1, TITLE: Wider and Deeper, Cheaper and Faster: Tensorized LSTMs for Sequence Learning
https://papers.nips.cc/paper/6606-wider-and-deeper-cheaper-and-faster-tensorized-lstms-for-sequence-learning
AUTHORS: Zhen He, Shaobing Gao, Liang Xiao, Daxue Liu, Hangen He, David Barber
HIGHLIGHT: As an alternative we propose the Tensorized LSTM in which the hidden states are represented by tensors and updated via a cross-layer convolution.

2, TITLE: Concentration of Multilinear Functions of the Ising Model with Applications to Network Data
https://papers.nips.cc/paper/6607-concentration-of-multilinear-functions-of-the-ising-model-with-applications-to-network-data
AUTHORS: Constantinos Daskalakis, Nishanth Dikkala, Gautam Kamath
HIGHLIGHT: We prove near-tight concentration of measure for polynomial functions of the Ising model, under high temperature, improving the radius of concentration guaranteed by known results by polynomial factors in the dimension (i.e.~the number of nodes in the Ising model).

3, TITLE: Deep Subspace Clustering Networks
https://papers.nips.cc/paper/6608-deep-subspace-clustering-networks
AUTHORS: Pan Ji, Tong Zhang, Hongdong Li, Mathieu Salzmann, Ian Reid
HIGHLIGHT: We present a novel deep neural network architecture for unsupervised subspace clustering.

4, TITLE: Attentional Pooling for Action Recognition
https://papers.nips.cc/paper/6609-attentional-pooling-for-action-recognition
AUTHORS: Rohit Girdhar, Deva Ramanan
HIGHLIGHT: We introduce a simple yet surprisingly powerful model to incorporate attention in action recognition and human object interaction tasks.

5, TITLE: On the Consistency of Quick Shift
https://papers.nips.cc/paper/6610-on-the-consistency-of-quick-shift
AUTHORS: Heinrich Jiang
HIGHLIGHT: We present finite sample statistical consistency guarantees for Quick Shift on mode and cluster recovery under mild distributional assumptions.

6, TITLE: Breaking the Nonsmooth Barrier: A Scalable Parallel Method for Composite Optimization
https://papers.nips.cc/paper/6611-breaking-the-nonsmooth-barrier-a-scalable-parallel-method-for-composite-optimization
AUTHORS: Fabian Pedregosa, R?mi Leblond, Simon Lacoste-Julien
HIGHLIGHT: In this work, we propose and analyze ProxASAGA, a fully asynchronous sparse method inspired by SAGA, a variance reduced incremental gradient algorithm.

7, TITLE: Dual-Agent GANs for Photorealistic and Identity Preserving Profile Face Synthesis
https://papers.nips.cc/paper/6612-dual-agent-gans-for-photorealistic-and-identity-preserving-profile-face-synthesis
AUTHORS: Jian Zhao, Lin Xiong, Panasonic Karlekar Jayashree, Jianshu Li, Fang Zhao, Zhecan Wang, Panasonic Sugiri Pranata, Panasonic Shengmei Shen, Shuicheng Yan, Jiashi Feng
HIGHLIGHT: To narrow this gap, we propose a Dual-Agent Generative Adversarial Network (DA-GAN) model, which can improve the realism of a face simulator's output using unlabeled real faces, while preserving the identity information during the realism refinement.

8, TITLE: Dilated Recurrent Neural Networks
https://papers.nips.cc/paper/6613-dilated-recurrent-neural-networks
AUTHORS: Shiyu Chang, Yang Zhang, Wei Han, Mo Yu, Xiaoxiao Guo, Wei Tan, Xiaodong Cui, Michael Witbrock, Mark A. Hasegawa-Johnson, Thomas S. Huang
HIGHLIGHT: In this paper, we introduce a simple yet effective RNN connection structure, the DilatedRNN, which simultaneously tackles all of these challenges.

9, TITLE: Hunt For The Unique, Stable, Sparse And Fast Feature Learning On Graphs
https://papers.nips.cc/paper/6614-hunt-for-the-unique-stable-sparse-and-fast-feature-learning-on-graphs
AUTHORS: Saurabh Verma, Zhi-Li Zhang
HIGHLIGHT: To both evaluate the quality of graph features produced by FGSD and demonstrate their utility, we apply them to the graph classification problem.

10, TITLE: Scalable Generalized Linear Bandits: Online Computation and Hashing
https://papers.nips.cc/paper/6615-scalable-generalized-linear-bandits-online-computation-and-hashing
AUTHORS: Kwang-Sung Jun, Aniruddha Bhargava, Robert Nowak, Rebecca Willett
HIGHLIGHT: This paper proposes new, scalable solutions to the GLB problem in two respects.

11, TITLE: Probabilistic Models for Integration Error in the Assessment of Functional Cardiac Models
https://papers.nips.cc/paper/6616-probabilistic-models-for-integration-error-in-the-assessment-of-functional-cardiac-models
AUTHORS: Chris Oates, Steven Niederer, Angela Lee, Fran?ois-Xavier Briol, Mark Girolami
HIGHLIGHT: This paper studies the numerical computation of integrals, representing estimates or predictions, over the output $f(x)$ of a computational model with respect to a distribution $p(\mathrm{d}x)$ over uncertain inputs x to the model.

12, TITLE: Machine Learning with Adversaries: Byzantine Tolerant Gradient Descent
https://papers.nips.cc/paper/6617-machine-learning-with-adversaries-byzantine-tolerant-gradient-descent
AUTHORS: Peva Blanchard, El Mahdi El Mhamdi, Rachid Guerraoui, Julien Stainer
HIGHLIGHT: We propose \emph{Krum}, an aggregation rule that satisfies our resilience property, which we argue is the first provably Byzantine-resilient algorithm for distributed SGD.

13, TITLE: Dynamic Safe Interruptibility for Decentralized Multi-Agent Reinforcement Learning
https://papers.nips.cc/paper/6618-dynamic-safe-interruptibility-for-decentralized-multi-agent-reinforcement-learning
AUTHORS: El Mahdi El Mhamdi, Rachid Guerraoui, Hadrien Hendrikx, Alexandre Maurer
HIGHLIGHT: This paper introduces dynamic safe interruptibility, an alternative definition more suited to decentralized learning problems, and studies this notion in two learning frameworks: joint action learners and independent learners.

14, TITLE: Interactive Submodular Bandit
https://papers.nips.cc/paper/6619-interactive-submodular-bandit
AUTHORS: Lin Chen, Andreas Krause, Amin Karbasi
HIGHLIGHT: We model such problems as an interactive submodular bandit optimization, where in each round we receive a context (e.g., previously selected movies) and have to choose an action (e.g., propose a new movie).

15, TITLE: Learning to See Physics via Visual De-animation
https://papers.nips.cc/paper/6620-learning-to-see-physics-via-visual-de-animation
AUTHORS: Jiajun Wu, Erika Lu, Pushmeet Kohli, Bill Freeman, Josh Tenenbaum
HIGHLIGHT: We introduce a paradigm for understanding physical scenes without human annotations.

16, TITLE: Label Efficient Learning of Transferable Representations acrosss Domains and Tasks
https://papers.nips.cc/paper/6621-label-efficient-learning-of-transferable-representations-acrosss-domains-and-tasks
AUTHORS: Zelun Luo, Yuliang Zou, Judy Hoffman, Li F. Fei-Fei
HIGHLIGHT: We propose a framework that learns a representation transferable across different domains and tasks in a data efficient manner.

17, TITLE: Decoding with Value Networks for Neural Machine Translation
https://papers.nips.cc/paper/6622-decoding-with-value-networks-for-neural-machine-translation
AUTHORS: Di He, Hanqing Lu, Yingce Xia, Tao Qin, Liwei Wang, Tie-Yan Liu
HIGHLIGHT: Inspired by the success and methodology of AlphaGo, in this paper we propose using a prediction network to improve beam search, which takes the source sentence x, the currently available decoding output $y_1,\cdots, y_{t-1}$ and a candidate word w at step t as inputs and predicts the long-term value (e.g., BLEU score) of the partial target sentence if it is completed by the NMT model.

18, TITLE: Parametric Simplex Method for Sparse Learning
https://papers.nips.cc/paper/6623-parametric-simplex-method-for-sparse-learning
AUTHORS: Haotian Pang, Han Liu, Robert J. Vanderbei, Tuo Zhao
HIGHLIGHT: In this paper, we investiage a broad class of sparse learning approaches formulated as linear programs parametrized by a {\em regularization factor}, and solve them by the parametric simplex method (PSM).

19, TITLE: Group Sparse Additive Machine
https://papers.nips.cc/paper/6624-group-sparse-additive-machine
AUTHORS: Hong Chen, Xiaoqian Wang, Cheng Deng, Heng Huang
HIGHLIGHT: To address this challenging problem, in this paper, we investigate the classification with group sparse additive models in reproducing kernel Hilbert spaces.

20, TITLE: Uprooting and Rerooting Higher-Order Graphical Models
https://papers.nips.cc/paper/6625-uprooting-and-rerooting-higher-order-graphical-models
AUTHORS: Mark Rowland, Adrian Weller

HIGHLIGHT: Here we introduce methods to extend the approach to models with higher-order potentials and develop theoretical insights.

21, TITLE: The Unreasonable Effectiveness of Structured Random Orthogonal Embeddings
https://papers.nips.cc/paper/6626-the-unreasonable-effectiveness-of-structured-random-orthogonal-embeddings
AUTHORS: Krzysztof M. Choromanski, Mark Rowland, Adrian Weller
HIGHLIGHT: We introduce matrices with complex entries which give significant further accuracy improvement.

22, TITLE: From Parity to Preference-based Notions of Fairness in Classification
https://papers.nips.cc/paper/6627-from-parity-to-preference-based-notions-of-fairness-in-classification
AUTHORS: Muhammad Bilal Zafar, Isabel Valera, Manuel Rodriguez, Krishna Gummadi, Adrian Weller
HIGHLIGHT: In this paper, we draw inspiration from the fair-division and envy-freeness literature in economics and game theory and propose preference-based notions of fairness -- given the choice between various sets of decision treatments or outcomes, any group of users would collectively prefer its treatment or outcomes, regardless of the (dis)parity as compared to the other groups.

23, TITLE: Inferring Generative Model Structure with Static Analysis
https://papers.nips.cc/paper/6628-inferring-generative-model-structure-with-static-analysis
AUTHORS: Paroma Varma, Bryan D. He, Payal Bajaj, Nishith Khandwala, Imon Banerjee, Daniel Rubin, Christopher R?
HIGHLIGHT: We present Coral, a paradigm that infers generative model structure by statically analyzing the code for these heuristics, thus significantly reducing the amount of data required to learn structure.

24, TITLE: Structured Embedding Models for Grouped Data
https://papers.nips.cc/paper/6629-structured-embedding-models-for-grouped-data
AUTHORS: Maja Rudolph, Francisco Ruiz, Susan Athey, David Blei
HIGHLIGHT: Here we develop structured exponential family embeddings (S-EFE), a method for discovering embeddings that vary across related groups of data.

25, TITLE: A Linear-Time Kernel Goodness-of-Fit Test
https://papers.nips.cc/paper/6630-a-linear-time-kernel-goodness-of-fit-test
AUTHORS: Wittawat Jitkrittum, Wenkai Xu, Zoltan Szabo, Kenji Fukumizu, Arthur Gretton
HIGHLIGHT: We propose a novel adaptive test of goodness-of-fit, with computational cost linear in the number of samples.

26, TITLE: Cortical microcircuits as gated-recurrent neural networks
https://papers.nips.cc/paper/6631-cortical-microcircuits-as-gated-recurrent-neural-networks
AUTHORS: Rui Costa, Ioannis Alexandros Assael, Brendan Shillingford, Nando de Freitas, TIm Vogels
HIGHLIGHT: We propose a natural mapping of subLSTMs onto known canonical excitatory-inhibitory cortical microcircuits.

27, TITLE: k-Support and Ordered Weighted Sparsity for Overlapping Groups: Hardness and Algorithms
https://papers.nips.cc/paper/6632-k-support-and-ordered-weighted-sparsity-for-overlapping-groups-hardness-and-algorithms
AUTHORS: Cong Han Lim, Stephen Wright
HIGHLIGHT: We study the norms obtained from extending the k-support norm and OWL norms to the setting in which there are overlapping groups.

28, TITLE: A simple model of recognition and recall memory
https://papers.nips.cc/paper/6633-a-simple-model-of-recognition-and-recall-memory
AUTHORS: Nisheeth Srivastava, Edward Vul
HIGHLIGHT: We build a simple computational model around this theory, using sampling to approximate an ideal Bayesian observer encoding and retrieving situational co-occurrence frequencies of stimuli and retrieval cues.

29, TITLE: On Structured Prediction Theory with Calibrated Convex Surrogate Losses
https://papers.nips.cc/paper/6634-on-structured-prediction-theory-with-calibrated-convex-surrogate-losses
AUTHORS: Anton Osokin, Francis Bach, Simon Lacoste-Julien
HIGHLIGHT: We provide novel theoretical insights on structured prediction in the context of efficient convex surrogate loss minimization with consistency guarantees.

30, TITLE: Best of Both Worlds: Transferring Knowledge from Discriminative Learning to a Generative Visual Dialog Model
https://papers.nips.cc/paper/6635-best-of-both-worlds-transferring-knowledge-from-discriminative-learning-to-a-generative-visual-dialog-model
AUTHORS: Jiasen Lu, Anitha Kannan, Jianwei Yang, Devi Parikh, Dhruv Batra

3

HIGHLIGHT: We present a novel training framework for neural sequence models, particularly for grounded dialog generation.

31, TITLE: MaskRNN: Instance Level Video Object Segmentation
https://papers.nips.cc/paper/6636-maskrnn-instance-level-video-object-segmentation
AUTHORS: Yuan-Ting Hu, Jia-Bin Huang, Alexander Schwing
HIGHLIGHT: To capture the temporal coherence, in this paper, we develop MaskRNN, a recurrent neural net approach which fuses in each frame the output of two deep nets for each object instance - a binary segmentation net providing a mask and a localization net providing a bounding box.

32, TITLE: Gated Recurrent Convolution Neural Network for OCR
https://papers.nips.cc/paper/6637-gated-recurrent-convolution-neural-network-for-ocr
AUTHORS: Jianfeng Wang, Xiaolin Hu
HIGHLIGHT: Inspired by a recently proposed model for general image classification, Recurrent Convolution Neural Network (RCNN), we propose a new architecture named Gated RCNN (GRCNN) for solving this problem.

33, TITLE: Towards Accurate Binary Convolutional Neural Network
https://papers.nips.cc/paper/6638-towards-accurate-binary-convolutional-neural-network
AUTHORS: Xiaofan Lin, Cong Zhao, Wei Pan
HIGHLIGHT: In this paper, we address this issue with two major innovations: (1) approximating full-precision weights with the linear combination of multiple binary weight bases; (2) employing multiple binary activations to alleviate information loss.

34, TITLE: Semi-Supervised Learning for Optical Flow with Generative Adversarial Networks
https://papers.nips.cc/paper/6639-semi-supervised-learning-for-optical-flow-with-generative-adversarial-networks
AUTHORS: Wei-Sheng Lai, Jia-Bin Huang, Ming-Hsuan Yang
HIGHLIGHT: In this paper, we propose to exploit unlabeled videos for semi-supervised learning of optical flow with a Generative Adversarial Network.

35, TITLE: Learning a Multi-View Stereo Machine
https://papers.nips.cc/paper/6640-learning-a-multi-view-stereo-machine
AUTHORS: Abhishek Kar, Christian H?ne, Jitendra Malik
HIGHLIGHT: We present a learnt system for multi-view stereopsis.

36, TITLE: Phase Transitions in the Pooled Data Problem
https://papers.nips.cc/paper/6641-phase-transitions-in-the-pooled-data-problem
AUTHORS: Jonathan Scarlett, Volkan Cevher
HIGHLIGHT: In this paper, we study the {\em pooled data} problem of identifying the labels associated with a large collection of items, based on a sequence of pooled tests revealing the counts of each label within the pool.

37, TITLE: Universal Style Transfer via Feature Transforms
https://papers.nips.cc/paper/6642-universal-style-transfer-via-feature-transforms
AUTHORS: Yijun Li, Chen Fang, Jimei Yang, Zhaowen Wang, Xin Lu, Ming-Hsuan Yang
HIGHLIGHT: In this paper, we present a simple yet effective method that tackles these limitations without training on any pre-defined styles.

38, TITLE: On the Model Shrinkage Effect of Gamma Process Edge Partition Models
https://papers.nips.cc/paper/6643-on-the-model-shrinkage-effect-of-gamma-process-edge-partition-models
AUTHORS: Iku Ohama, Issei Sato, Takuya Kida, Hiroki Arimura
HIGHLIGHT: In order to ensure that the model shrinkage effect of the EPM works in an appropriate manner, we proposed two novel generative constructions of the EPM: CEPM incorporating constrained gamma priors, and DEPM incorporating Dirichlet priors instead of the gamma priors.

39, TITLE: Pose Guided Person Image Generation
https://papers.nips.cc/paper/6644-pose-guided-person-image-generation
AUTHORS: Liqian Ma, Xu Jia, Qianru Sun, Bernt Schiele, Tinne Tuytelaars, Luc Van Gool
HIGHLIGHT: This paper proposes the novel Pose Guided Person Generation Network (PG^2) that allows to synthesize person images in arbitrary poses, based on an image of that person and a novel pose.

40, TITLE: Inference in Graphical Models via Semidefinite Programming Hierarchies
https://papers.nips.cc/paper/6645-inference-in-graphical-models-via-semidefinite-programming-hierarchies
AUTHORS: Murat A. Erdogdu, Yash Deshpande, Andrea Montanari

HIGHLIGHT: In this paper, we propose binary SDP relaxations for MAP inference using the SOS hierarchy with two innovations focused on computational efficiency.

41, TITLE: Variable Importance Using Decision Trees
https://papers.nips.cc/paper/6646-variable-importance-using-decision-trees
AUTHORS: Jalil Kazemitabar, Arash Amini, Adam Bloniarz, Ameet S. Talwalkar
HIGHLIGHT: Decision trees and random forests are well established models that not only offer good predictive performance, but also provide rich feature importance information.

42, TITLE: Preventing Gradient Explosions in Gated Recurrent Units
https://papers.nips.cc/paper/6647-preventing-gradient-explosions-in-gated-recurrent-units
AUTHORS: Sekitoshi Kanai, Yasuhiro Fujiwara, Sotetsu Iwamura
HIGHLIGHT: In this paper, we find a condition under which the dynamics of the GRU changes drastically and propose a learning method to address the exploding gradient problem.

43, TITLE: On the Power of Truncated SVD for General High-rank Matrix Estimation Problems
https://papers.nips.cc/paper/6648-on-the-power-of-truncated-svd-for-general-high-rank-matrix-estimation-problems
AUTHORS: Simon S. Du, Yining Wang, Aarti Singh
HIGHLIGHT: 2.High-rank matrix denoising: we design algorithms that recovers a matrix $\mat A$ with relative error in Frobenius norm from its noise-perturbed observations, without assuming $\mat A$ is exactly low-rank.

44, TITLE: f-GANs in an Information Geometric Nutshell
https://papers.nips.cc/paper/6649-f-gans-in-an-information-geometric-nutshell
AUTHORS: Richard Nock, Zac Cranko, Aditya K. Menon, Lizhen Qu, Robert C. Williamson
HIGHLIGHT: In this paper, we unveil a broad class of distributions for which such convergence happens --- namely, deformed exponential families, a wide superset of exponential families ---.

45, TITLE: Toward Multimodal Image-to-Image Translation
https://papers.nips.cc/paper/6650-toward-multimodal-image-to-image-translation
AUTHORS: Jun-Yan Zhu, Richard Zhang, Deepak Pathak, Trevor Darrell, Alexei A. Efros, Oliver Wang, Eli Shechtman
HIGHLIGHT: In this work, we aim to model a distribution of possible outputs in a conditional generative modeling setting.

46, TITLE: Mixture-Rank Matrix Approximation for Collaborative Filtering
https://papers.nips.cc/paper/6651-mixture-rank-matrix-approximation-for-collaborative-filtering
AUTHORS: Dongsheng Li, Chao Chen, Wei Liu, Tun Lu, Ning Gu, Stephen Chu
HIGHLIGHT: In this paper, a mixture-rank matrix approximation (MRMA) method is proposed, in which user-item ratings can be characterized by a mixture of LRMA models with different ranks.

47, TITLE: Continuous DR-submodular Maximization: Structure and Algorithms
https://papers.nips.cc/paper/6652-continuous-dr-submodular-maximization-structure-and-algorithms
AUTHORS: An Bian, Kfir Levy, Andreas Krause, Joachim M. Buhmann
HIGHLIGHT: In this work we study the problem of maximizing non-monotone DR-submodular continuous functions under general down-closed convex constraints.

48, TITLE: Learning with Average Top-k Loss
https://papers.nips.cc/paper/6653-learning-with-average-top-k-loss
AUTHORS: Yanbo Fan, Siwei Lyu, Yiming Ying, Baogang Hu
HIGHLIGHT: In this work, we introduce the average top-k (\atk) loss as a new ensemble loss for supervised learning.

49, TITLE: Learning multiple visual domains with residual adapters
https://papers.nips.cc/paper/6654-learning-multiple-visual-domains-with-residual-adapters
AUTHORS: Sylvestre-Alvise Rebuffi, Hakan Bilen, Andrea Vedaldi
HIGHLIGHT: In this paper, we look in particular at the task of learning a single visual representation that can be successfully utilized in the analysis of very different types of images, from dog breeds to stop signs and digits.
We also introduce the Visual Decathlon Challenge, a benchmark that evaluates the ability of representations to capture simultaneously ten very different visual domains and measures their ability to recognize well uniformly.

50, TITLE: Dykstra's Algorithm, ADMM, and Coordinate Descent: Connections, Insights, and Extensions
https://papers.nips.cc/paper/6655-dykstras-algorithm-admm-and-coordinate-descent-connections-insights-and-extensions
AUTHORS: Ryan J. Tibshirani

HIGHLIGHT: We study connections between Dykstra's algorithm for projecting onto an intersection of convex sets, the augmented Lagrangian method of multipliers or ADMM, and block coordinate descent.

51, TITLE: Learning Spherical Convolution for Fast Features from 360? Imagery
https://papers.nips.cc/paper/6656-learning-spherical-convolution-for-fast-features-from-360-imagery
AUTHORS: Yu-Chuan Su, Kristen Grauman
HIGHLIGHT: We propose to learn a spherical convolutional network that translates a planar CNN to process 360° imagery directly in its equirectangular projection.

52, TITLE: MarrNet: 3D Shape Reconstruction via 2.5D Sketches
https://papers.nips.cc/paper/6657-marrnet-3d-shape-reconstruction-via-25d-sketches
AUTHORS: Jiajun Wu, Yifan Wang, Tianfan Xue, Xingyuan Sun, Bill Freeman, Josh Tenenbaum
HIGHLIGHT: In this work, we propose an end-to-end trainable framework, sequentially estimating 2.5D sketches and 3D object shapes.

53, TITLE: Multimodal Learning and Reasoning for Visual Question Answering
https://papers.nips.cc/paper/6658-multimodal-learning-and-reasoning-for-visual-question-answering
AUTHORS: Ilija Ilievski, Jiashi Feng
HIGHLIGHT: In this work we introduce a modular neural network model that learns a multimodal and multifaceted representation of the image and the question.

54, TITLE: Adversarial Surrogate Losses for Ordinal Regression
https://papers.nips.cc/paper/6659-adversarial-surrogate-losses-for-ordinal-regression
AUTHORS: Rizal Fathony, Mohammad Ali Bashiri, Brian Ziebart
HIGHLIGHT: Many existing methods for this task reduce to binary classification problems and employ surrogate losses, such as the hinge loss.

55, TITLE: Hypothesis Transfer Learning via Transformation Functions
https://papers.nips.cc/paper/6660-hypothesis-transfer-learning-via-transformation-functions
AUTHORS: Simon S. Du, Jayanth Koushik, Aarti Singh, Barnabas Poczos
HIGHLIGHT: In this paper, we propose a unified algorithm-dependent framework for HTL through a novel notion of transformation functions, which characterizes the relation between the source and the target domains.

56, TITLE: Controllable Invariance through Adversarial Feature Learning
https://papers.nips.cc/paper/6661-controllable-invariance-through-adversarial-feature-learning
AUTHORS: Qizhe Xie, Zihang Dai, Yulun Du, Eduard Hovy, Graham Neubig
HIGHLIGHT: In this paper, we tackle the problem of learning representations invariant to a specific factor or trait of data.

57, TITLE: Convergence Analysis of Two-layer Neural Networks with ReLU Activation
https://papers.nips.cc/paper/6662-convergence-analysis-of-two-layer-neural-networks-with-relu-activation
AUTHORS: Yuanzhi Li, Yang Yuan
HIGHLIGHT: In this paper, we make progress on understanding this mystery by providing a convergence analysis for SGD on a rich subset of two-layer feedforward networks with ReLU activations.

58, TITLE: Doubly Accelerated Stochastic Variance Reduced Dual Averaging Method for Regularized Empirical Risk Minimization
https://papers.nips.cc/paper/6663-doubly-accelerated-stochastic-variance-reduced-dual-averaging-method-for-regularized-empirical-risk-minimization
AUTHORS: Tomoya Murata, Taiji Suzuki
HIGHLIGHT: We develop a new accelerated stochastic gradient method for efficiently solving the convex regularized empirical risk minimization problem in mini-batch settings.

59, TITLE: Langevin Dynamics with Continuous Tempering for Training Deep Neural Networks
https://papers.nips.cc/paper/6664-langevin-dynamics-with-continuous-tempering-for-training-deep-neural-networks
AUTHORS: Nanyang Ye, Zhanxing Zhu, Rafal Mantiuk
HIGHLIGHT: In this paper, a novel approach is proposed which divides the training process into two consecutive phases to obtain better generalization performance: Bayesian sampling and stochastic optimization.

60, TITLE: Efficient Online Linear Optimization with Approximation Algorithms
https://papers.nips.cc/paper/6665-efficient-online-linear-optimization-with-approximation-algorithms

AUTHORS: Dan Garber
HIGHLIGHT: We present new algorithms with significantly improved oracle complexity for both the full information and bandit variants of the problem.

61, TITLE: Geometric Descent Method for Convex Composite Minimization
https://papers.nips.cc/paper/6666-geometric-descent-method-for-convex-composite-minimization
AUTHORS: Shixiang Chen, Shiqian Ma, Wei Liu
HIGHLIGHT: In this paper, we extend the geometric descent method recently proposed by Bubeck, Lee and Singh to tackle nonsmooth and strongly convex composite problems.

62, TITLE: Diffusion Approximations for Online Principal Component Estimation and Global Convergence
https://papers.nips.cc/paper/6667-diffusion-approximations-for-online-principal-component-estimation-and-global-convergence
AUTHORS: Chris Junchi Li, Mengdi Wang, Han Liu, Tong Zhang
HIGHLIGHT: In this paper, we propose to adopt the diffusion approximation tools to study the dynamics of Oja's iteration which is an online stochastic gradient method for the principal component analysis.

63, TITLE: Avoiding Discrimination through Causal Reasoning
https://papers.nips.cc/paper/6668-avoiding-discrimination-through-causal-reasoning
AUTHORS: Niki Kilbertus, Mateo Rojas Carulla, Giambattista Parascandolo, Moritz Hardt, Dominik Janzing, Bernhard Sch?lkopf
HIGHLIGHT: Going beyond observational criteria, we frame the problem of discrimination based on protected attributes in the language of causal reasoning.

64, TITLE: Nonparametric Online Regression while Learning the Metric
https://papers.nips.cc/paper/6669-nonparametric-online-regression-while-learning-the-metric
AUTHORS: Ilja Kuzborskij, Nicol? Cesa-Bianchi
HIGHLIGHT: We study algorithms for online nonparametric regression that learn the directions along which the regression function is smoother.

65, TITLE: Recycling Privileged Learning and Distribution Matching for Fairness
https://papers.nips.cc/paper/6670-recycling-privileged-learning-and-distribution-matching-for-fairness
AUTHORS: Novi Quadrianto, Viktoriia Sharmanska
HIGHLIGHT: To achieve our goal, we recycle two well-established machine learning techniques, privileged learning and distribution matching, and harmonize them for satisfying multi-faceted fairness definitions.

66, TITLE: Safe and Nested Subgame Solving for Imperfect-Information Games
https://papers.nips.cc/paper/6671-safe-and-nested-subgame-solving-for-imperfect-information-games
AUTHORS: Noam Brown, Tuomas Sandholm
HIGHLIGHT: We introduce subgame-solving techniques that outperform prior methods both in theory and practice.

67, TITLE: Unsupervised Image-to-Image Translation Networks
https://papers.nips.cc/paper/6672-unsupervised-image-to-image-translation-networks
AUTHORS: Ming-Yu Liu, Thomas Breuel, Jan Kautz
HIGHLIGHT: To address the problem, we make a shared-latent space assumption and propose an unsupervised image-to-image translation framework based on Coupled GANs.

68, TITLE: Coded Distributed Computing for Inverse Problems
https://papers.nips.cc/paper/6673-coded-distributed-computing-for-inverse-problems
AUTHORS: Yaoqing Yang, Pulkit Grover, Soummya Kar
HIGHLIGHT: In this paper, we utilize the emerging idea of ``coded computation'' to design a novel error-correcting-code inspired technique for solving linear inverse problems under specific iterative methods in a parallelized implementation affected by stragglers.

69, TITLE: A Screening Rule for l1-Regularized Ising Model Estimation
https://papers.nips.cc/paper/6674-a-screening-rule-for-l1-regularized-ising-model-estimation
AUTHORS: Zhaobin Kuang, Sinong Geng, David Page
HIGHLIGHT: We discover a screening rule for l1-regularized Ising model estimation.

70, TITLE: Improved Dynamic Regret for Non-degenerate Functions
https://papers.nips.cc/paper/6675-improved-dynamic-regret-for-non-degenerate-functions

AUTHORS: Lijun Zhang, Tianbao Yang, Jinfeng Yi, Jing Rong, Zhi-Hua Zhou
HIGHLIGHT: In this paper, we illustrate that the dynamic regret can be further improved by allowing the learner to query the gradient of the function multiple times, and meanwhile the strong convexity can be weakened to other non-degenerate conditions.

71, TITLE: Learning Efficient Object Detection Models with Knowledge Distillation
https://papers.nips.cc/paper/6676-learning-efficient-object-detection-models-with-knowledge-distillation
AUTHORS: Guobin Chen, Wongun Choi, Xiang Yu, Tony Han, Manmohan Chandraker
HIGHLIGHT: In this work, we propose a new framework to learn compact and fast ob- ject detection networks with improved accuracy using knowledge distillation [20] and hint learning [34].

72, TITLE: One-Sided Unsupervised Domain Mapping
https://papers.nips.cc/paper/6677-one-sided-unsupervised-domain-mapping
AUTHORS: Sagie Benaim, Lior Wolf
HIGHLIGHT: In this work, we present a method of learning G_{AB} without learning G_{BA}.

73, TITLE: Deep Mean-Shift Priors for Image Restoration
https://papers.nips.cc/paper/6678-deep-mean-shift-priors-for-image-restoration
AUTHORS: Siavash Arjomand Bigdeli, Matthias Zwicker, Paolo Favaro, Meiguang Jin
HIGHLIGHT: In this paper we introduce a natural image prior that directly represents a Gaussian-smoothed version of the natural image distribution.

74, TITLE: Greedy Algorithms for Cone Constrained Optimization with Convergence Guarantees
https://papers.nips.cc/paper/6679-greedy-algorithms-for-cone-constrained-optimization-with-convergence-guarantees
AUTHORS: Francesco Locatello, Michael Tschannen, Gunnar Raetsch, Martin Jaggi
HIGHLIGHT: In this paper, we consider the intermediate case of optimization over the convex cone, parametrized as the conic hull of a generic atom set, leading to the first principled definitions of non-negative MP algorithms for which we give explicit convergence rates and demonstrate excellent empirical performance.

75, TITLE: A New Theory for Matrix Completion
https://papers.nips.cc/paper/6680-a-new-theory-for-matrix-completion
AUTHORS: Guangcan Liu, Qingshan Liu, Xiaotong Yuan
HIGHLIGHT: To break through the limits of random sampling, this paper introduces a new hypothesis called \emph{isomeric condition}, which is provably weaker than the assumption of uniform sampling and arguably holds even when the missing data is placed irregularly.

76, TITLE: Robust Hypothesis Test for Nonlinear Effect with Gaussian Processes
https://papers.nips.cc/paper/6681-robust-hypothesis-test-for-nonlinear-effect-with-gaussian-processes
AUTHORS: Jeremiah Liu, Brent Coull
HIGHLIGHT: To demonstrate the utility of the proposed method, we apply our test to the problem of detecting nonlinear interaction between groups of continuous features.

77, TITLE: Lower bounds on the robustness to adversarial perturbations
https://papers.nips.cc/paper/6682-lower-bounds-on-the-robustness-to-adversarial-perturbations
AUTHORS: Jonathan Peck, Joris Roels, Bart Goossens, Yvan Saeys
HIGHLIGHT: In this work, we take steps towards a formal characterization of adversarial perturbations by deriving lower bounds on the magnitudes of perturbations necessary to change the classification of neural networks.

78, TITLE: Minimizing a Submodular Function from Samples
https://papers.nips.cc/paper/6683-minimizing-a-submodular-function-from-samples
AUTHORS: Eric Balkanski, Yaron Singer
HIGHLIGHT: In this paper we consider the problem of minimizing a submodular function from training data.

79, TITLE: Introspective Classification with Convolutional Nets
https://papers.nips.cc/paper/6684-introspective-classification-with-convolutional-nets
AUTHORS: Long Jin, Justin Lazarow, Zhuowen Tu
HIGHLIGHT: We propose introspective convolutional networks (ICN) that emphasize the importance of having convolutional neural networks empowered with generative capabilities.

80, TITLE: Label Distribution Learning Forests
https://papers.nips.cc/paper/6685-label-distribution-learning-forests

AUTHORS: Wei Shen, KAI ZHAO, Yilu Guo, Alan L. Yuille
HIGHLIGHT: This paper presents label distribution learning forests (LDLFs) - a novel label distribution learning algorithm based on differentiable decision trees, which have several advantages: 1) Decision trees have the potential to model any general form of label distributions by a mixture of leaf node predictions.

81, TITLE: Unsupervised learning of object frames by dense equivariant image labelling
https://papers.nips.cc/paper/6686-unsupervised-learning-of-object-frames-by-dense-equivariant-image-labelling
AUTHORS: James Thewlis, Hakan Bilen, Andrea Vedaldi
HIGHLIGHT: Starting from the recent idea of viewpoint factorization, we propose a new approach that, given a large number of images of an object and no other supervision, can extract a dense object-centric coordinate frame.

82, TITLE: Compression-aware Training of Deep Networks
https://papers.nips.cc/paper/6687-compression-aware-training-of-deep-networks
AUTHORS: Jose M. Alvarez, Mathieu Salzmann
HIGHLIGHT: In this paper, we propose to explicitly account for compression in the training process.

83, TITLE: Multiscale Semi-Markov Dynamics for Intracortical Brain-Computer Interfaces
https://papers.nips.cc/paper/6688-multiscale-semi-markov-dynamics-for-intracortical-brain-computer-interfaces
AUTHORS: Daniel Milstein, Jason Pacheco, Leigh Hochberg, John D. Simeral, Beata Jarosiewicz, Erik Sudderth
HIGHLIGHT: We propose a dynamic Bayesian network that includes the on-screen goal position as part of its latent state, and thus allows the person's intended angle of movement to be aggregated over a much longer history of neural activity.

84, TITLE: PredRNN: Recurrent Neural Networks for Predictive Learning using Spatiotemporal LSTMs
https://papers.nips.cc/paper/6689-predrnn-recurrent-neural-networks-for-predictive-learning-using-spatiotemporal-lstms
AUTHORS: Yunbo Wang, Mingsheng Long, Jianmin Wang, Zhifeng Gao, Philip S. Yu
HIGHLIGHT: PredRNN: Recurrent Neural Networks for Predictive Learning using Spatiotemporal LSTMs

85, TITLE: Detrended Partial Cross Correlation for Brain Connectivity Analysis
https://papers.nips.cc/paper/6690-detrended-partial-cross-correlation-for-brain-connectivity-analysis
AUTHORS: Jaime Ide, F?bio Cappabianco, Fabio Faria, Chiang-shan R. Li
HIGHLIGHT: In this paper, using detrended partial cross-correlation analysis (DPCCA), we propose a novel functional connectivity measure to delineate brain interactions at multiple time scales, while controlling for covariates.

86, TITLE: Contrastive Learning for Image Captioning
https://papers.nips.cc/paper/6691-contrastive-learning-for-image-captioning
AUTHORS: Bo Dai, Dahua Lin
HIGHLIGHT: In this work, we propose a new learning method, Contrastive Learning (CL), for image captioning.

87, TITLE: Safe Model-based Reinforcement Learning with Stability Guarantees
https://papers.nips.cc/paper/6692-safe-model-based-reinforcement-learning-with-stability-guarantees
AUTHORS: Felix Berkenkamp, Matteo Turchetta, Angela Schoellig, Andreas Krause
HIGHLIGHT: In this paper, we present a learning algorithm that explicitly considers safety, defined in terms of stability guarantees.

88, TITLE: Online multiclass boosting
https://papers.nips.cc/paper/6693-online-multiclass-boosting
AUTHORS: Young Hun Jung, Jack Goetz, Ambuj Tewari
HIGHLIGHT: Recent work has extended the theoretical analysis of boosting algorithms to multiclass problems and to online settings.

89, TITLE: Matching on Balanced Nonlinear Representations for Treatment Effects Estimation
https://papers.nips.cc/paper/6694-matching-on-balanced-nonlinear-representations-for-treatment-effects-estimation
AUTHORS: Sheng Li, Yun Fu
HIGHLIGHT: In this paper, we aim to address these problems by learning low-dimensional balanced and nonlinear representations (BNR) for observational data.

90, TITLE: Learning Overcomplete HMMs
https://papers.nips.cc/paper/6695-learning-overcomplete-hmms
AUTHORS: Vatsal Sharan, Sham M. Kakade, Percy S. Liang, Gregory Valiant

HIGHLIGHT: In this paper, we present several new results---both positive and negative---which help define the boundaries between the tractable-learning setting and the intractable setting.

91, TITLE: GP CaKe: Effective brain connectivity with causal kernels
https://papers.nips.cc/paper/6696-gp-cake-effective-brain-connectivity-with-causal-kernels
AUTHORS: Luca Ambrogioni, Max Hinne, Marcel Van Gerven, Eric Maris
HIGHLIGHT: Here we propose to model this causal interaction using integro-differential equations and causal kernels that allow for a rich analysis of effective connectivity.

92, TITLE: Decoupling "when to update" from "how to update"
https://papers.nips.cc/paper/6697-decoupling-when-to-update-from-how-to-update
AUTHORS: Eran Malach, Shai Shalev-Shwartz
HIGHLIGHT: In this paper, we propose a meta algorithm for tackling the noisy labels problem.

93, TITLE: Self-Normalizing Neural Networks
https://papers.nips.cc/paper/6698-self-normalizing-neural-networks
AUTHORS: G?nter Klambauer, Thomas Unterthiner, Andreas Mayr, Sepp Hochreiter
HIGHLIGHT: We introduce self-normalizing neural networks (SNNs) to enable high-level abstract representations.

94, TITLE: Learning to Pivot with Adversarial Networks
https://papers.nips.cc/paper/6699-learning-to-pivot-with-adversarial-networks
AUTHORS: Gilles Louppe, Michael Kagan, Kyle Cranmer
HIGHLIGHT: In this work, we introduce and derive theoretical results for a training procedure based on adversarial networks for enforcing the pivotal property (or, equivalently, fairness with respect to continuous attributes) on a predictive model.

95, TITLE: SchNet: A continuous-filter convolutional neural network for modeling quantum interactions
https://papers.nips.cc/paper/6700-schnet-a-continuous-filter-convolutional-neural-network-for-modeling-quantum-interactions
AUTHORS: Kristof Sch?tt, Pieter-Jan Kindermans, Huziel Enoc Sauceda Felix, Stefan Chmiela, Alexandre Tkatchenko, Klaus-Robert M?ller
HIGHLIGHT: Thus, we propose to use continuous-filter convolutional layers to be able to model local correlations without requiring the data to lie on a grid.
Finally, we introduce a more challenging benchmark with chemical and structural variations that suggests the path for further work.

96, TITLE: Active Bias: Training More Accurate Neural Networks by Emphasizing High Variance Samples
https://papers.nips.cc/paper/6701-active-bias-training-more-accurate-neural-networks-by-emphasizing-high-variance-samples
AUTHORS: Haw-Shiuan Chang, Erik Learned-Miller, Andrew McCallum
HIGHLIGHT: This paper presents two improved alternatives based on lightweight estimates of sample uncertainty in stochastic gradient descent (SGD): the variance in predicted probability of the correct class across iterations of mini-batch SGD, and the proximity of the correct class probability to the decision threshold.

97, TITLE: Differentiable Learning of Submodular Models
https://papers.nips.cc/paper/6702-differentiable-learning-of-submodular-models
AUTHORS: Josip Djolonga, Andreas Krause
HIGHLIGHT: In this paper we focus on the problem of submodular minimization, for which we show that such layers are indeed possible.

98, TITLE: Inductive Representation Learning on Large Graphs
https://papers.nips.cc/paper/6703-inductive-representation-learning-on-large-graphs
AUTHORS: Will Hamilton, Zhitao Ying, Jure Leskovec
HIGHLIGHT: Here we present GraphSAGE, a general, inductive framework that leverages node feature information (e.g., text attributes) to efficiently generate node embeddings.

99, TITLE: Subset Selection and Summarization in Sequential Data
https://papers.nips.cc/paper/6704-subset-selection-and-summarization-in-sequential-data
AUTHORS: Ehsan Elhamifar, M. Clara De Paolis Kaluza
HIGHLIGHT: In this paper, we develop a new framework for sequential subset selection that finds a set of representatives compatible with the dynamic models of data.
To do so, we equip items with transition dynamic models and pose the problem as an integer binary optimization over assignments of sequential items to representatives, that leads to high encoding, diversity and transition potentials.

100, TITLE: Question Asking as Program Generation
https://papers.nips.cc/paper/6705-question-asking-as-program-generation
AUTHORS: Anselm Rothe, Brenden M. Lake, Todd Gureckis
HIGHLIGHT: Here we introduce a cognitive model capable of constructing human-like questions.

101, TITLE: Revisiting Perceptron: Efficient and Label-Optimal Learning of Halfspaces
https://papers.nips.cc/paper/6706-revisiting-perceptron-efficient-and-label-optimal-learning-of-halfspaces
AUTHORS: Songbai Yan, Chicheng Zhang
HIGHLIGHT: In this work, we propose an efficient Perceptron-based algorithm for actively learning homogeneous halfspaces under the uniform distribution over the unit sphere.

102, TITLE: Gradient Descent Can Take Exponential Time to Escape Saddle Points
https://papers.nips.cc/paper/6707-gradient-descent-can-take-exponential-time-to-escape-saddle-points
AUTHORS: Simon S. Du, Chi Jin, Jason D. Lee, Michael I. Jordan, Aarti Singh, Barnabas Poczos
HIGHLIGHT: Gradient Descent Can Take Exponential Time to Escape Saddle Points

103, TITLE: Union of Intersections (UoI) for Interpretable Data Driven Discovery and Prediction
https://papers.nips.cc/paper/6708-union-of-intersections-uoi-for-interpretable-data-driven-discovery-and-prediction
AUTHORS: Kristofer Bouchard, Alejandro Bujan, Farbod Roosta-Khorasani, Shashanka Ubaru, Mr. Prabhat, Antoine Snijders, Jian-Hua Mao, Edward Chang, Michael W. Mahoney, Sharmodeep Bhattacharya
HIGHLIGHT: We introduce the Union of Intersections (UoI) method, a flexible, modular, and scalable framework for enhanced model selection and estimation.

104, TITLE: One-Shot Imitation Learning
https://papers.nips.cc/paper/6709-one-shot-imitation-learning
AUTHORS: Yan Duan, Marcin Andrychowicz, Bradly Stadie, OpenAI Jonathan Ho, Jonas Schneider, Ilya Sutskever, Pieter Abbeel, Wojciech Zaremba
HIGHLIGHT: In this paper, we propose a meta-learning framework for achieving such capability, which we call one-shot imitation learning.

105, TITLE: Learning the Morphology of Brain Signals Using Alpha-Stable Convolutional Sparse Coding
https://papers.nips.cc/paper/6710-learning-the-morphology-of-brain-signals-using-alpha-stable-convolutional-sparse-coding
AUTHORS: Mainak Jas, Tom Dupr? la Tour, Umut Simsekli, Alexandre Gramfort
HIGHLIGHT: In this study, we address these issues and propose a novel probabilistic convolutional sparse coding (CSC) model for learning shift-invariant atoms from raw neural signals containing potentially severe artifacts.

106, TITLE: Integration Methods and Optimization Algorithms
https://papers.nips.cc/paper/6711-integration-methods-and-optimization-algorithms
AUTHORS: Damien Scieur, Vincent Roulet, Francis Bach, Alexandre d'Aspremont
HIGHLIGHT: We show that accelerated optimization methods can be seen as particular instances of multi-step integration schemes from numerical analysis, applied to the gradient flow equation.

107, TITLE: Sharpness, Restart and Acceleration
https://papers.nips.cc/paper/6712-sharpness-restart-and-acceleration
AUTHORS: Vincent Roulet, Alexandre d'Aspremont
HIGHLIGHT: The constants quantifying error bounds are of course unobservable, but we show that optimal restart strategies are robust, and searching for the best scheme only increases the complexity by a logarithmic factor compared to the optimal bound.

108, TITLE: Learning Koopman Invariant Subspaces for Dynamic Mode Decomposition
https://papers.nips.cc/paper/6713-learning-koopman-invariant-subspaces-for-dynamic-mode-decomposition
AUTHORS: Naoya Takeishi, Yoshinobu Kawahara, Takehisa Yairi
HIGHLIGHT: In this paper, we propose a fully data-driven method for Koopman spectral analysis based on the principle of learning Koopman invariant subspaces from observed data.

109, TITLE: Soft-to-Hard Vector Quantization for End-to-End Learning Compressible Representations
https://papers.nips.cc/paper/6714-soft-to-hard-vector-quantization-for-end-to-end-learning-compressible-representations
AUTHORS: Eirikur Agustsson, Fabian Mentzer, Michael Tschannen, Lukas Cavigelli, Radu Timofte, Luca Benini, Luc V. Gool
HIGHLIGHT: We present a new approach to learn compressible representations in deep architectures with an end-to-end training strategy.

110, TITLE:		Learning spatiotemporal piecewise-geodesic trajectories from longitudinal manifold-valued data
https://papers.nips.cc/paper/6715-learning-spatiotemporal-piecewise-geodesic-trajectories-from-longitudinal-manifold-valued-data
AUTHORS:		St?phanie ALLASSONNIERE, Juliette Chevallier, Stephane Oudard
HIGHLIGHT:		We introduce a hierarchical model which allows to estimate a group-average piecewise-geodesic trajectory in the Riemannian space of measurements and individual variability.

111, TITLE:		Improving Regret Bounds for Combinatorial Semi-Bandits with Probabilistically Triggered Arms and Its Applications
https://papers.nips.cc/paper/6716-improving-regret-bounds-for-combinatorial-semi-bandits-with-probabilistically-triggered-arms-and-its-applications
AUTHORS:		Qinshi Wang, Wei Chen
HIGHLIGHT:		We resolve a serious issue in the prior CMAB-T studies where the regret bounds contain a possibly exponentially large factor of $1/p^*$, where p^* is the minimum positive probability that an arm is triggered by any action.

112, TITLE:		Predictive-State Decoders: Encoding the Future into Recurrent Networks
https://papers.nips.cc/paper/6717-predictive-state-decoders-encoding-the-future-into-recurrent-networks
AUTHORS:		Arun Venkatraman, Nicholas Rhinehart, Wen Sun, Lerrel Pinto, Martial Hebert, Byron Boots, Kris Kitani, J. Bagnell
HIGHLIGHT:		We seek to combine the advantages of RNNs and PSRs by augmenting existing state-of-the-art recurrent neural networks with Predictive-State Decoders (PSDs), which add supervision to the network's internal state representation to target predicting future observations.

113, TITLE:		Optimistic posterior sampling for reinforcement learning: worst-case regret bounds
https://papers.nips.cc/paper/6718-optimistic-posterior-sampling-for-reinforcement-learning-worst-case-regret-bounds
AUTHORS:		Shipra Agrawal, Randy Jia
HIGHLIGHT:		We present an algorithm based on posterior sampling (aka Thompson sampling) that achieves near-optimal worst-case regret bounds when the underlying Markov Decision Process (MDP) is communicating with a finite, though unknown, diameter.

114, TITLE:		Mean teachers are better role models: Weight-averaged consistency targets improve semi-supervised deep learning results
https://papers.nips.cc/paper/6719-mean-teachers-are-better-role-models-weight-averaged-consistency-targets-improve-semi-supervised-deep-learning-results
AUTHORS:		Antti Tarvainen, Harri Valpola
HIGHLIGHT:		To overcome this problem, we propose Mean Teacher, a method that averages model weights instead of label predictions.

115, TITLE:		Matching neural paths: transfer from recognition to correspondence search
https://papers.nips.cc/paper/6720-matching-neural-paths-transfer-from-recognition-to-correspondence-search
AUTHORS:		Nikolay Savinov, Lubor Ladicky, Marc Pollefeys
HIGHLIGHT:		In this work we focus on low-level correspondences --- a highly ambiguous matching problem.

116, TITLE:		Linearly constrained Gaussian processes
https://papers.nips.cc/paper/6721-linearly-constrained-gaussian-processes
AUTHORS:		Carl Jidling, Niklas Wahlstr?m, Adrian Wills, Thomas B. Sch?n
HIGHLIGHT:		We consider a modification of the covariance function in Gaussian processes to correctly account for known linear constraints.

117, TITLE:		Fixed-Rank Approximation of a Positive-Semidefinite Matrix from Streaming Data
https://papers.nips.cc/paper/6722-fixed-rank-approximation-of-a-positive-semidefinite-matrix-from-streaming-data
AUTHORS:		Joel A. Tropp, Alp Yurtsever, Madeleine Udell, Volkan Cevher
HIGHLIGHT:		This paper develops a new algorithm for fixed-rank psd approximation from a sketch.

118, TITLE:		Multi-Modal Imitation Learning from Unstructured Demonstrations using Generative Adversarial Nets
https://papers.nips.cc/paper/6723-multi-modal-imitation-learning-from-unstructured-demonstrations-using-generative-adversarial-nets
AUTHORS:		Karol Hausman, Yevgen Chebotar, Stefan Schaal, Gaurav Sukhatme, Joseph J. Lim
HIGHLIGHT:		In this paper, we propose a multi-modal imitation learning framework that is able to segment and imitate skills from unlabelled and unstructured demonstrations by learning skill segmentation and imitation learning jointly.

119, TITLE:		Learning to Inpaint for Image Compression

https://papers.nips.cc/paper/6724-learning-to-inpaint-for-image-compression
AUTHORS: Mohammad Haris Baig, Vladlen Koltun, Lorenzo Torresani
HIGHLIGHT: We present two architectural recipes in the context of multi-stage progressive encoders and empirically demonstrate their importance on compression performance.

120, TITLE: Adaptive Bayesian Sampling with Monte Carlo EM
https://papers.nips.cc/paper/6725-adaptive-bayesian-sampling-with-monte-carlo-em
AUTHORS: Anirban Roychowdhury, Srinivasan Parthasarathy
HIGHLIGHT: We present a novel technique for learning the mass matrices in samplers obtained from discretized dynamics that preserve some energy function.

121, TITLE: ADMM without a Fixed Penalty Parameter: Faster Convergence with New Adaptive Penalization
https://papers.nips.cc/paper/6726-admm-without-a-fixed-penalty-parameter-faster-convergence-with-new-adaptive-penalization
AUTHORS: Yi Xu, Mingrui Liu, Qihang Lin, Tianbao Yang
HIGHLIGHT: In this paper, we develop a new ADMM and its linearized variant with a new adaptive scheme to update the penalty parameter.

122, TITLE: Shape and Material from Sound
https://papers.nips.cc/paper/6727-shape-and-material-from-sound
AUTHORS: Zhoutong Zhang, Qiujia Li, Zhengjia Huang, Jiajun Wu, Josh Tenenbaum, Bill Freeman
HIGHLIGHT: In this paper, we build machines to approximate such competency.

123, TITLE: Flexible statistical inference for mechanistic models of neural dynamics
https://papers.nips.cc/paper/6728-flexible-statistical-inference-for-mechanistic-models-of-neural-dynamics
AUTHORS: Jan-Matthis Lueckmann, Pedro J. Goncalves, Giacomo Bassetto, Kaan ?cal, Marcel Nonnenmacher, Jakob H. Macke
HIGHLIGHT: We propose to overcome this limitation by using likelihood-free inference approaches (also known as Approximate Bayesian Computation, ABC) to perform full Bayesian inference on single-neuron models.

124, TITLE: Online Prediction with Selfish Experts
https://papers.nips.cc/paper/6729-online-prediction-with-selfish-experts
AUTHORS: Tim Roughgarden, Okke Schrijvers
HIGHLIGHT: We consider the problem of binary prediction with expert advice in settings where experts have agency and seek to maximize their credibility.

125, TITLE: Tensor Biclustering
https://papers.nips.cc/paper/6730-tensor-biclustering
AUTHORS: Soheil Feizi, Hamid Javadi, David Tse
HIGHLIGHT: We study the information-theoretic limit of this problem under a generative model.

126, TITLE: DPSCREEN: Dynamic Personalized Screening
https://papers.nips.cc/paper/6731-dpscreen-dynamic-personalized-screening
AUTHORS: Kartik Ahuja, William Zame, Mihaela van der Schaar
HIGHLIGHT: In this work, we develop the first framework to construct screening policies for a large class of disease models.

127, TITLE: Learning Unknown Markov Decision Processes: A Thompson Sampling Approach
https://papers.nips.cc/paper/6732-learning-unknown-markov-decision-processes-a-thompson-sampling-approach
AUTHORS: Yi Ouyang, Mukul Gagrani, Ashutosh Nayyar, Rahul Jain
HIGHLIGHT: We propose a Thompson Sampling-based reinforcement learning algorithm with dynamic episodes (TSDE).

128, TITLE: Testing and Learning on Distributions with Symmetric Noise Invariance
https://papers.nips.cc/paper/6733-testing-and-learning-on-distributions-with-symmetric-noise-invariance
AUTHORS: Ho Chung Law, Christopher Yau, Dino Sejdinovic
HIGHLIGHT: We propose distances between distributions which encode invariance to additive symmetric noise, aimed at testing whether the assumed true underlying processes differ.

129, TITLE: A Dirichlet Mixture Model of Hawkes Processes for Event Sequence Clustering
https://papers.nips.cc/paper/6734-a-dirichlet-mixture-model-of-hawkes-processes-for-event-sequence-clustering
AUTHORS: Hongteng Xu, Hongyuan Zha

HIGHLIGHT: To solve this problem, we propose and discuss an effective model-based clustering method based on a novel Dirichlet mixture model of a special but significant type of point processes --- Hawkes process.

130, TITLE: Deanonymization in the Bitcoin P2P Network
https://papers.nips.cc/paper/6735-deanonymization-in-the-bitcoin-p2p-network
AUTHORS: Giulia Fanti, Pramod Viswanath
HIGHLIGHT: In this paper, we model the Bitcoin networking stack and analyze its anonymity properties, both pre- and post-2015.

131, TITLE: Accelerated consensus via Min-Sum Splitting
https://papers.nips.cc/paper/6736-accelerated-consensus-via-min-sum-splitting
AUTHORS: Patrick Rebeschini, Sekhar C. Tatikonda
HIGHLIGHT: We apply the Min-Sum message-passing protocol to solve the consensus problem in distributed optimization.

132, TITLE: Generalized Linear Model Regression under Distance-to-set Penalties
https://papers.nips.cc/paper/6737-generalized-linear-model-regression-under-distance-to-set-penalties
AUTHORS: Jason Xu, Eric Chi, Kenneth Lange
HIGHLIGHT: This paper explores instead penalizing the squared distance to constraint sets.

133, TITLE: Adaptive stimulus selection for optimizing neural population responses
https://papers.nips.cc/paper/6738-adaptive-stimulus-selection-for-optimizing-neural-population-responses
AUTHORS: Benjamin Cowley, Ryan Williamson, Katerina Clemens, Matthew Smith, Byron M. Yu
HIGHLIGHT: We propose "Adept," an adaptive stimulus selection method that can optimize population objective functions.

134, TITLE: Nonbacktracking Bounds on the Influence in Independent Cascade Models
https://papers.nips.cc/paper/6739-nonbacktracking-bounds-on-the-influence-in-independent-cascade-models
AUTHORS: Emmanuel Abbe, Sanjeev Kulkarni, Eun Jee Lee
HIGHLIGHT: This paper develops upper and lower bounds on the influence measure in a network, more precisely, the expected number of nodes that a seed set can influence in the independent cascade model.

135, TITLE: Learning with Feature Evolvable Streams
https://papers.nips.cc/paper/6740-learning-with-feature-evolvable-streams
AUTHORS: Bo-Jian Hou, Lijun Zhang, Zhi-Hua Zhou
HIGHLIGHT: In this paper, we propose a novel learning paradigm: Feature Evolvable Streaming Learning where old features would vanish and new features would occur.

136, TITLE: Online Convex Optimization with Stochastic Constraints
https://papers.nips.cc/paper/6741-online-convex-optimization-with-stochastic-constraints
AUTHORS: Hao Yu, Michael Neely, Xiaohan Wei
HIGHLIGHT: To solve this problem, this paper proposes a new algorithm that achieves $O(\sqrt{T})$ expected regret and constraint violations and $O(\sqrt{T}\log(T))$ high probability regret and constraint violations.

137, TITLE: Max-Margin Invariant Features from Transformed Unlabelled Data
https://papers.nips.cc/paper/6742-max-margin-invariant-features-from-transformed-unlabelled-data
AUTHORS: Dipan Pal, Ashwin Kannan, Gautam Arakalgud, Marios Savvides
HIGHLIGHT: In this paper, we study kernels that are invariant to a unitary group while having theoretical guarantees in addressing the important practical issue of unavailability of transformed versions of labelled data.

138, TITLE: Regularized Modal Regression with Applications in Cognitive Impairment Prediction
https://papers.nips.cc/paper/6743-regularized-modal-regression-with-applications-in-cognitive-impairment-prediction
AUTHORS: Xiaoqian Wang, Hong Chen, Weidong Cai, Dinggang Shen, Heng Huang
HIGHLIGHT: In this paper, we go beyond this criterion by investigating the regularized modal regression from a statistical learning viewpoint.

139, TITLE: Translation Synchronization via Truncated Least Squares
https://papers.nips.cc/paper/6744-translation-synchronization-via-truncated-least-squares
AUTHORS: Xiangru Huang, Zhenxiao Liang, Chandrajit Bajaj, Qixing Huang
HIGHLIGHT: In this paper, we introduce a robust algorithm, \textsl{TranSync}, for the 1D translation synchronization problem, in which the aim is to recover the global coordinates of a set of nodes from noisy measurements of relative coordinates along an observation graph.

140, TITLE:	From which world is your graph
https://papers.nips.cc/paper/6745-from-which-world-is-your-graph
AUTHORS:	Cheng Li, Felix MF Wong, Zhenming Liu, Varun Kanade
HIGHLIGHT:	This work focuses on unifying two of the most widely used link-formation models: the stochastic block model (SBM) and the small world (or latent space) model (SWM).

141, TITLE:	A New Alternating Direction Method for Linear Programming
https://papers.nips.cc/paper/6746-a-new-alternating-direction-method-for-linear-programming
AUTHORS:	Sinong Wang, Ness Shroff
HIGHLIGHT:	In this paper, we propose a new variable splitting method of LP and prove that our method has a convergence rate of $O(\|\mathbf{A}\|^2\log(1/\epsilon))$.

142, TITLE:	Regret Analysis for Continuous Dueling Bandit
https://papers.nips.cc/paper/6747-regret-analysis-for-continuous-dueling-bandit
AUTHORS:	Wataru Kumagai
HIGHLIGHT:	In this paper, we address a dueling bandit problem based on a cost function over a continuous space.

143, TITLE:	Best Response Regression
https://papers.nips.cc/paper/6748-best-response-regression
AUTHORS:	Omer Ben-Porat, Moshe Tennenholtz
HIGHLIGHT:	In this work, we initiate the study of strategic predictions in machine learning.

144, TITLE:	TernGrad: Ternary Gradients to Reduce Communication in Distributed Deep Learning
https://papers.nips.cc/paper/6749-terngrad-ternary-gradients-to-reduce-communication-in-distributed-deep-learning
AUTHORS:	Wei Wen, Cong Xu, Feng Yan, Chunpeng Wu, Yandan Wang, Yiran Chen, Hai Li
HIGHLIGHT:	In this work, we propose TernGrad that uses ternary gradients to accelerate distributed deep learning in data parallelism.

145, TITLE:	Learning Affinity via Spatial Propagation Networks
https://papers.nips.cc/paper/6750-learning-affinity-via-spatial-propagation-networks
AUTHORS:	Sifei Liu, Shalini De Mello, Jinwei Gu, Guangyu Zhong, Ming-Hsuan Yang, Jan Kautz
HIGHLIGHT:	In this paper, we propose a spatial propagation networks for learning affinity matrix.

146, TITLE:	Linear regression without correspondence
https://papers.nips.cc/paper/6751-linear-regression-without-correspondence
AUTHORS:	Daniel J. Hsu, Kevin Shi, Xiaorui Sun
HIGHLIGHT:	This article considers algorithmic and statistical aspects of linear regression when the correspondence between the covariates and the responses is unknown.

147, TITLE:	NeuralFDR: Learning Discovery Thresholds from Hypothesis Features
https://papers.nips.cc/paper/6752-neuralfdr-learning-discovery-thresholds-from-hypothesis-features
AUTHORS:	Fei Xia, Martin J. Zhang, James Y. Zou, David Tse
HIGHLIGHT:	We propose a new algorithm, NeuralFDR, which automatically learns a discovery threshold as a function of all the hypothesis features.

148, TITLE:	Cost efficient gradient boosting
https://papers.nips.cc/paper/6753-cost-efficient-gradient-boosting
AUTHORS:	Sven Peter, Ferran Diego, Fred A. Hamprecht, Boaz Nadler
HIGHLIGHT:	In this work we propose a budget-aware strategy based on deep boosted regression trees.

149, TITLE:	Probabilistic Rule Realization and Selection
https://papers.nips.cc/paper/6754-probabilistic-rule-realization-and-selection
AUTHORS:	Haizi Yu, Tianxi Li, Lav R. Varshney
HIGHLIGHT:	Under a probabilistic setting for discrete input spaces, we focus on the rule realization problem which generates input sample distributions that follow the given rules.

150, TITLE:	Nearest-Neighbor Sample Compression: Efficiency, Consistency, Infinite Dimensions
https://papers.nips.cc/paper/6755-nearest-neighbor-sample-compression-efficiency-consistency-infinite-dimensions

AUTHORS: Aryeh Kontorovich, Sivan Sabato, Roi Weiss
HIGHLIGHT: We pose several challenging open problems for future research.

151, TITLE: A Scale Free Algorithm for Stochastic Bandits with Bounded Kurtosis
https://papers.nips.cc/paper/6756-a-scale-free-algorithm-for-stochastic-bandits-with-bounded-kurtosis
AUTHORS: Tor Lattimore
HIGHLIGHT: A Scale Free Algorithm for Stochastic Bandits with Bounded Kurtosis

152, TITLE: Learning Multiple Tasks with Multilinear Relationship Networks
https://papers.nips.cc/paper/6757-learning-multiple-tasks-with-multilinear-relationship-networks
AUTHORS: Mingsheng Long, ZHANGJIE CAO, Jianmin Wang, Philip S. Yu
HIGHLIGHT: This paper presents Multilinear Relationship Networks (MRN) that discover the task relationships based on novel tensor normal priors over parameter tensors of multiple task-specific layers in deep convolutional networks.

153, TITLE: Deep Hyperalignment
https://papers.nips.cc/paper/6758-deep-hyperalignment
AUTHORS: Muhammad Yousefnezhad, Daoqiang Zhang
HIGHLIGHT: This paper proposes Deep Hyperalignment (DHA) as a regularized, deep extension, scalable Hyperalignment (HA) method, which is well-suited for applying functional alignment to fMRI datasets with nonlinearity, high-dimensionality (broad ROI), and a large number of subjects.

154, TITLE: Online to Offline Conversions, Universality and Adaptive Minibatch Sizes
https://papers.nips.cc/paper/6759-online-to-offline-conversions-universality-and-adaptive-minibatch-sizes
AUTHORS: Kfir Levy
HIGHLIGHT: We present an approach towards convex optimization that relies on a novel scheme which converts adaptive online algorithms into offline methods.

155, TITLE: Stochastic Optimization with Variance Reduction for Infinite Datasets with Finite Sum Structure
https://papers.nips.cc/paper/6760-stochastic-optimization-with-variance-reduction-for-infinite-datasets-with-finite-sum-structure
AUTHORS: Alberto Bietti, Julien Mairal
HIGHLIGHT: In this paper, we introduce a variance reduction approach for these settings when the objective is composite and strongly convex.

156, TITLE: Deep Learning with Topological Signatures
https://papers.nips.cc/paper/6761-deep-learning-with-topological-signatures
AUTHORS: Christoph Hofer, Roland Kwitt, Marc Niethammer, Andreas Uhl
HIGHLIGHT: In contrast, we propose a technique that enables us to input topological signatures to deep neural networks and learn a task-optimal representation during training.

157, TITLE: Predicting User Activity Level In Point Processes With Mass Transport Equation
https://papers.nips.cc/paper/6762-predicting-user-activity-level-in-point-processes-with-mass-transport-equation
AUTHORS: Yichen Wang, Xiaojing Ye, Hongyuan Zha, Le Song
HIGHLIGHT: In this paper, we propose a framework that provides an unbiased estimator of the probability mass function of point processes.

158, TITLE: Submultiplicative Glivenko-Cantelli and Uniform Convergence of Revenues
https://papers.nips.cc/paper/6763-submultiplicative-glivenko-cantelli-and-uniform-convergence-of-revenues
AUTHORS: Noga Alon, Moshe Babaioff, Yannai A. Gonczarowski, Yishay Mansour, Shay Moran, Amir Yehudayoff
HIGHLIGHT: In this work we derive a variant of the classic Glivenko-Cantelli Theorem, which asserts uniform convergence of the empirical Cumulative Distribution Function (CDF) to the CDF of the underlying distribution.

159, TITLE: Deep Dynamic Poisson Factorization Model
https://papers.nips.cc/paper/6764-deep-dynamic-poisson-factorization-model
AUTHORS: Chengyue Gong, win-bin huang
HIGHLIGHT: A new model, named as deep dynamic poisson factorization model, is proposed in this paper for analyzing sequential count vectors.

160, TITLE: Positive-Unlabeled Learning with Non-Negative Risk Estimator
https://papers.nips.cc/paper/6765-positive-unlabeled-learning-with-non-negative-risk-estimator
AUTHORS: Ryuichi Kiryo, Gang Niu, Marthinus C. du Plessis, Masashi Sugiyama

HIGHLIGHT: In this paper, we propose a non-negative risk estimator for PU learning: when getting minimized, it is more robust against overfitting, and thus we are able to use very flexible models (such as deep neural networks) given limited P data.

161, TITLE: Optimal Sample Complexity of M-wise Data for Top-K Ranking
https://papers.nips.cc/paper/6766-optimal-sample-complexity-of-m-wise-data-for-top-k-ranking
AUTHORS: Minje Jang, Sunghyun Kim, Changho Suh, Sewoong Oh
HIGHLIGHT: We explore the top-K rank aggregation problem in which one aims to recover a consistent ordering that focuses on top-K ranked items based on partially revealed preference information.

162, TITLE: Reliable Decision Support using Counterfactual Models
https://papers.nips.cc/paper/6767-reliable-decision-support-using-counterfactual-models
AUTHORS: Peter Schulam, Suchi Saria
HIGHLIGHT: We propose using a different learning objective that predicts counterfactuals instead of predicting outcomes under an existing action policy as in supervised learning.

163, TITLE: QSGD: Communication-Efficient SGD via Gradient Quantization and Encoding
https://papers.nips.cc/paper/6768-qsgd-communication-efficient-sgd-via-gradient-quantization-and-encoding
AUTHORS: Dan Alistarh, Demjan Grubic, Jerry Li, Ryota Tomioka, Milan Vojnovic
HIGHLIGHT: In this paper, we propose Quantized SGD (QSGD), a family of compression schemes for gradient updates which provides convergence guarantees.

164, TITLE: Convergent Block Coordinate Descent for Training Tikhonov Regularized Deep Neural Networks
https://papers.nips.cc/paper/6769-convergent-block-coordinate-descent-for-training-tikhonov-regularized-deep-neural-networks
AUTHORS: Ziming Zhang, Matthew Brand
HIGHLIGHT: By lifting the ReLU function into a higher dimensional space, we develop a smooth multi-convex formulation for training feed-forward deep neural networks (DNNs).

165, TITLE: Train longer, generalize better: closing the generalization gap in large batch training of neural networks
https://papers.nips.cc/paper/6770-train-longer-generalize-better-closing-the-generalization-gap-in-large-batch-training-of-neural-networks
AUTHORS: Elad Hoffer, Itay Hubara, Daniel Soudry
HIGHLIGHT: We therefore propose a "random walk on a random landscape" statistical model which is known to exhibit similar "ultra-slow" diffusion behavior.

166, TITLE: Flexpoint: An Adaptive Numerical Format for Efficient Training of Deep Neural Networks
https://papers.nips.cc/paper/6771-flexpoint-an-adaptive-numerical-format-for-efficient-training-of-deep-neural-networks
AUTHORS: Urs K?ster, Tristan Webb, Xin Wang, Marcel Nassar, Arjun K. Bansal, William Constable, Oguz Elibol, Scott Gray, Stewart Hall, Luke Hornof, Amir Khosrowshahi, Carey Kloss, Ruby J. Pai, Naveen Rao
HIGHLIGHT: Here we present the Flexpoint data format, aiming at a complete replacement of 32-bit floating point format training and inference, designed to support modern deep network topologies without modifications.

167, TITLE: Model evidence from nonequilibrium simulations
https://papers.nips.cc/paper/6772-model-evidence-from-nonequilibrium-simulations
AUTHORS: Michael Habeck
HIGHLIGHT: We introduce estimators for the model evidence that combine forward and backward simulations and show for various challenging models that the evidence estimators outperform forward and reverse AIS.

168, TITLE: Minimal Exploration in Structured Stochastic Bandits
https://papers.nips.cc/paper/6773-minimal-exploration-in-structured-stochastic-bandits
AUTHORS: Richard Combes, Stefan Magureanu, Alexandre Proutiere
HIGHLIGHT: This paper introduces and addresses a wide class of stochastic bandit problems where the function mapping the arm to the corresponding reward exhibits some known structural properties.

169, TITLE: Learned D-AMP: Principled Neural Network based Compressive Image Recovery
https://papers.nips.cc/paper/6774-learned-d-amp-principled-neural-network-based-compressive-image-recovery
AUTHORS: Chris Metzler, Ali Mousavi, Richard Baraniuk
HIGHLIGHT: Taking inspiration from this work, we develop a novel neural network architecture that mimics the behavior of the denoising-based approximate message passing (D-AMP) algorithm.

170, TITLE: Deliberation Networks: Sequence Generation Beyond One-Pass Decoding

https://papers.nips.cc/paper/6775-deliberation-networks-sequence-generation-beyond-one-pass-decoding
AUTHORS: Yingce Xia, Fei Tian, Lijun Wu, Jianxin Lin, Tao Qin, Nenghai Yu, Tie-Yan Liu
HIGHLIGHT: In this work, we introduce the deliberation process into the encoder-decoder framework and propose deliberation networks for sequence generation.

171, TITLE: Adaptive Clustering through Semidefinite Programming
https://papers.nips.cc/paper/6776-adaptive-clustering-through-semidefinite-programming
AUTHORS: Martin Royer
HIGHLIGHT: We analyze the clustering problem through a flexible probabilistic model that aims to identify an optimal partition on the sample X1,...,Xn.

172, TITLE: Log-normality and Skewness of Estimated State/Action Values in Reinforcement Learning
https://papers.nips.cc/paper/6777-log-normality-and-skewness-of-estimated-stateaction-values-in-reinforcement-learning
AUTHORS: Liangpeng Zhang, Ke Tang, Xin Yao
HIGHLIGHT: In this paper, we show that a state/action value estimated using the Bellman equation can be decomposed to a weighted sum of path-wise values that follow log-normal distributions.

173, TITLE: Repeated Inverse Reinforcement Learning
https://papers.nips.cc/paper/6778-repeated-inverse-reinforcement-learning
AUTHORS: Kareem Amin, Nan Jiang, Satinder Singh
HIGHLIGHT: We introduce a novel repeated Inverse Reinforcement Learning problem: the agent has to act on behalf of a human in a sequence of tasks and wishes to minimize the number of tasks that it surprises the human by acting suboptimally with respect to how the human would have acted.

174, TITLE: The Numerics of GANs
https://papers.nips.cc/paper/6779-the-numerics-of-gans
AUTHORS: Lars Mescheder, Sebastian Nowozin, Andreas Geiger
HIGHLIGHT: In this paper, we analyze the numerics of common algorithms for training Generative Adversarial Networks (GANs).

175, TITLE: Practical Bayesian Optimization for Model Fitting with Bayesian Adaptive Direct Search
https://papers.nips.cc/paper/6780-practical-bayesian-optimization-for-model-fitting-with-bayesian-adaptive-direct-search
AUTHORS: Luigi Acerbi, Wei Ji
HIGHLIGHT: Computational models in fields such as computational neuroscience are often evaluated via stochastic simulation or numerical approximation.

176, TITLE: Learning Chordal Markov Networks via Branch and Bound
https://papers.nips.cc/paper/6781-learning-chordal-markov-networks-via-branch-and-bound
AUTHORS: Kari Rantanen, Antti Hyttinen, Matti J?rvisalo
HIGHLIGHT: We present a new algorithmic approach for the task of finding a chordal Markov network structure that maximizes a given scoring function.

177, TITLE: Revenue Optimization with Approximate Bid Predictions
https://papers.nips.cc/paper/6782-revenue-optimization-with-approximate-bid-predictions
AUTHORS: Andres Munoz, Sergei Vassilvitskii
HIGHLIGHT: In this work, we show how to reduce reserve price optimization to the standard setting of prediction under squared loss, a well understood problem in the learning community.

178, TITLE: Solving Most Systems of Random Quadratic Equations
https://papers.nips.cc/paper/6783-solving-most-systems-of-random-quadratic-equations
AUTHORS: Gang Wang, Georgios Giannakis, Yousef Saad, Jie Chen
HIGHLIGHT: This paper deals with finding an n-dimensional solution $\bm{x}$ to a system of quadratic equations $y_i=|\langle\bm{a}_i,\bm{x}\rangle|^2$, $1\le i \le m$, which in general is known to be NP-hard.

179, TITLE: Unsupervised Learning of Disentangled and Interpretable Representations from Sequential Data
https://papers.nips.cc/paper/6784-unsupervised-learning-of-disentangled-and-interpretable-representations-from-sequential-data
AUTHORS: Wei-Ning Hsu, Yu Zhang, James Glass
HIGHLIGHT: We present a factorized hierarchical variational autoencoder, which learns disentangled and interpretable representations from sequential data without supervision.

180, TITLE: Lookahead Bayesian Optimization with Inequality Constraints
https://papers.nips.cc/paper/6785-lookahead-bayesian-optimization-with-inequality-constraints
AUTHORS: Remi Lam, Karen Willcox
HIGHLIGHT: To address this limitation, we propose a lookahead approach that selects the next evaluation in order to maximize the long-term feasible reduction of the objective function.

181, TITLE: Hierarchical Methods of Moments
https://papers.nips.cc/paper/6786-hierarchical-methods-of-moments
AUTHORS: Matteo Ruffini, Guillaume Rabusseau, Borja Balle
HIGHLIGHT: In this paper we present a hierarchical approach to methods of moments to circumvent such limitations.

182, TITLE: Interpretable and Globally Optimal Prediction for Textual Grounding using Image Concepts
https://papers.nips.cc/paper/6787-interpretable-and-globally-optimal-prediction-for-textual-grounding-using-image-concepts
AUTHORS: Raymond Yeh, Jinjun Xiong, Wen-Mei Hwu, Minh Do, Alexander Schwing
HIGHLIGHT: In this work, we demonstrate that we can cast the problem of textual grounding into a unified framework that permits efficient search over all possible bounding boxes.

183, TITLE: Revisit Fuzzy Neural Network: Demystifying Batch Normalization and ReLU with Generalized Hamming Network
https://papers.nips.cc/paper/6788-revisit-fuzzy-neural-network-demystifying-batch-normalization-and-relu-with-generalized-hamming-network
AUTHORS: Lixin Fan
HIGHLIGHT: We revisit fuzzy neural network with a cornerstone notion of generalized hamming distance, which provides a novel and theoretically justified framework to re-interpret many useful neural network techniques in terms of fuzzy logic.

184, TITLE: Speeding Up Latent Variable Gaussian Graphical Model Estimation via Nonconvex Optimization
https://papers.nips.cc/paper/6789-speeding-up-latent-variable-gaussian-graphical-model-estimation-via-nonconvex-optimization
AUTHORS: Pan Xu, Jian Ma, Quanquan Gu
HIGHLIGHT: In order to speed up the estimation of the sparse plus low-rank components, we propose a sparsity constrained maximum likelihood estimator based on matrix factorization and an efficient alternating gradient descent algorithm with hard thresholding to solve it.

185, TITLE: Batch Renormalization: Towards Reducing Minibatch Dependence in Batch-Normalized Models
https://papers.nips.cc/paper/6790-batch-renormalization-towards-reducing-minibatch-dependence-in-batch-normalized-models
AUTHORS: Sergey Ioffe
HIGHLIGHT: We propose Batch Renormalization, a simple and effective extension to ensure that the training and inference models generate the same outputs that depend on individual examples rather than the entire minibatch.

186, TITLE: Generating steganographic images via adversarial training
https://papers.nips.cc/paper/6791-generating-steganographic-images-via-adversarial-training
AUTHORS: Jamie Hayes, George Danezis
HIGHLIGHT: In this paper, we apply adversarial training techniques to the discriminative task of learning a steganographic algorithm.

187, TITLE: Near-linear time approximation algorithms for optimal transport via Sinkhorn iteration
https://papers.nips.cc/paper/6792-near-linear-time-approximation-algorithms-for-optimal-transport-via-sinkhorn-iteration
AUTHORS: Jason Altschuler, Jonathan Weed, Philippe Rigollet
HIGHLIGHT: This paper demonstrates that this ambitious goal is in fact achieved by Cuturi's Sinkhorn Distances.

188, TITLE: PixelGAN Autoencoders
https://papers.nips.cc/paper/6793-pixelgan-autoencoders
AUTHORS: Alireza Makhzani, Brendan J. Frey
HIGHLIGHT: In this paper, we describe the "PixelGAN autoencoder", a generative autoencoder in which the generative path is a convolutional autoregressive neural network on pixels (PixelCNN) that is conditioned on a latent code, and the recognition path uses a generative adversarial network (GAN) to impose a prior distribution on the latent code.

189, TITLE: Consistent Multitask Learning with Nonlinear Output Relations
https://papers.nips.cc/paper/6794-consistent-multitask-learning-with-nonlinear-output-relations
AUTHORS: Carlo Ciliberto, Alessandro Rudi, Lorenzo Rosasco, Massimiliano Pontil
HIGHLIGHT: In this paper, we tackle this issue by casting the problem within the framework of structured prediction.

190, TITLE:			Alternating minimization for dictionary learning with random initialization
https://papers.nips.cc/paper/6795-alternating-minimization-for-dictionary-learning-with-random-initialization
AUTHORS:			Niladri Chatterji, Peter L. Bartlett
HIGHLIGHT:			We present theoretical guarantees for an alternating minimization algorithm for the dictionary learning/sparse coding problem.

191, TITLE:			Learning ReLUs via Gradient Descent
https://papers.nips.cc/paper/6796-learning-relus-via-gradient-descent
AUTHORS:			Mahdi Soltanolkotabi
HIGHLIGHT:			In this paper we study the problem of learning Rectified Linear Units (ReLUs) which are functions of the form $\vct{x}\mapsto \max(0,\langle \vct{w},\vct{x}\rangle)$ with $\vct{w}\in\R^d$ denoting the weight vector.

192, TITLE:			Stabilizing Training of Generative Adversarial Networks through Regularization
https://papers.nips.cc/paper/6797-stabilizing-training-of-generative-adversarial-networks-through-regularization
AUTHORS:			Kevin Roth, Aurelien Lucchi, Sebastian Nowozin, Thomas Hofmann
HIGHLIGHT:			We overcome this fundamental limitation and propose a new regularization approach with low computational cost that yields a stable GAN training procedure.

193, TITLE:			Expectation Propagation with Stochastic Kinetic Model in Complex Interaction Systems
https://papers.nips.cc/paper/6798-expectation-propagation-with-stochastic-kinetic-model-in-complex-interaction-systems
AUTHORS:			Le Fang, Fan Yang, Wen Dong, Tong Guan, Chunming Qiao
HIGHLIGHT:			In this paper, we formulate the dynamics of a complex interacting network as a stochastic process driven by a sequence of events, and develop expectation propagation algorithms to make inferences from noisy observations.

194, TITLE:			Data-Efficient Reinforcement Learning in Continuous State-Action Gaussian-POMDPs
https://papers.nips.cc/paper/6799-data-efficient-reinforcement-learning-in-continuous-state-action-gaussian-pomdps
AUTHORS:			Rowan McAllister, Carl Edward Rasmussen
HIGHLIGHT:			We present a data-efficient reinforcement learning method for continuous state-action systems under significant observation noise.

195, TITLE:			Compatible Reward Inverse Reinforcement Learning
https://papers.nips.cc/paper/6800-compatible-reward-inverse-reinforcement-learning
AUTHORS:			Alberto Maria Metelli, Matteo Pirotta, Marcello Restelli
HIGHLIGHT:			After introducing our approach for finite domains, we extend it to continuous ones.

196, TITLE:			First-Order Adaptive Sample Size Methods to Reduce Complexity of Empirical Risk Minimization
https://papers.nips.cc/paper/6801-first-order-adaptive-sample-size-methods-to-reduce-complexity-of-empirical-risk-minimization
AUTHORS:			Aryan Mokhtari, Alejandro Ribeiro
HIGHLIGHT:			The sample size is then grown geometrically -- e.g., scaling by a factor of two -- and use the solution of the previous ERM as a warm start for the new ERM.

197, TITLE:			Hiding Images in Plain Sight: Deep Steganography
https://papers.nips.cc/paper/6802-hiding-images-in-plain-sight-deep-steganography
AUTHORS:			Shumeet Baluja
HIGHLIGHT:			In this study, we attempt to place a full size color image within another image of the same size.

198, TITLE:			Neural Program Meta-Induction
https://papers.nips.cc/paper/6803-neural-program-meta-induction
AUTHORS:			Jacob Devlin, Rudy R. Bunel, Rishabh Singh, Matthew Hausknecht, Pushmeet Kohli
HIGHLIGHT:			Specifically, we propose two novel approaches for cross-task knowledge transfer to improve program induction in limited-data scenarios.
To test the efficacy of our methods, we constructed a new benchmark of programs written in the Karel programming language.

199, TITLE:			Bayesian Dyadic Trees and Histograms for Regression
https://papers.nips.cc/paper/6804-bayesian-dyadic-trees-and-histograms-for-regression
AUTHORS:			St?phanie van der Pas, Veronika Rockova
HIGHLIGHT:			In this work, we shed light on the machinery behind Bayesian variants of these methods.

200, TITLE:			A graph-theoretic approach to multitasking

https://papers.nips.cc/paper/6805-a-graph-theoretic-approach-to-multitasking
AUTHORS: Noga Alon, Daniel Reichman, Igor Shinkar, Tal Wagner, Sebastian Musslick, Jonathan D. Cohen, Tom Griffiths, Biswadip dey, Kayhan Ozcimder
HIGHLIGHT: In this paper we use a graph-theoretic analysis of network architecture to address this question, where tasks are represented as edges in a bipartite graph $G=(A \cup B, E)$.

201, TITLE: Consistent Robust Regression
https://papers.nips.cc/paper/6806-consistent-robust-regression
AUTHORS: Kush Bhatia, Prateek Jain, Parameswaran Kamalaruban, Purushottam Kar
HIGHLIGHT: In this work we present such an estimator, called CRR.

202, TITLE: Natural Value Approximators: Learning when to Trust Past Estimates
https://papers.nips.cc/paper/6807-natural-value-approximators-learning-when-to-trust-past-estimates
AUTHORS: Zhongwen Xu, Joseph Modayil, Hado P. van Hasselt, Andre Barreto, David Silver, Tom Schaul
HIGHLIGHT: We propose a mechanism that learns an interpolation between a direct value estimate and a projected value estimate computed from the encountered reward and the previous estimate.

203, TITLE: Bandits Dueling on Partially Ordered Sets
https://papers.nips.cc/paper/6808-bandits-dueling-on-partially-ordered-sets
AUTHORS: Julien Audiffren, Liva Ralaivola
HIGHLIGHT: We propose an algorithm, UnchainedBandits, that efficiently finds the set of optimal arms, or Pareto front, of any poset even when pairs of comparable arms cannot be a priori distinguished from pairs of incomparable arms, with a set of minimal assumptions.

204, TITLE: Elementary Symmetric Polynomials for Optimal Experimental Design
https://papers.nips.cc/paper/6809-elementary-symmetric-polynomials-for-optimal-experimental-design
AUTHORS: Zelda E. Mariet, Suvrit Sra
HIGHLIGHT: Specifically, we introduce models based on elementary symmetric polynomials; these polynomials capture "partial volumes" and offer a graded interpolation between the widely used A-optimal and D-optimal design models, obtaining each of them as special cases.

205, TITLE: Emergence of Language with Multi-agent Games: Learning to Communicate with Sequences of Symbols
https://papers.nips.cc/paper/6810-emergence-of-language-with-multi-agent-games-learning-to-communicate-with-sequences-of-symbols
AUTHORS: Serhii Havrylov, Ivan Titov
HIGHLIGHT: We compare a reinforcement learning approach and one using a differentiable relaxation (straight-through Gumbel-softmax estimator) and observe that the latter is much faster to converge and it results in more effective protocols.

206, TITLE: Training Deep Networks without Learning Rates Through Coin Betting
https://papers.nips.cc/paper/6811-training-deep-networks-without-learning-rates-through-coin-betting
AUTHORS: Francesco Orabona, Tatiana Tommasi
HIGHLIGHT: Instead, we reduce the optimization process to a game of betting on a coin and propose a learning rate free optimal algorithm for this scenario.

207, TITLE: Pixels to Graphs by Associative Embedding
https://papers.nips.cc/paper/6812-pixels-to-graphs-by-associative-embedding
AUTHORS: Alejandro Newell, Jia Deng
HIGHLIGHT: We present a method for training a convolutional neural network such that it takes in an input image and produces a full graph definition.

208, TITLE: Runtime Neural Pruning
https://papers.nips.cc/paper/6813-runtime-neural-pruning
AUTHORS: Ji Lin, Yongming Rao, Jiwen Lu, Jie Zhou
HIGHLIGHT: In this paper, we propose a Runtime Neural Pruning (RNP) framework which prunes the deep neural network dynamically at the runtime.

209, TITLE: Eigenvalue Decay Implies Polynomial-Time Learnability for Neural Networks
https://papers.nips.cc/paper/6814-eigenvalue-decay-implies-polynomial-time-learnability-for-neural-networks
AUTHORS: Surbhi Goel, Adam Klivans

HIGHLIGHT: In this work we show that a natural distributional assumption corresponding to {\em eigenvalue decay} of the Gram matrix yields polynomial-time algorithms in the non-realizable setting for expressive classes of networks (e.g. feed-forward networks of ReLUs).

210, TITLE: MMD GAN: Towards Deeper Understanding of Moment Matching Network
https://papers.nips.cc/paper/6815-mmd-gan-towards-deeper-understanding-of-moment-matching-network
AUTHORS: Chun-Liang Li, Wei-Cheng Chang, Yu Cheng, Yiming Yang, Barnabas Poczos
HIGHLIGHT: In this paper, we propose to improve both the model expressiveness of GMMN and its computational efficiency by introducing {\it adversarial kernel learning} techniques, as the replacement of a fixed Gaussian kernel in the original GMMN.

211, TITLE: The Reversible Residual Network: Backpropagation Without Storing Activations
https://papers.nips.cc/paper/6816-the-reversible-residual-network-backpropagation-without-storing-activations
AUTHORS: Aidan N. Gomez, Mengye Ren, Raquel Urtasun, Roger B. Grosse
HIGHLIGHT: In this work, we present the Reversible Residual Network (RevNet), a variant of ResNets where each layer's activations can be reconstructed exactly from the next layer's.

212, TITLE: Fast Rates for Bandit Optimization with Upper-Confidence Frank-Wolfe
https://papers.nips.cc/paper/6817-fast-rates-for-bandit-optimization-with-upper-confidence-frank-wolfe
AUTHORS: Quentin Berthet, Vianney Perchet
HIGHLIGHT: We consider the problem of bandit optimization, inspired by stochastic optimization and online learning problems with bandit feedback.

213, TITLE: Zap Q-Learning
https://papers.nips.cc/paper/6818-zap-q-learning
AUTHORS: Adithya M Devraj, Sean Meyn
HIGHLIGHT: The Zap Q-learning algorithm introduced in this paper is an improvement of Watkins' original algorithm and recent competitors in several respects.

214, TITLE: Expectation Propagation for t-Exponential Family Using q-Algebra
https://papers.nips.cc/paper/6819-expectation-propagation-for-t-exponential-family-using-q-algebra
AUTHORS: Futoshi Futami, Issei Sato, Masashi Sugiyama
HIGHLIGHT: In this paper, we borrow the mathematical tools of q-algebra from statistical physics and show that the pseudo additivity of distributions allows us to perform calculation of t-exponential family distributions through natural parameters.

215, TITLE: Few-Shot Learning Through an Information Retrieval Lens
https://papers.nips.cc/paper/6820-few-shot-learning-through-an-information-retrieval-lens
AUTHORS: Eleni Triantafillou, Richard Zemel, Raquel Urtasun
HIGHLIGHT: We propose an information retrieval-inspired approach for this problem that is motivated by the increased importance of maximally leveraging all the available information in this low-data regime.

216, TITLE: Formal Guarantees on the Robustness of a Classifier against Adversarial Manipulation
https://papers.nips.cc/paper/6821-formal-guarantees-on-the-robustness-of-a-classifier-against-adversarial-manipulation
AUTHORS: Matthias Hein, Maksym Andriushchenko
HIGHLIGHT: We show in this paper for the first time formal guarantees on the robustness of a classifier by giving instance-specific \emph{lower bounds} on the norm of the input manipulation required to change the classifier decision.

217, TITLE: Associative Embedding: End-to-End Learning for Joint Detection and Grouping
https://papers.nips.cc/paper/6822-associative-embedding-end-to-end-learning-for-joint-detection-and-grouping
AUTHORS: Alejandro Newell, Zhiao Huang, Jia Deng
HIGHLIGHT: We introduce associative embedding, a novel method for supervising convolutional neural networks for the task of detection and grouping.

218, TITLE: Practical Locally Private Heavy Hitters
https://papers.nips.cc/paper/6823-practical-locally-private-heavy-hitters
AUTHORS: Raef Bassily, Kobbi Nissim, Uri Stemmer, Abhradeep Guha Thakurta
HIGHLIGHT: We present new practical local differentially private heavy hitters algorithms achieving optimal or near-optimal worst-case error -- TreeHist and Bitstogram.

219, TITLE: Large-Scale Quadratically Constrained Quadratic Program via Low-Discrepancy Sequences
https://papers.nips.cc/paper/6824-large-scale-quadratically-constrained-quadratic-program-via-low-discrepancy-sequences

AUTHORS: Kinjal Basu, Ankan Saha, Shaunak Chatterjee
HIGHLIGHT: In this paper, we develop a method that transforms the quadratic constraint into a linear form by a sampling a set of low-discrepancy points.

220, TITLE: Inhomogeneous Hypergraph Clustering with Applications
https://papers.nips.cc/paper/6825-inhomogeneous-hypergraph-clustering-with-applications
AUTHORS: Pan Li, Olgica Milenkovic
HIGHLIGHT: We hence propose a new hypergraph clustering technique, termed inhomogeneous hypergraph partitioning, which assigns different costs to different hyperedge cuts.

221, TITLE: Differentiable Learning of Logical Rules for Knowledge Base Reasoning
https://papers.nips.cc/paper/6826-differentiable-learning-of-logical-rules-for-knowledge-base-reasoning
AUTHORS: Fan Yang, Zhilin Yang, William W. Cohen
HIGHLIGHT: We propose a framework, Neural Logic Programming, that combines the parameter and structure learning of first-order logical rules in an end-to-end differentiable model.

222, TITLE: Deep Multi-task Gaussian Processes for Survival Analysis with Competing Risks
https://papers.nips.cc/paper/6827-deep-multi-task-gaussian-processes-for-survival-analysis-with-competing-risks
AUTHORS:
HIGHLIGHT: We propose a variational inference algorithm that is capable of learning the model parameters from time-to-event data while handling right censoring.

223, TITLE: Masked Autoregressive Flow for Density Estimation
https://papers.nips.cc/paper/6828-masked-autoregressive-flow-for-density-estimation
AUTHORS: George Papamakarios, Theo Pavlakou, Iain Murray
HIGHLIGHT: We describe an approach for increasing the flexibility of an autoregressive model, based on modelling the random numbers that the model uses internally when generating data.

224, TITLE: Non-convex Finite-Sum Optimization Via SCSG Methods
https://papers.nips.cc/paper/6829-non-convex-finite-sum-optimization-via-scsg-methods
AUTHORS: Lihua Lei, Cheng Ju, Jianbo Chen, Michael I. Jordan
HIGHLIGHT: We develop a class of algorithms, as variants of the stochastically controlled stochastic gradient (SCSG) methods , for the smooth nonconvex finite-sum optimization problem.

225, TITLE: Beyond normality: Learning sparse probabilistic graphical models in the non-Gaussian setting
https://papers.nips.cc/paper/6830-beyond-normality-learning-sparse-probabilistic-graphical-models-in-the-non-gaussian-setting
AUTHORS: Rebecca Morrison, Ricardo Baptista, Youssef Marzouk
HIGHLIGHT: We present an algorithm to identify sparse dependence structure in continuous and non-Gaussian probability distributions, given a corresponding set of data.

226, TITLE: An inner-loop free solution to inverse problems using deep neural networks
https://papers.nips.cc/paper/6831-an-inner-loop-free-solution-to-inverse-problems-using-deep-neural-networks
AUTHORS: Kai Fan, Qi Wei, Lawrence Carin, Katherine A. Heller
HIGHLIGHT: We propose a new method that uses deep learning techniques to accelerate the popular alternating direction method of multipliers (ADMM) solution for inverse problems.

227, TITLE: OnACID: Online Analysis of Calcium Imaging Data in Real Time
https://papers.nips.cc/paper/6832-onacid-online-analysis-of-calcium-imaging-data-in-real-time
AUTHORS: Andrea Giovannucci, Johannes Friedrich, Matt Kaufman, Anne Churchland, Dmitri Chklovskii, Liam Paninski, Eftychios A. Pnevmatikakis
HIGHLIGHT: Here we introduce OnACID, an Online framework for the Analysis of streaming Calcium Imaging Data, including i) motion artifact correction, ii) neuronal source extraction, and iii) activity denoising and deconvolution.

228, TITLE: Collaborative PAC Learning
https://papers.nips.cc/paper/6833-collaborative-pac-learning
AUTHORS: Avrim Blum, Nika Haghtalab, Ariel D. Procaccia, Mingda Qiao
HIGHLIGHT: We introduce a collaborative PAC learning model, in which k players attempt to learn the same underlying concept.

229, TITLE: Fast Black-box Variational Inference through Stochastic Trust-Region Optimization

https://papers.nips.cc/paper/6834-fast-black-box-variational-inference-through-stochastic-trust-region-optimization
AUTHORS: Jeffrey Regier, Michael I. Jordan, Jon McAuliffe
HIGHLIGHT: We introduce TrustVI, a fast second-order algorithm for black-box variational inference based on trust-region optimization and the reparameterization trick.

230, TITLE: Scalable Demand-Aware Recommendation
https://papers.nips.cc/paper/6835-scalable-demand-aware-recommendation
AUTHORS: Jinfeng Yi, Cho-Jui Hsieh, Kush R. Varshney, Lijun Zhang, Yao Li
HIGHLIGHT: We further relax this problem and propose a highly scalable alternating minimization approach with which we can solve problems with millions of users and millions of items in a single thread.

231, TITLE: SGD Learns the Conjugate Kernel Class of the Network
https://papers.nips.cc/paper/6836-sgd-learns-the-conjugate-kernel-class-of-the-network
AUTHORS: Amit Daniely
HIGHLIGHT: We show that the standard stochastic gradient decent (SGD) algorithm is guaranteed to learn, in polynomial time, a function that is competitive with the best function in the conjugate kernel space of the network, as defined in Daniely, Frostig and Singer.

232, TITLE: Noise-Tolerant Interactive Learning Using Pairwise Comparisons
https://papers.nips.cc/paper/6837-noise-tolerant-interactive-learning-using-pairwise-comparisons
AUTHORS: Yichong Xu, Hongyang Zhang, Kyle Miller, Aarti Singh, Artur Dubrawski
HIGHLIGHT: In this paper, we attempt to characterize how the access to an easier comparison oracle helps in improving the label and total query complexity.

233, TITLE: Analyzing Hidden Representations in End-to-End Automatic Speech Recognition Systems
https://papers.nips.cc/paper/6838-analyzing-hidden-representations-in-end-to-end-automatic-speech-recognition-systems
AUTHORS: Yonatan Belinkov, James Glass
HIGHLIGHT: In this work, we analyze the speech representations learned by a deep end-to-end model that is based on convolutional and recurrent layers, and trained with a connectionist temporal classification (CTC) loss.

234, TITLE: Generative Local Metric Learning for Kernel Regression
https://papers.nips.cc/paper/6839-generative-local-metric-learning-for-kernel-regression
AUTHORS: Yung-Kyun Noh, Masashi Sugiyama, Kee-Eung Kim, Frank Park, Daniel D. Lee
HIGHLIGHT: We propose a method for efficiently learning a good metric function based upon analyzing the performance of the NW estimator for Gaussian-distributed data.

235, TITLE: Information Theoretic Properties of Markov Random Fields, and their Algorithmic Applications
https://papers.nips.cc/paper/6840-information-theoretic-properties-of-markov-random-fields-and-their-algorithmic-applications
AUTHORS: Linus Hamilton, Frederic Koehler, Ankur Moitra
HIGHLIGHT: Here we take a more conceptual approach to proving lower bounds on the mutual information.

236, TITLE: Fitting Low-Rank Tensors in Constant Time
https://papers.nips.cc/paper/6841-fitting-low-rank-tensors-in-constant-time
AUTHORS: Kohei Hayashi, Yuichi Yoshida
HIGHLIGHT: In this paper, we develop an algorithm that approximates the residual error of Tucker decomposition, one of the most popular tensor decomposition methods, with a provable guarantee.

237, TITLE: Deep Supervised Discrete Hashing
https://papers.nips.cc/paper/6842-deep-supervised-discrete-hashing
AUTHORS: Qi Li, Zhenan Sun, Ran He, Tieniu Tan
HIGHLIGHT: In this paper, we develop a deep supervised discrete hashing algorithm based on the assumption that the learned binary codes should be ideal for classification.

238, TITLE: Using Options and Covariance Testing for Long Horizon Off-Policy Policy Evaluation
https://papers.nips.cc/paper/6843-using-options-and-covariance-testing-for-long-horizon-off-policy-policy-evaluation
AUTHORS: Zhaohan Guo, Philip S. Thomas, Emma Brunskill
HIGHLIGHT: We propose using policies over temporally extended actions, called options, and show that combining these policies with importance sampling can significantly improve performance for long-horizon problems.

239, TITLE: How regularization affects the critical points in linear networks

https://papers.nips.cc/paper/6844-how-regularization-affects-the-critical-points-in-linear-networks
AUTHORS:		Amirhossein Taghvaei, Jin W. Kim, Prashant Mehta
HIGHLIGHT:		An optimal control model is introduced for this purpose and a learning algorithm (backprop with weight decay) derived for the same using the Hamilton's formulation of optimal control.

240, TITLE:		Fisher GAN
https://papers.nips.cc/paper/6845-fisher-gan
AUTHORS:		Youssef Mroueh, Tom Sercu
HIGHLIGHT:		In this paper we introduce Fisher GAN that fits within the Integral Probability Metrics (IPM) framework for training GANs.

241, TITLE:		Information-theoretic analysis of generalization capability of learning algorithms
https://papers.nips.cc/paper/6846-information-theoretic-analysis-of-generalization-capability-of-learning-algorithms
AUTHORS:		Aolin Xu, Maxim Raginsky
HIGHLIGHT:		We propose a number of methods for this purpose, among which are algorithms that regularize the ERM algorithm with relative entropy or with random noise.

242, TITLE:		Sparse Approximate Conic Hulls
https://papers.nips.cc/paper/6847-sparse-approximate-conic-hulls
AUTHORS:		Greg Van Buskirk, Benjamin Raichel, Nicholas Ruozzi
HIGHLIGHT:		We consider the problem of computing a restricted nonnegative matrix factorization (NMF) of an $m\times n$ matrix X. Specifically, we seek a factorization $X\approx BC$, where the k columns of B are a subset of those from X and $C\in\Re_{\geq 0}^{k\times n}$.

243, TITLE:		Rigorous Dynamics and Consistent Estimation in Arbitrarily Conditioned Linear Systems
https://papers.nips.cc/paper/6848-rigorous-dynamics-and-consistent-estimation-in-arbitrarily-conditioned-linear-systems
AUTHORS:		Alyson K. Fletcher, Mojtaba Sahraee-Ardakan, Sundeep Rangan, Philip Schniter
HIGHLIGHT:		The paper thus provides a computationally simple method with provable guarantees of optimality and consistency over a large class of linear inverse problems.

244, TITLE:		Toward Goal-Driven Neural Network Models for the Rodent Whisker-Trigeminal System
https://papers.nips.cc/paper/6849-toward-goal-driven-neural-network-models-for-the-rodent-whisker-trigeminal-system
AUTHORS:		Chengxu Zhuang, Jonas Kubilius, Mitra JZ Hartmann, Daniel L. Yamins
HIGHLIGHT:		In the present work, we take a goal-driven deep neural network (DNN) approach to modeling these computations.

245, TITLE:		Accuracy First: Selecting a Differential Privacy Level for Accuracy Constrained ERM
https://papers.nips.cc/paper/6850-accuracy-first-selecting-a-differential-privacy-level-for-accuracy-constrained-erm
AUTHORS:		Katrina Ligett, Seth Neel, Aaron Roth, Bo Waggoner, Steven Z. Wu
HIGHLIGHT:		We propose a general "noise reduction" framework that can apply to a variety of private empirical risk minimization (ERM) algorithms, using them to "search" the space of privacy levels to find the empirically strongest one that meets the accuracy constraint, and incurring only logarithmic overhead in the number of privacy levels searched.

246, TITLE:		EX2: Exploration with Exemplar Models for Deep Reinforcement Learning
https://papers.nips.cc/paper/6851-ex2-exploration-with-exemplar-models-for-deep-reinforcement-learning
AUTHORS:		Justin Fu, John Co-Reyes, Sergey Levine
HIGHLIGHT:		We propose a novelty detection algorithm for exploration that is based entirely on discriminatively trained exemplar models, where classifiers are trained to discriminate each visited state against all others.

247, TITLE:		Multitask Spectral Learning of Weighted Automata
https://papers.nips.cc/paper/6852-multitask-spectral-learning-of-weighted-automata
AUTHORS:		Guillaume Rabusseau, Borja Balle, Joelle Pineau
HIGHLIGHT:		We consider the problem of estimating multiple related functions computed by weighted automata~(WFA).

248, TITLE:		Multi-way Interacting Regression via Factorization Machines
https://papers.nips.cc/paper/6853-multi-way-interacting-regression-via-factorization-machines
AUTHORS:		Mikhail Yurochkin, XuanLong Nguyen, nikolaos Vasiloglou
HIGHLIGHT:		We propose a Bayesian regression method that accounts for multi-way interactions of arbitrary orders among the predictor variables.

249, TITLE:	Predicting Organic Reaction Outcomes with Weisfeiler-Lehman Network
https://papers.nips.cc/paper/6854-predicting-organic-reaction-outcomes-with-weisfeiler-lehman-network
AUTHORS:	Wengong Jin, Connor Coley, Regina Barzilay, Tommi Jaakkola
HIGHLIGHT:	In this paper, we propose a template-free approach to efficiently explore the space of product molecules by first pinpointing the reaction center -- the set of nodes and edges where graph edits occur.

250, TITLE:	Practical Data-Dependent Metric Compression with Provable Guarantees
https://papers.nips.cc/paper/6855-practical-data-dependent-metric-compression-with-provable-guarantees
AUTHORS:	Piotr Indyk, Ilya Razenshteyn, Tal Wagner
HIGHLIGHT:	We introduce a new distance-preserving compact representation of multi-dimensional point-sets.

251, TITLE:	REBAR: Low-variance, unbiased gradient estimates for discrete latent variable models
https://papers.nips.cc/paper/6856-rebar-low-variance-unbiased-gradient-estimates-for-discrete-latent-variable-models
AUTHORS:	George Tucker, Andriy Mnih, Chris J. Maddison, John Lawson, Jascha Sohl-Dickstein
HIGHLIGHT:	In this work, we combine the two approaches through a novel control variate that produces low-variance, \emph{unbiased} gradient estimates.

252, TITLE:	Nonlinear random matrix theory for deep learning
https://papers.nips.cc/paper/6857-nonlinear-random-matrix-theory-for-deep-learning
AUTHORS:	Jeffrey Pennington, Pratik Worah
HIGHLIGHT:	In this work, we open the door for direct applications of random matrix theory to deep learning by demonstrating that the pointwise nonlinearities typically applied in neural networks can be incorporated into a standard method of proof in random matrix theory known as the moments method.

253, TITLE:	Parallel Streaming Wasserstein Barycenters
https://papers.nips.cc/paper/6858-parallel-streaming-wasserstein-barycenters
AUTHORS:	Matthew Staib, Sebastian Claici, Justin M. Solomon, Stefanie Jegelka
HIGHLIGHT:	Improving on this situation, we present a scalable, communication-efficient, parallel algorithm for computing the Wasserstein barycenter of arbitrary distributions.

254, TITLE:	ELF: An Extensive, Lightweight and Flexible Research Platform for Real-time Strategy Games
https://papers.nips.cc/paper/6859-elf-an-extensive-lightweight-and-flexible-research-platform-for-real-time-strategy-games
AUTHORS:	Yuandong Tian, Qucheng Gong, Wenling Shang, Yuxin Wu, C. Lawrence Zitnick
HIGHLIGHT:	In this paper, we propose ELF, an Extensive, Lightweight and Flexible platform for fundamental reinforcement learning research.

255, TITLE:	Dual Discriminator Generative Adversarial Nets
https://papers.nips.cc/paper/6860-dual-discriminator-generative-adversarial-nets
AUTHORS:	Tu Nguyen, Trung Le, Hung Vu, Dinh Phung
HIGHLIGHT:	We propose in this paper a novel approach to tackle the problem of mode collapse encountered in generative adversarial network (GAN).

256, TITLE:	Dynamic Revenue Sharing
https://papers.nips.cc/paper/6861-dynamic-revenue-sharing
AUTHORS:	Santiago Balseiro, Max Lin, Vahab Mirrokni, Renato Leme, IIIS Song Zuo
HIGHLIGHT:	In this paper, we characterize the optimal revenue sharing scheme that satisfies both constraints in expectation.

257, TITLE:	Decomposition-Invariant Conditional Gradient for General Polytopes with Line Search
https://papers.nips.cc/paper/6862-decomposition-invariant-conditional-gradient-for-general-polytopes-with-line-search
AUTHORS:	Mohammad Ali Bashiri, Xinhua Zhang
HIGHLIGHT:	In this paper, we show that by employing an away-step update, similar rates can be generalized to arbitrary polytopes with strong empirical performance.

258, TITLE:	VAIN: Attentional Multi-agent Predictive Modeling
https://papers.nips.cc/paper/6863-vain-attentional-multi-agent-predictive-modeling
AUTHORS:	Yedid Hoshen
HIGHLIGHT:	In this paper we introduce VAIN, a novel attentional architecture for multi-agent predictive modeling that scales linearly with the number of agents.

259, TITLE:	An Empirical Bayes Approach to Optimizing Machine Learning Algorithms

26

https://papers.nips.cc/paper/6864-an-empirical-bayes-approach-to-optimizing-machine-learning-algorithms
AUTHORS: James McInerney
HIGHLIGHT: In this paper, we consider an alternative approach that uses more samples from the hyperparameter selection procedure to average over the uncertainty in model hyperparameters.

260, TITLE: Differentially Private Empirical Risk Minimization Revisited: Faster and More General
https://papers.nips.cc/paper/6865-differentially-private-empirical-risk-minimization-revisited-faster-and-more-general
AUTHORS: Di Wang, Minwei Ye, Jinhui Xu
HIGHLIGHT: In this paper we study differentially private Empirical Risk Minimization(ERM) in different settings.

261, TITLE: Variational Inference via <var>\chi</var> Upper Bound Minimization
https://papers.nips.cc/paper/6866-variational-inference-via-chi-upper-bound-minimization
AUTHORS: Adji Bousso Dieng, Dustin Tran, Rajesh Ranganath, John Paisley, David Blei
HIGHLIGHT: In this paper we propose CHIVI, a black-box variational inference algorithm that minimizes $D_{\chi}(p \| q)$, the χ-divergence from p to q.

262, TITLE: On Quadratic Convergence of DC Proximal Newton Algorithm in Nonconvex Sparse Learning
https://papers.nips.cc/paper/6867-on-quadratic-convergence-of-dc-proximal-newton-algorithm-in-nonconvex-sparse-learning
AUTHORS: Xingguo Li, Lin Yang, Jason Ge, Jarvis Haupt, Tong Zhang, Tuo Zhao
HIGHLIGHT: We propose a DC proximal Newton algorithm for solving nonconvex regularized sparse learning problems in high dimensions.

263, TITLE: #Exploration: A Study of Count-Based Exploration for Deep Reinforcement Learning
https://papers.nips.cc/paper/6868-exploration-a-study-of-count-based-exploration-for-deep-reinforcement-learning
AUTHORS: Haoran Tang, Rein Houthooft, Davis Foote, Adam Stooke, OpenAI Xi Chen, Yan Duan, John Schulman, Filip DeTurck, Pieter Abbeel
HIGHLIGHT: In this work, we describe a surprising finding: a simple generalization of the classic count-based approach can reach near state-of-the-art performance on various high-dimensional and/or continuous deep RL benchmarks.

264, TITLE: An Empirical Study on The Properties of Random Bases for Kernel Methods
https://papers.nips.cc/paper/6869-an-empirical-study-on-the-properties-of-random-bases-for-kernel-methods
AUTHORS: Maximilian Alber, Pieter-Jan Kindermans, Kristof Sch?tt, Klaus-Robert M?ller, Fei Sha
HIGHLIGHT: In this work, we contrast random features of approximated kernel machines with learned features of neural networks.

265, TITLE: Bridging the Gap Between Value and Policy Based Reinforcement Learning
https://papers.nips.cc/paper/6870-bridging-the-gap-between-value-and-policy-based-reinforcement-learning
AUTHORS: Ofir Nachum, Mohammad Norouzi, Kelvin Xu, Dale Schuurmans
HIGHLIGHT: From this observation, we develop a new RL algorithm, Path Consistency Learning (PCL), that minimizes a notion of soft consistency error along multi-step action sequences extracted from both on- and off-policy traces.

266, TITLE: Premise Selection for Theorem Proving by Deep Graph Embedding
https://papers.nips.cc/paper/6871-premise-selection-for-theorem-proving-by-deep-graph-embedding
AUTHORS: Mingzhe Wang, Yihe Tang, Jian Wang, Jia Deng
HIGHLIGHT: We propose a deep learning-based approach to the problem of premise selection: selecting mathematical statements relevant for proving a given conjecture.

267, TITLE: A Bayesian Data Augmentation Approach for Learning Deep Models
https://papers.nips.cc/paper/6872-a-bayesian-data-augmentation-approach-for-learning-deep-models
AUTHORS: Toan Tran, Trung Pham, Gustavo Carneiro, Lyle Palmer, Ian Reid
HIGHLIGHT: For learning, we introduce a theoretically sound algorithm --- generalised Monte Carlo expectation maximisation, and demonstrate one possible implementation via an extension of the Generative Adversarial Network (GAN).

268, TITLE: Principles of Riemannian Geometry in Neural Networks
https://papers.nips.cc/paper/6873-principles-of-riemannian-geometry-in-neural-networks
AUTHORS: Michael Hauser, Asok Ray
HIGHLIGHT: This study deals with neural networks in the sense of geometric transformations acting on the coordinate representation of the underlying data manifold which the data is sampled from.

269, TITLE: Cold-Start Reinforcement Learning with Softmax Policy Gradient

27

https://papers.nips.cc/paper/6874-cold-start-reinforcement-learning-with-softmax-policy-gradient
AUTHORS: Nan Ding, Radu Soricut
HIGHLIGHT: In this paper, we describe a reinforcement learning method based on a softmax value function that requires neither of these procedures.

270, TITLE: Online Dynamic Programming
https://papers.nips.cc/paper/6875-online-dynamic-programming
AUTHORS: Holakou Rahmanian, Manfred K. Warmuth
HIGHLIGHT: We consider the problem of repeatedly solving a variant of the same dynamic programming problem in successive trials.

271, TITLE: Alternating Estimation for Structured High-Dimensional Multi-Response Models
https://papers.nips.cc/paper/6876-alternating-estimation-for-structured-high-dimensional-multi-response-models
AUTHORS: Sheng Chen, Arindam Banerjee
HIGHLIGHT: By exploiting the noise correlations among different responses, we propose an alternating estimation (AltEst) procedure to estimate the model parameters based on the generalized Dantzig selector (GDS).

272, TITLE: Convolutional Gaussian Processes
https://papers.nips.cc/paper/6877-convolutional-gaussian-processes
AUTHORS: Mark van der Wilk, Carl Edward Rasmussen, James Hensman
HIGHLIGHT: The main contribution of our work is the construction of an inter-domain inducing point approximation that is well-tailored to the convolutional kernel.

273, TITLE: Estimation of the covariance structure of heavy-tailed distributions
https://papers.nips.cc/paper/6878-estimation-of-the-covariance-structure-of-heavy-tailed-distributions
AUTHORS: Xiaohan Wei, Stanislav Minsker
HIGHLIGHT: We propose and analyze a new estimator of the covariance matrix that admits strong theoretical guarantees under weak assumptions on the underlying distribution, such as existence of moments of only low order.

274, TITLE: Decomposable Submodular Function Minimization: Discrete and Continuous
https://papers.nips.cc/paper/6880-decomposable-submodular-function-minimization-discrete-and-continuous
AUTHORS: Alina Ene, Huy Nguyen, L?szl? A. V?gh
HIGHLIGHT: This paper investigates connections between discrete and continuous approaches for decomposable submodular function minimization.

275, TITLE: Gauging Variational Inference
https://papers.nips.cc/paper/6881-gauging-variational-inference
AUTHORS: Sung-Soo Ahn, Michael Chertkov, Jinwoo Shin
HIGHLIGHT: In this paper, we propose two new variational schemes, coined Gauged-MF (G-MF) and Gauged-BP (G-BP), improving MF and BP, respectively.

276, TITLE: Deep Recurrent Neural Network-Based Identification of Precursor microRNAs
https://papers.nips.cc/paper/6882-deep-recurrent-neural-network-based-identification-of-precursor-micrornas
AUTHORS: Seunghyun Park, Seonwoo Min, Hyun-Soo Choi, Sungroh Yoon
HIGHLIGHT: To address the limitations of existing approaches, we propose a pre-miRNA identification method that incorporates (1) a deep recurrent neural network (RNN) for automated feature learning and classification, (2) multimodal architecture for seamless integration of prior knowledge (secondary structure), (3) an attention mechanism for improving long-term dependence modeling, and (4) an RNN-based class activation mapping for highlighting the learned representations that can contrast pre-miRNAs and non-pre-miRNAs.

277, TITLE: Robust Estimation of Neural Signals in Calcium Imaging
https://papers.nips.cc/paper/6883-robust-estimation-of-neural-signals-in-calcium-imaging
AUTHORS: Hakan Inan, Murat A. Erdogdu, Mark Schnitzer
HIGHLIGHT: In this work, we proceed in a new direction and propose to extract cells and their activity using robust statistical estimation.

278, TITLE: State Aware Imitation Learning
https://papers.nips.cc/paper/6884-state-aware-imitation-learning
AUTHORS: Yannick Schroecker, Charles L. Isbell
HIGHLIGHT: In this paper, we introduce State Aware Imitation Learning (SAIL), an imitation learning algorithm that allows an agent to learn how to remain in states where it can confidently take the correct action and how to recover if it is lead astray.

279, TITLE: Beyond Parity: Fairness Objectives for Collaborative Filtering
https://papers.nips.cc/paper/6885-beyond-parity-fairness-objectives-for-collaborative-filtering
AUTHORS: Sirui Yao, Bert Huang
HIGHLIGHT: We identify the insufficiency of existing fairness metrics and propose four new metrics that address different forms of unfairness.

280, TITLE: A PAC-Bayesian Analysis of Randomized Learning with Application to Stochastic Gradient Descent
https://papers.nips.cc/paper/6886-a-pac-bayesian-analysis-of-randomized-learning-with-application-to-stochastic-gradient-descent
AUTHORS: Ben London
HIGHLIGHT: We analyze this algorithm in the context of our generalization bounds and evaluate it on a benchmark dataset.

281, TITLE: Fully Decentralized Policies for Multi-Agent Systems: An Information Theoretic Approach
https://papers.nips.cc/paper/6887-fully-decentralized-policies-for-multi-agent-systems-an-information-theoretic-approach
AUTHORS: Roel Dobbe, David Fridovich-Keil, Claire Tomlin
HIGHLIGHT: Our main contribution is an information theoretic framework based on rate distortion theory which facilitates analysis of how well the resulting fully decentralized policies are able to reconstruct the optimal solution.

282, TITLE: Model-Powered Conditional Independence Test
https://papers.nips.cc/paper/6888-model-powered-conditional-independence-test
AUTHORS: Rajat Sen, Ananda Theertha Suresh, Karthikeyan Shanmugam, Alexandros G. Dimakis, Sanjay Shakkottai
HIGHLIGHT: To tackle this problem we propose a novel nearest neighbor bootstrap procedure and theoretically show that our generated samples are indeed close to f^{CI} in terms of total variational distance.

283, TITLE: Deep Voice 2: Multi-Speaker Neural Text-to-Speech
https://papers.nips.cc/paper/6889-deep-voice-2-multi-speaker-neural-text-to-speech
AUTHORS: Andrew Gibiansky, Sercan Arik, Gregory Diamos, John Miller, Kainan Peng, Wei Ping, Jonathan Raiman, Yanqi Zhou
HIGHLIGHT: We introduce a technique for augmenting neural text-to-speech (TTS) with low-dimensional trainable speaker embeddings to generate different voices from a single model.

284, TITLE: Variance-based Regularization with Convex Objectives
https://papers.nips.cc/paper/6890-variance-based-regularization-with-convex-objectives
AUTHORS: Hongseok Namkoong, John C. Duchi
HIGHLIGHT: We develop an approach to risk minimization and stochastic optimization that provides a convex surrogate for variance, allowing near-optimal and computationally efficient trading between approximation and estimation error.

285, TITLE: Deep Lattice Networks and Partial Monotonic Functions
https://papers.nips.cc/paper/6891-deep-lattice-networks-and-partial-monotonic-functions
AUTHORS: Seungil You, David Ding, Kevin Canini, Jan Pfeifer, Maya Gupta
HIGHLIGHT: We propose learning deep models that are monotonic with respect to a user-specified set of inputs by alternating layers of linear embeddings, ensembles of lattices, and calibrators (piecewise linear functions), with appropriate constraints for monotonicity, and jointly training the resulting network.

286, TITLE: Continual Learning with Deep Generative Replay
https://papers.nips.cc/paper/6892-continual-learning-with-deep-generative-replay
AUTHORS: Hanul Shin, Jung Kwon Lee, Jaehong Kim, Jiwon Kim
HIGHLIGHT: Inspired by the generative nature of the hippocampus as a short-term memory system in primate brain, we propose the Deep Generative Replay, a novel framework with a cooperative dual model architecture consisting of a deep generative model ("generator") and a task solving model ("solver").

287, TITLE: AIDE: An algorithm for measuring the accuracy of probabilistic inference algorithms
https://papers.nips.cc/paper/6893-aide-an-algorithm-for-measuring-the-accuracy-of-probabilistic-inference-algorithms
AUTHORS: Marco Cusumano-Towner, Vikash K. Mansinghka
HIGHLIGHT: This paper introduces the auxiliary inference divergence estimator (AIDE), an algorithm for measuring the accuracy of approximate inference algorithms.

288, TITLE: Learning Causal Structures Using Regression Invariance
https://papers.nips.cc/paper/6894-learning-causal-structures-using-regression-invariance
AUTHORS: AmirEmad Ghassami, Saber Salehkaleybar, Negar Kiyavash, Kun Zhang

HIGHLIGHT: We introduce the idea of using the invariance of the functional relations of the variables to their causes across a set of environments for structure learning.

289, TITLE: Online Influence Maximization under Independent Cascade Model with Semi-Bandit Feedback
https://papers.nips.cc/paper/6895-online-influence-maximization-under-independent-cascade-model-with-semi-bandit-feedback
AUTHORS: Zheng Wen, Branislav Kveton, Michal Valko, Sharan Vaswani
HIGHLIGHT: Under a stochastic semi-bandit feedback, we propose and analyze IMLinUCB, a computationally efficient UCB-based algorithm.

290, TITLE: Near Minimax Optimal Players for the Finite-Time 3-Expert Prediction Problem
https://papers.nips.cc/paper/6896-near-minimax-optimal-players-for-the-finite-time-3-expert-prediction-problem
AUTHORS: Yasin Abbasi, Peter L. Bartlett, Victor Gabillon
HIGHLIGHT: We study minimax strategies for the online prediction problem with expert advice.

291, TITLE: Reinforcement Learning under Model Mismatch
https://papers.nips.cc/paper/6897-reinforcement-learning-under-model-mismatch
AUTHORS: Aurko Roy, Huan Xu, Sebastian Pokutta
HIGHLIGHT: We address this problem by extending the framework of robust MDPs to the model-free Reinforcement Learning setting, where we do not have access to the model parameters, but can only sample states from it.

292, TITLE: Hierarchical Attentive Recurrent Tracking
https://papers.nips.cc/paper/6898-hierarchical-attentive-recurrent-tracking
AUTHORS: Adam Kosiorek, Alex Bewley, Ingmar Posner
HIGHLIGHT: Inspired by how the human visual cortex employs spatial attention and separate ``where'' and ``what'' processing pathways to actively suppress irrelevant visual features, this work develops a hierarchical attentive recurrent model for single object tracking in videos.

293, TITLE: Tomography of the London Underground: a Scalable Model for Origin-Destination Data
https://papers.nips.cc/paper/6899-tomography-of-the-london-underground-a-scalable-model-for-origin-destination-data
AUTHORS: Nicol? Colombo, Ricardo Silva, Soong Moon Kang
HIGHLIGHT: The corresponding likelihood function is intractable for medium or large-scale networks and we propose two distinct strategies, namely the exact maximum-likelihood inference of an approximate but tractable model and the variational inference of the original intractable model.

294, TITLE: Rotting Bandits
https://papers.nips.cc/paper/6900-rotting-bandits
AUTHORS: Nir Levine, Koby Crammer, Shie Mannor
HIGHLIGHT: We present algorithms, accompanied by simulations, and derive theoretical guarantees.

295, TITLE: Unbiased estimates for linear regression via volume sampling
https://papers.nips.cc/paper/6901-unbiased-estimates-for-linear-regression-via-volume-sampling
AUTHORS: Michal Derezinski, Manfred K. Warmuth
HIGHLIGHT: Pseudo inverse plays an important part in solving the linear least squares problem, where we try to predict a label for each column of X.

296, TITLE: Approximation Bounds for Hierarchical Clustering: Average Linkage, Bisecting K-means, and Local Search
https://papers.nips.cc/paper/6902-approximation-bounds-for-hierarchical-clustering-average-linkage-bisecting-k-means-and-local-search
AUTHORS: Benjamin Moseley, Joshua Wang
HIGHLIGHT: The goal of this paper is to give an analytic framework to better understand observations seen in practice.

297, TITLE: Adaptive Accelerated Gradient Converging Method under H\"{o}lderian Error Bound Condition
https://papers.nips.cc/paper/6903-adaptive-accelerated-gradient-converging-method-under-holderian-error-bound-condition
AUTHORS: Mingrui Liu, Tianbao Yang
HIGHLIGHT: To the best of our knowledge, these improved results are first shown in this work.

298, TITLE: Stein Variational Gradient Descent as Gradient Flow
https://papers.nips.cc/paper/6904-stein-variational-gradient-descent-as-gradient-flow
AUTHORS: Qiang Liu
HIGHLIGHT: This paper develops the first theoretical analysis on SVGD.

299, TITLE: Partial Hard Thresholding: Towards A Principled Analysis of Support Recovery
https://papers.nips.cc/paper/6905-partial-hard-thresholding-towards-a-principled-analysis-of-support-recovery
AUTHORS: Jie Shen, Ping Li
HIGHLIGHT: In this paper, we present a principled analysis on the support recovery performance for a family of hard thresholding algorithms.

300, TITLE: Shallow Updates for Deep Reinforcement Learning
https://papers.nips.cc/paper/6906-shallow-updates-for-deep-reinforcement-learning
AUTHORS: Nir Levine, Tom Zahavy, Daniel J. Mankowitz, Aviv Tamar, Shie Mannor
HIGHLIGHT: In this work we propose a hybrid approach -- the Least Squares Deep Q-Network (LS-DQN), which combines rich feature representations learned by a DRL algorithm with the stability of a linear least squares method.

301, TITLE: LightGBM: A Highly Efficient Gradient Boosting Decision Tree
https://papers.nips.cc/paper/6907-lightgbm-a-highly-efficient-gradient-boosting-decision-tree
AUTHORS: Guolin Ke, Qi Meng, Thomas Finley, Taifeng Wang, Wei Chen, Weidong Ma, Qiwei Ye, Tie-Yan Liu
HIGHLIGHT: To tackle this problem, we propose two novel techniques: \emph{Gradient-based One-Side Sampling} (GOSS) and \emph{Exclusive Feature Bundling} (EFB).

302, TITLE: Adversarial Ranking for Language Generation
https://papers.nips.cc/paper/6908-adversarial-ranking-for-language-generation
AUTHORS: Kevin Lin, Dianqi Li, Xiaodong He, Zhengyou Zhang, Ming-ting Sun
HIGHLIGHT: In this paper, we propose a novel generative adversarial network, RankGAN, for generating high-quality language descriptions.

303, TITLE: Regret Minimization in MDPs with Options without Prior Knowledge
https://papers.nips.cc/paper/6909-regret-minimization-in-mdps-with-options-without-prior-knowledge
AUTHORS: Ronan Fruit, Matteo Pirotta, Alessandro Lazaric, Emma Brunskill
HIGHLIGHT: In this paper, we remove this limitation by combining the SMDP view together with the inner Markov structure of options into a novel algorithm whose regret performance matches UCRL-SMDP's up to an additive regret term.

304, TITLE: Net-Trim: Convex Pruning of Deep Neural Networks with Performance Guarantee
https://papers.nips.cc/paper/6910-net-trim-convex-pruning-of-deep-neural-networks-with-performance-guarantee
AUTHORS: Alireza Aghasi, Afshin Abdi, Nam Nguyen, Justin Romberg
HIGHLIGHT: We introduce and analyze a new technique for model reduction for deep neural networks.

305, TITLE: Graph Matching via Multiplicative Update Algorithm
https://papers.nips.cc/paper/6911-graph-matching-via-multiplicative-update-algorithm
AUTHORS: Bo Jiang, Jin Tang, Chris Ding, Yihong Gong, Bin Luo
HIGHLIGHT: In this paper, we present a new algorithm, called Multiplicative Update Graph Matching (MPGM), that develops a multiplicative update technique to solve the QP matching problem.

306, TITLE: Dynamic Importance Sampling for Anytime Bounds of the Partition Function
https://papers.nips.cc/paper/6912-dynamic-importance-sampling-for-anytime-bounds-of-the-partition-function
AUTHORS: Qi Lou, Rina Dechter, Alexander T. Ihler
HIGHLIGHT: In this paper, we propose a dynamic importance sampling scheme that provides anytime finite-sample bounds for the partition function.

307, TITLE: Is the Bellman residual a bad proxy?
https://papers.nips.cc/paper/6913-is-the-bellman-residual-a-bad-proxy
AUTHORS: Matthieu Geist, Bilal Piot, Olivier Pietquin
HIGHLIGHT: This paper aims at theoretically and empirically comparing two standard optimization criteria for Reinforcement Learning: i) maximization of the mean value and ii) minimization of the Bellman residual.

308, TITLE: Generalization Properties of Learning with Random Features
https://papers.nips.cc/paper/6914-generalization-properties-of-learning-with-random-features
AUTHORS: Alessandro Rudi, Lorenzo Rosasco
HIGHLIGHT: We study the generalization properties of ridge regression with random features in the statistical learning framework.

309, TITLE:	Differentially private Bayesian learning on distributed data
https://papers.nips.cc/paper/6915-differentially-private-bayesian-learning-on-distributed-data
AUTHORS:	Mikko Heikkil?, Eemil Lagerspetz, Samuel Kaski, Kana Shimizu, Sasu Tarkoma, Antti Honkela
HIGHLIGHT:	We propose a learning strategy based on a secure multi-party sum function for aggregating summaries from data holders and the Gaussian mechanism for DP.

310, TITLE:	Learning to Compose Domain-Specific Transformations for Data Augmentation
https://papers.nips.cc/paper/6916-learning-to-compose-domain-specific-transformations-for-data-augmentation
AUTHORS:	Alexander J. Ratner, Henry Ehrenberg, Zeshan Hussain, Jared Dunnmon, Christopher R?
HIGHLIGHT:	We propose a method for automating this process by learning a generative sequence model over user-specified transformation functions using a generative adversarial approach.

311, TITLE:	Wasserstein Learning of Deep Generative Point Process Models
https://papers.nips.cc/paper/6917-wasserstein-learning-of-deep-generative-point-process-models
AUTHORS:	Shuai Xiao, Mehrdad Farajtabar, Xiaojing Ye, Junchi Yan, Le Song, Hongyuan Zha
HIGHLIGHT:	In this paper, we propose an intensity-free approach for point processes modeling that transforms nuisance processes to a target one.

312, TITLE:	Ensemble Sampling
https://papers.nips.cc/paper/6918-ensemble-sampling
AUTHORS:	Xiuyuan Lu, Benjamin Van Roy
HIGHLIGHT:	This paper develops ensemble sampling, which aims to approximate Thompson sampling while maintaining tractability even in the face of complex models such as neural networks.

313, TITLE:	Language Modeling with Recurrent Highway Hypernetworks
https://papers.nips.cc/paper/6919-language-modeling-with-recurrent-highway-hypernetworks
AUTHORS:	Joseph Suarez
HIGHLIGHT:	We present extensive experimental and theoretical support for the efficacy of recurrent highway networks (RHNs) and recurrent hypernetworks complimentary to the original works.

314, TITLE:	Adaptive SVRG Methods under Error Bound Conditions with Unknown Growth Parameter
https://papers.nips.cc/paper/6920-adaptive-svrg-methods-under-error-bound-conditions-with-unknown-growth-parameter
AUTHORS:	Yi Xu, Qihang Lin, Tianbao Yang
HIGHLIGHT:	To address this issue, we propose novel SVRG methods that automatically search for this unknown parameter on the fly of optimization while still obtain almost the same convergence rate as when this parameter is known.

315, TITLE:	Bayesian Compression for Deep Learning
https://papers.nips.cc/paper/6921-bayesian-compression-for-deep-learning
AUTHORS:	Christos Louizos, Karen Ullrich, Max Welling
HIGHLIGHT:	In this work, we argue that the most principled and effective way to attack this problem is by adopting a Bayesian point of view, where through sparsity inducing priors we prune large parts of the network.

316, TITLE:	Streaming Sparse Gaussian Process Approximations
https://papers.nips.cc/paper/6922-streaming-sparse-gaussian-process-approximations
AUTHORS:	Thang D. Bui, Cuong Nguyen, Richard E. Turner
HIGHLIGHT:	This paper develops a new principled framework for deploying Gaussian process probabilistic models in the streaming setting, providing methods for learning hyperparameters and optimising pseudo-input locations.

317, TITLE:	VEEGAN: Reducing Mode Collapse in GANs using Implicit Variational Learning
https://papers.nips.cc/paper/6923-veegan-reducing-mode-collapse-in-gans-using-implicit-variational-learning
AUTHORS:	Akash Srivastava, Lazar Valkov, Chris Russell, Michael U. Gutmann, Charles Sutton
HIGHLIGHT:	To address this, we introduce VEEGAN, which features a reconstructor network, reversing the action of the generator by mapping from data to noise.

318, TITLE:	Sparse Embedded k-Means Clustering
https://papers.nips.cc/paper/6924-sparse-embedded-k-means-clustering
AUTHORS:	Weiwei Liu, Xiaobo Shen, Ivor Tsang
HIGHLIGHT:	Our empirical studies corroborate our theoretical findings, and demonstrate that our approach is able to significantly accelerate k-means clustering, while achieving satisfactory clustering performance.

319, TITLE:	Dynamic-Depth Context Tree Weighting
https://papers.nips.cc/paper/6925-dynamic-depth-context-tree-weighting
AUTHORS:	Joao V. Messias, Shimon Whiteson
HIGHLIGHT:	This paper proposes dynamic-depth context tree weighting (D2-CTW), a model-learning method that addresses these limitations.

320, TITLE:	A Regularized Framework for Sparse and Structured Neural Attention
https://papers.nips.cc/paper/6926-a-regularized-framework-for-sparse-and-structured-neural-attention
AUTHORS:	Vlad Niculae, Mathieu Blondel
HIGHLIGHT:	We propose in this paper a new framework for sparse and structured attention, building upon a smoothed max operator.

321, TITLE:	Multi-output Polynomial Networks and Factorization Machines
https://papers.nips.cc/paper/6927-multi-output-polynomial-networks-and-factorization-machines
AUTHORS:	Mathieu Blondel, Vlad Niculae, Takuma Otsuka, Naonori Ueda
HIGHLIGHT:	We extend these models to the multi-output setting, i.e., for learning vector-valued functions, with application to multi-class or multi-task problems.

322, TITLE:	Clustering Billions of Reads for DNA Data Storage
https://papers.nips.cc/paper/6928-clustering-billions-of-reads-for-dna-data-storage
AUTHORS:	Cyrus Rashtchian, Konstantin Makarychev, Miklos Racz, Siena Ang, Djordje Jevdjic, Sergey Yekhanin, Luis Ceze, Karin Strauss
HIGHLIGHT:	To address this issue, we present a novel distributed algorithm for approximately computing the underlying clusters.

323, TITLE:	Multi-Objective Non-parametric Sequential Prediction
https://papers.nips.cc/paper/6929-multi-objective-non-parametric-sequential-prediction
AUTHORS:	Guy Uziel, Ran El-Yaniv
HIGHLIGHT:	In this paper, we extend the multi-objective framework to the case of stationary and ergodic processes, thus allowing dependencies among observations.

324, TITLE:	A Universal Analysis of Large-Scale Regularized Least Squares Solutions
https://papers.nips.cc/paper/6930-a-universal-analysis-of-large-scale-regularized-least-squares-solutions
AUTHORS:	Ashkan Panahi, Babak Hassibi
HIGHLIGHT:	In this paper, we confirm these observations theoretically when the distribution is sub-Gaussian.

325, TITLE:	Deep Sets
https://papers.nips.cc/paper/6931-deep-sets
AUTHORS:	Manzil Zaheer, Satwik Kottur, Siamak Ravanbakhsh, Barnabas Poczos, Ruslan R. Salakhutdinov, Alexander J. Smola
HIGHLIGHT:	We study the problem of designing models for machine learning tasks defined on sets.

326, TITLE:	ExtremeWeather: A large-scale climate dataset for semi-supervised detection, localization, and understanding of extreme weather events
https://papers.nips.cc/paper/6932-extremeweather-a-large-scale-climate-dataset-for-semi-supervised-detection-localization-and-understanding-of-extreme-weather-events
AUTHORS:	Evan Racah, Christopher Beckham, Tegan Maharaj, Samira Ebrahimi Kahou, Mr. Prabhat, Chris Pal
HIGHLIGHT:	We present a multichannel spatiotemporal CNN architecture for semi-supervised bounding box prediction and exploratory data analysis.
We present a dataset, ExtremeWeather, to encourage machine learning research in this area and to help facilitate further work in understanding and mitigating the effects of climate change.

327, TITLE:	Process-constrained batch Bayesian optimisation
https://papers.nips.cc/paper/6933-process-constrained-batch-bayesian-optimisation
AUTHORS:	Pratibha Vellanki, Santu Rana, Sunil Gupta, David Rubin, Alessandra Sutti, Thomas Dorin, Murray Height, Paul Sanders, Svetha Venkatesh
HIGHLIGHT:	We propose two algorithms, pc-BO(basic) and pc-BO(nested).

328, TITLE:	Bayesian Inference of Individualized Treatment Effects using Multi-task Gaussian Processes
https://papers.nips.cc/paper/6934-bayesian-inference-of-individualized-treatment-effects-using-multi-task-gaussian-processes

AUTHORS: Ahmed M. Alaa, Mihaela van der Schaar
HIGHLIGHT: Stemming from the potential outcomes model, we propose a novel multi-task learning framework in which factual and counterfactual outcomes are modeled as the outputs of a function in a vector-valued reproducing kernel Hilbert space (vvRKHS).

329, TITLE: Spherical convolutions and their application in molecular modelling
https://papers.nips.cc/paper/6935-spherical-convolutions-and-their-application-in-molecular-modelling
AUTHORS: Wouter Boomsma, Jes Frellsen
HIGHLIGHT: In this paper, we introduce two strategies for conducting convolutions on the sphere, using either a spherical-polar grid or a grid based on the cubed-sphere representation.

330, TITLE: Efficient Optimization for Linear Dynamical Systems with Applications to Clustering and Sparse Coding
https://papers.nips.cc/paper/6936-efficient-optimization-for-linear-dynamical-systems-with-applications-to-clustering-and-sparse-coding
AUTHORS: Wenbing Huang, Mehrtash Harandi, Tong Zhang, Lijie Fan, Fuchun Sun, Junzhou Huang
HIGHLIGHT: In this paper, we propose an efficient projected gradient descent method to minimize a general form of a loss function and demonstrate how clustering and sparse coding with LDSs can be solved by the proposed method efficiently.

331, TITLE: On Optimal Generalizability in Parametric Learning
https://papers.nips.cc/paper/6937-on-optimal-generalizability-in-parametric-learning
AUTHORS: Ahmad Beirami, Meisam Razaviyayn, Shahin Shahrampour, Vahid Tarokh
HIGHLIGHT: We consider the parametric learning problem, where the objective of the learner is determined by a parametric loss function.

332, TITLE: Near Optimal Sketching of Low-Rank Tensor Regression
https://papers.nips.cc/paper/6938-near-optimal-sketching-of-low-rank-tensor-regression
AUTHORS: Xingguo Li, Jarvis Haupt, David Woodruff
HIGHLIGHT: We study the least squares regression problem $\min_{\Theta \in \RR^{p_1 \times \cdots \times p_D}} \| \cA(\Theta) - b \|_2^2$, where Θ is a low-rank tensor, defined as $\Theta = \sum_{r=1}^{R} \theta_1^{(r)} \circ \cdots \circ \theta_D^{(r)}$, for vectors $\theta_d^{(r)} \in \mathbb{R}^{p_d}$ for all $r \in [R]$ and $d \in [D]$.

333, TITLE: Tractability in Structured Probability Spaces
https://papers.nips.cc/paper/6939-tractability-in-structured-probability-spaces
AUTHORS: Arthur Choi, Yujia Shen, Adnan Darwiche
HIGHLIGHT: In this paper, we study the scalability of such models in the context of representing and learning distributions over routes on a map.

334, TITLE: Model-based Bayesian inference of neural activity and connectivity from all-optical interrogation of a neural circuit
https://papers.nips.cc/paper/6940-model-based-bayesian-inference-of-neural-activity-and-connectivity-from-all-optical-interrogation-of-a-neural-circuit
AUTHORS: Laurence Aitchison, Lloyd Russell, Adam M. Packer, Jinyao Yan, Philippe Castonguay, Michael Hausser, Srinivas C. Turaga
HIGHLIGHT: We use the framework of variational autoencoders to model spiking activity using discrete latent variables, low-dimensional latent common input, and sparse spike-and-slab generalized linear coupling between neurons.

335, TITLE: Gaussian process based nonlinear latent structure discovery in multivariate spike train data
https://papers.nips.cc/paper/6941-gaussian-process-based-nonlinear-latent-structure-discovery-in-multivariate-spike-train-data
AUTHORS: Anqi Wu, Nicholas A. Roy, Stephen Keeley, Jonathan W. Pillow
HIGHLIGHT: Here we propose a doubly nonlinear latent variable model that can identify low-dimensional structure underlying apparently high-dimensional spike train data.

336, TITLE: Neural system identification for large populations separating ?what? and ?where?
https://papers.nips.cc/paper/6942-neural-system-identification-for-large-populations-separating-what-and-where
AUTHORS: David Klindt, Alexander S. Ecker, Thomas Euler, Matthias Bethge
HIGHLIGHT: We propose a CNN architecture with a sparse readout layer factorizing the spatial (where) and feature (what) dimensions.

337, TITLE: Certified Defenses for Data Poisoning Attacks
https://papers.nips.cc/paper/6943-certified-defenses-for-data-poisoning-attacks
AUTHORS: Jacob Steinhardt, Pang Wei W. Koh, Percy S. Liang

HIGHLIGHT: Empirically, we find that even under a simple defense, the MNIST-1-7 and Dogfish datasets are resilient to attack, while in contrast the IMDB sentiment dataset can be driven from 12% to 23% test error by adding only 3% poisoned data.

338, TITLE: Eigen-Distortions of Hierarchical Representations
https://papers.nips.cc/paper/6944-eigen-distortions-of-hierarchical-representations
AUTHORS: Alexander Berardino, Valero Laparra, Johannes Ball?, Eero Simoncelli
HIGHLIGHT: We develop a method for comparing hierarchical image representations in terms of their ability to explain perceptual sensitivity in humans.

339, TITLE: Limitations on Variance-Reduction and Acceleration Schemes for Finite Sums Optimization
https://papers.nips.cc/paper/6945-limitations-on-variance-reduction-and-acceleration-schemes-for-finite-sums-optimization
AUTHORS: Yossi Arjevani
HIGHLIGHT: We study the conditions under which one is able to efficiently apply variance-reduction and acceleration schemes on finite sums problems.

340, TITLE: Unsupervised Sequence Classification using Sequential Output Statistics
https://papers.nips.cc/paper/6946-unsupervised-sequence-classification-using-sequential-output-statistics
AUTHORS: Yu Liu, Jianshu Chen, Li Deng
HIGHLIGHT: To address the problem, we propose an unsupervised learning cost function and study its properties.

341, TITLE: Subset Selection under Noise
https://papers.nips.cc/paper/6947-subset-selection-under-noise
AUTHORS: Chao Qian, Jing-Cheng Shi, Yang Yu, Ke Tang, Zhi-Hua Zhou
HIGHLIGHT: We prove that PONSS can achieve a better approximation ratio under some assumption such as i.i.d. noise distribution.

342, TITLE: Collecting Telemetry Data Privately
https://papers.nips.cc/paper/6948-collecting-telemetry-data-privately
AUTHORS: Bolin Ding, Janardhan Kulkarni, Sergey Yekhanin
HIGHLIGHT: In this paper, we develop new LDP mechanisms geared towards repeated collection of counter data, with formal privacy guarantees even after being executed for an arbitrarily long period of time.

343, TITLE: Concrete Dropout
https://papers.nips.cc/paper/6949-concrete-dropout
AUTHORS: Yarin Gal, Jiri Hron, Alex Kendall
HIGHLIGHT: We propose a new dropout variant which gives improved performance and better calibrated uncertainties.

344, TITLE: Adaptive Batch Size for Safe Policy Gradients
https://papers.nips.cc/paper/6950-adaptive-batch-size-for-safe-policy-gradients
AUTHORS: Matteo Papini, Matteo Pirotta, Marcello Restelli
HIGHLIGHT: In this paper, we propose a set of methods to jointly optimize the step and the batch sizes that guarantee (with high probability) to improve the policy performance after each update.

345, TITLE: A Disentangled Recognition and Nonlinear Dynamics Model for Unsupervised Learning
https://papers.nips.cc/paper/6951-a-disentangled-recognition-and-nonlinear-dynamics-model-for-unsupervised-learning
AUTHORS: Marco Fraccaro, Simon Kamronn, Ulrich Paquet, Ole Winther
HIGHLIGHT: We introduce the Kalman variational auto-encoder, a framework for unsupervised learning of sequential data that disentangles two latent representations: an object's representation, coming from a recognition model, and a latent state describing its dynamics.

346, TITLE: PASS-GLM: polynomial approximate sufficient statistics for scalable Bayesian GLM inference
https://papers.nips.cc/paper/6952-pass-glm-polynomial-approximate-sufficient-statistics-for-scalable-bayesian-glm-inference
AUTHORS: Jonathan Huggins, Ryan P. Adams, Tamara Broderick
HIGHLIGHT: We propose a new approach based on constructing polynomial approximate sufficient statistics for GLMs (PASS-GLM).

347, TITLE: Bayesian GAN
https://papers.nips.cc/paper/6953-bayesian-gan
AUTHORS: Yunus Saatci, Andrew G. Wilson
HIGHLIGHT: We present a practical Bayesian formulation for unsupervised and semi-supervised learning with GANs.

348, TITLE: Off-policy evaluation for slate recommendation
https://papers.nips.cc/paper/6954-off-policy-evaluation-for-slate-recommendation
AUTHORS: Adith Swaminathan, Akshay Krishnamurthy, Alekh Agarwal, Miro Dudik, John Langford, Damien Jose, Imed Zitouni
HIGHLIGHT: We build on techniques from combinatorial bandits to introduce a new practical estimator that uses logged data to estimate a policy's performance.

349, TITLE: A multi-agent reinforcement learning model of common-pool resource appropriation
https://papers.nips.cc/paper/6955-a-multi-agent-reinforcement-learning-model-of-common-pool-resource-appropriation
AUTHORS: Julien P?rolat, Joel Z. Leibo, Vinicius Zambaldi, Charles Beattie, Karl Tuyls, Thore Graepel
HIGHLIGHT: Abstract models of common-pool resource appropriation based on non-cooperative game theory predict that self-interested agents will generally fail to find socially positive equilibria---a phenomenon called the tragedy of the commons.

350, TITLE: On the Optimization Landscape of Tensor Decompositions
https://papers.nips.cc/paper/6956-on-the-optimization-landscape-of-tensor-decompositions
AUTHORS: Rong Ge, Tengyu Ma
HIGHLIGHT: In this paper, we analyze the optimization landscape of the random over-complete tensor decomposition problem, which has many applications in unsupervised leaning, especially in learning latent variable models.

351, TITLE: High-Order Attention Models for Visual Question Answering
https://papers.nips.cc/paper/6957-high-order-attention-models-for-visual-question-answering
AUTHORS: Idan Schwartz, Alexander Schwing, Tamir Hazan
HIGHLIGHT: In this paper we propose a novel and generally applicable form of attention mechanism that learns high-order correlations between various data modalities.

352, TITLE: Sparse convolutional coding for neuronal assembly detection
https://papers.nips.cc/paper/6958-sparse-convolutional-coding-for-neuronal-assembly-detection
AUTHORS: Sven Peter, Elke Kirschbaum, Martin Both, Lee Campbell, Brandon Harvey, Conor Heins, Daniel Durstewitz, Ferran Diego, Fred A. Hamprecht
HIGHLIGHT: In this paper we propose a new algorithm, based on sparse convolutional coding, for detecting recurrent motifs of arbitrary structure up to a given length.

353, TITLE: Quantifying how much sensory information in a neural code is relevant for behavior
https://papers.nips.cc/paper/6959-quantifying-how-much-sensory-information-in-a-neural-code-is-relevant-for-behavior
AUTHORS: Giuseppe Pica, Eugenio Piasini, Houman Safaai, Caroline Runyan, Christopher Harvey, Mathew Diamond, Christoph Kayser, Tommaso Fellin, Stefano Panzeri
HIGHLIGHT: Here we develop a novel measure, termed the information-theoretic intersection information $\III(S;R;C)$, that quantifies how much of the sensory information carried by a neural response R is used for behavior during perceptual discrimination tasks.

354, TITLE: Geometric Matrix Completion with Recurrent Multi-Graph Neural Networks
https://papers.nips.cc/paper/6960-geometric-matrix-completion-with-recurrent-multi-graph-neural-networks
AUTHORS: Federico Monti, Michael Bronstein, Xavier Bresson
HIGHLIGHT: We propose a novel approach to overcome these limitations by using geometric deep learning on graphs.

355, TITLE: Reducing Reparameterization Gradient Variance
https://papers.nips.cc/paper/6961-reducing-reparameterization-gradient-variance
AUTHORS: Andrew Miller, Nick Foti, Alexander D'Amour, Ryan P. Adams
HIGHLIGHT: We demonstrate our approach on a non-conjugate hierarchical model and a Bayesian neural net where our method attained orders of magnitude (20-2{,}000$\times$) reduction in gradient variance resulting in faster and more stable optimization.

356, TITLE: Visual Reference Resolution using Attention Memory for Visual Dialog
https://papers.nips.cc/paper/6962-visual-reference-resolution-using-attention-memory-for-visual-dialog
AUTHORS: Paul Hongsuck Seo, Andreas Lehrmann, Bohyung Han, Leonid Sigal
HIGHLIGHT: We propose a novel attention mechanism that exploits visual attentions in the past to resolve the current reference in the visual dialog scenario.

357, TITLE: Joint distribution optimal transportation for domain adaptation

https://papers.nips.cc/paper/6963-joint-distribution-optimal-transportation-for-domain-adaptation
AUTHORS: Nicolas Courty, R?mi Flamary, Amaury Habrard, Alain Rakotomamonjy
HIGHLIGHT: We propose a solution of this problem with optimal transport, that allows to recover an estimated target $\pt^f=(X,f(X))$ by optimizing simultaneously the optimal coupling and f.

358, TITLE: Multiresolution Kernel Approximation for Gaussian Process Regression
https://papers.nips.cc/paper/6964-multiresolution-kernel-approximation-for-gaussian-process-regression
AUTHORS: Yi Ding, Risi Kondor, Jonathan Eskreis-Winkler
HIGHLIGHT: In this paper we introduce Multiresolution Kernel Approximation (MKA), the first true broad bandwidth kernel approximation algorithm.

359, TITLE: Collapsed variational Bayes for Markov jump processes
https://papers.nips.cc/paper/6965-collapsed-variational-bayes-for-markov-jump-processes
AUTHORS: Boqian Zhang, Jiangwei Pan, Vinayak A. Rao
HIGHLIGHT: In this work, we propose a novel collapsed variational inference algorithm to address this issue.

360, TITLE: Universal consistency and minimax rates for online Mondrian Forests
https://papers.nips.cc/paper/6966-universal-consistency-and-minimax-rates-for-online-mondrian-forests
AUTHORS: Jaouad Mourtada, St?phane Ga?ffas, Erwan Scornet
HIGHLIGHT: We establish the consistency of an algorithm of Mondrian Forests~\cite{lakshminarayanan2014mondrianforests,lakshminarayanan2016mondrianuncertainty}, a randomized classification algorithm that can be implemented online.

361, TITLE: Welfare Guarantees from Data
https://papers.nips.cc/paper/6967-welfare-guarantees-from-data
AUTHORS: Darrell Hoy, Denis Nekipelov, Vasilis Syrgkanis
HIGHLIGHT: We propose a data-dependent analog of the price of anarchy that refines this worst-case assuming access to samples of strategic behavior.

362, TITLE: Diving into the shallows: a computational perspective on large-scale shallow learning
https://papers.nips.cc/paper/6968-diving-into-the-shallows-a-computational-perspective-on-large-scale-shallow-learning
AUTHORS: SIYUAN MA, Mikhail Belkin
HIGHLIGHT: In this paper we identify a basic limitation in gradient descent-based optimization methods when used in conjunctions with smooth kernels.

363, TITLE: End-to-end Differentiable Proving
https://papers.nips.cc/paper/6969-end-to-end-differentiable-proving
AUTHORS: Tim Rockt?schel, Sebastian Riedel
HIGHLIGHT: We introduce deep neural networks for end-to-end differentiable theorem proving that operate on dense vector representations of symbols.

364, TITLE: Influence Maximization with <var>\varepsilon</var>-Almost Submodular Threshold Functions
https://papers.nips.cc/paper/6970-influence-maximization-with-varepsilon-almost-submodular-threshold-functions
AUTHORS: Qiang Li, Wei Chen, Institute of Computing Xiaoming Sun, Institute of Computing Jialin Zhang
HIGHLIGHT: In this paper, motivated by empirical evidences, we explore influence maximization in the non-submodular regime.

365, TITLE: InfoGAIL: Interpretable Imitation Learning from Visual Demonstrations
https://papers.nips.cc/paper/6971-infogail-interpretable-imitation-learning-from-visual-demonstrations
AUTHORS: Yunzhu Li, Jiaming Song, Stefano Ermon
HIGHLIGHT: In this paper, we propose a new algorithm that can infer the latent structure of expert demonstrations in an unsupervised way.

366, TITLE: Variational Laws of Visual Attention for Dynamic Scenes
https://papers.nips.cc/paper/6972-variational-laws-of-visual-attention-for-dynamic-scenes
AUTHORS: Dario Zanca, Marco Gori
HIGHLIGHT: This paper proposes a model of attentional scanpath that is based on the principle that there are foundational laws that drive the emergence of visual attention.

367, TITLE: Recursive Sampling for the Nystrom Method

https://papers.nips.cc/paper/6973-recursive-sampling-for-the-nystrom-method
AUTHORS: Cameron Musco, Christopher Musco
HIGHLIGHT: We give the first algorithm for kernel Nystrom approximation that runs in linear time in the number of training points and is provably accurate for all kernel matrices, without dependence on regularity or incoherence conditions.

368, TITLE: Interpolated Policy Gradient: Merging On-Policy and Off-Policy Gradient Estimation for Deep Reinforcement Learning
https://papers.nips.cc/paper/6974-interpolated-policy-gradient-merging-on-policy-and-off-policy-gradient-estimation-for-deep-reinforcement-learning
AUTHORS: Shixiang (Shane) Gu, Timothy Lillicrap, Richard E. Turner, Zoubin Ghahramani, Bernhard Sch?lkopf, Sergey Levine
HIGHLIGHT: This paper examines, both theoretically and empirically, approaches to merging on- and off-policy updates for deep reinforcement learning.

369, TITLE: Dynamic Routing Between Capsules
https://papers.nips.cc/paper/6975-dynamic-routing-between-capsules
AUTHORS: Sara Sabour, Nicholas Frosst, Geoffrey E. Hinton
HIGHLIGHT: We use the length of the activity vector to represent the probability that the entity exists and its orientation to represent the instantiation parameters.

370, TITLE: Incorporating Side Information by Adaptive Convolution
https://papers.nips.cc/paper/6976-incorporating-side-information-by-adaptive-convolution
AUTHORS: Di Kang, Debarun Dhar, Antoni Chan
HIGHLIGHT: In order to incorporate the available side information, we propose an adaptive convolutional neural network (ACNN), where the convolution filter weights adapt to the current scene context via the side information.
Since existing crowd counting datasets do not contain ground-truth side information, we collect a new dataset with the ground-truth camera angle and height as the side information.

371, TITLE: Conic Scan-and-Cover algorithms for nonparametric topic modeling
https://papers.nips.cc/paper/6977-conic-scan-and-cover-algorithms-for-nonparametric-topic-modeling
AUTHORS: Mikhail Yurochkin, Aritra Guha, XuanLong Nguyen
HIGHLIGHT: We propose new algorithms for topic modeling when the number of topics is unknown.

372, TITLE: FALKON: An Optimal Large Scale Kernel Method
https://papers.nips.cc/paper/6978-falkon-an-optimal-large-scale-kernel-method
AUTHORS: Alessandro Rudi, Luigi Carratino, Lorenzo Rosasco
HIGHLIGHT: In this paper, we take a substantial step in scaling up kernel methods, proposing FALKON, a novel algorithm that allows to efficiently process millions of points.

373, TITLE: Structured Generative Adversarial Networks
https://papers.nips.cc/paper/6979-structured-generative-adversarial-networks
AUTHORS: Zhijie Deng, Hao Zhang, Xiaodan Liang, Luona Yang, Shizhen Xu, Jun Zhu, Eric P. Xing
HIGHLIGHT: We propose structured generative adversarial networks (SGANs) for semi-supervised conditional generative modeling.

374, TITLE: Conservative Contextual Linear Bandits
https://papers.nips.cc/paper/6980-conservative-contextual-linear-bandits
AUTHORS: Abbas Kazerouni, Mohammad Ghavamzadeh, Yasin Abbasi, Benjamin Van Roy
HIGHLIGHT: In this paper, we study the issue of safety in contextual linear bandits that have application in many different fields including personalized ad recommendation in online marketing.

375, TITLE: Variational Memory Addressing in Generative Models
https://papers.nips.cc/paper/6981-variational-memory-addressing-in-generative-models
AUTHORS: J?rg Bornschein, Andriy Mnih, Daniel Zoran, Danilo Jimenez Rezende
HIGHLIGHT: To illustrate the advantages of this approach we incorporate it into a variational autoencoder and apply the resulting model to the task of generative few-shot learning.

376, TITLE: On Tensor Train Rank Minimization : Statistical Efficiency and Scalable Algorithm
https://papers.nips.cc/paper/6982-on-tensor-train-rank-minimization-statistical-efficiency-and-scalable-algorithm
AUTHORS: Masaaki Imaizumi, Takanori Maehara, Kohei Hayashi
HIGHLIGHT: In this paper, we address the limitations.

377, TITLE: Scalable Levy Process Priors for Spectral Kernel Learning
https://papers.nips.cc/paper/6983-scalable-levy-process-priors-for-spectral-kernel-learning
AUTHORS: Phillip A. Jang, Andrew Loeb, Matthew Davidow, Andrew G. Wilson
HIGHLIGHT: We propose a distribution over kernels formed by modelling a spectral mixture density with a Levy process.

378, TITLE: Deep Hyperspherical Learning
https://papers.nips.cc/paper/6984-deep-hyperspherical-learning
AUTHORS: Weiyang Liu, Yan-Ming Zhang, Xingguo Li, Zhiding Yu, Bo Dai, Tuo Zhao, Le Song
HIGHLIGHT: In light of such challenges, we propose hyperspherical convolution (SphereConv), a novel learning framework
that gives angular representations on hyperspheres.

379, TITLE: Learning Deep Structured Multi-Scale Features using Attention-Gated CRFs for Contour Prediction
https://papers.nips.cc/paper/6985-learning-deep-structured-multi-scale-features-using-attention-gated-crfs-for-contour-prediction
AUTHORS: Dan Xu, Wanli Ouyang, Xavier Alameda-Pineda, Elisa Ricci, Xiaogang Wang, Nicu Sebe
HIGHLIGHT: This paper presents a novel approach for predicting contours which advances the state of the art in two
fundamental aspects, i.e. multi-scale feature generation and fusion.

380, TITLE: On-the-fly Operation Batching in Dynamic Computation Graphs
https://papers.nips.cc/paper/6986-on-the-fly-operation-batching-in-dynamic-computation-graphs
AUTHORS: Graham Neubig, Yoav Goldberg, Chris Dyer
HIGHLIGHT: In this paper, we present an algorithm, and its implementation in the DyNet toolkit, for automatically batching
operations.

381, TITLE: Nonlinear Acceleration of Stochastic Algorithms
https://papers.nips.cc/paper/6987-nonlinear-acceleration-of-stochastic-algorithms
AUTHORS: Damien Scieur, Francis Bach, Alexandre d'Aspremont
HIGHLIGHT: Here, we study extrapolation methods in a stochastic setting, where the iterates are produced by either a simple
or an accelerated stochastic gradient algorithm.

382, TITLE: Optimized Pre-Processing for Discrimination Prevention
https://papers.nips.cc/paper/6988-optimized-pre-processing-for-discrimination-prevention
AUTHORS: Flavio Calmon, Dennis Wei, Bhanukiran Vinzamuri, Karthikeyan Natesan Ramamurthy, Kush R. Varshney
HIGHLIGHT: In this paper, we introduce a novel probabilistic formulation of data pre-processing for reducing discrimination.

383, TITLE: YASS: Yet Another Spike Sorter
https://papers.nips.cc/paper/6989-yass-yet-another-spike-sorter
AUTHORS: Jin Hyung Lee, David E. Carlson, Hooshmand Shokri Razaghi, Weichi Yao, Georges A. Goetz, Espen Hagen,
Eleanor Batty, E.J. Chichilnisky, Gaute T. Einevoll, Liam Paninski
HIGHLIGHT: We present several new techniques that make dense MEA spike sorting more robust and scalable.

384, TITLE: Independence clustering (without a matrix)
https://papers.nips.cc/paper/6990-independence-clustering-without-a-matrix
AUTHORS: Daniil Ryabko
HIGHLIGHT: A consistent, computationally tractable algorithm for each of the settings is proposed, and a number of
fascinating open directions for further research are outlined.

385, TITLE: Fast amortized inference of neural activity from calcium imaging data with variational autoencoders
https://papers.nips.cc/paper/6991-fast-amortized-inference-of-neural-activity-from-calcium-imaging-data-with-variational-
autoencoders
AUTHORS: Artur Speiser, Jinyao Yan, Evan W. Archer, Lars Buesing, Srinivas C. Turaga, Jakob H. Macke
HIGHLIGHT: Here, we introduce a flexible algorithmic framework for fast, efficient and accurate extraction of neural spikes
from imaging data.

386, TITLE: Adaptive Active Hypothesis Testing under Limited Information
https://papers.nips.cc/paper/6992-adaptive-active-hypothesis-testing-under-limited-information
AUTHORS: Fabio Cecchi, Nidhi Hegde
HIGHLIGHT: In this paper we consider a special case where the decision maker has limited knowledge about the distribution
of observations for each action, in that only a binary value is observed.

387, TITLE: Streaming Weak Submodularity: Interpreting Neural Networks on the Fly
https://papers.nips.cc/paper/6993-streaming-weak-submodularity-interpreting-neural-networks-on-the-fly
AUTHORS: Ethan Elenberg, Alexandros G. Dimakis, Moran Feldman, Amin Karbasi
HIGHLIGHT: We cast interpretability of black-box classifiers as a combinatorial maximization problem and propose an efficient streaming algorithm to solve it subject to cardinality constraints.

388, TITLE: Successor Features for Transfer in Reinforcement Learning
https://papers.nips.cc/paper/6994-successor-features-for-transfer-in-reinforcement-learning
AUTHORS: Andre Barreto, Will Dabney, Remi Munos, Jonathan J. Hunt, Tom Schaul, Hado P. van Hasselt, David Silver
HIGHLIGHT: We propose a transfer framework for the scenario where the reward function changes between tasks but the environment's dynamics remain the same.

389, TITLE: Counterfactual Fairness
https://papers.nips.cc/paper/6995-counterfactual-fairness
AUTHORS: Matt J. Kusner, Joshua Loftus, Chris Russell, Ricardo Silva
HIGHLIGHT: In this paper, we develop a framework for modeling fairness using tools from causal inference.

390, TITLE: Prototypical Networks for Few-shot Learning
https://papers.nips.cc/paper/6996-prototypical-networks-for-few-shot-learning
AUTHORS: Jake Snell, Kevin Swersky, Richard Zemel
HIGHLIGHT: We propose Prototypical Networks for the problem of few-shot classification, where a classifier must generalize to new classes not seen in the training set, given only a small number of examples of each new class.

391, TITLE: Triple Generative Adversarial Nets
https://papers.nips.cc/paper/6997-triple-generative-adversarial-nets
AUTHORS: Chongxuan LI, Taufik Xu, Jun Zhu, Bo Zhang
HIGHLIGHT: To address the problems, we present triple generative adversarial net (Triple-GAN), which consists of three players---a generator, a discriminator and a classifier.

392, TITLE: Efficient Sublinear-Regret Algorithms for Online Sparse Linear Regression with Limited Observation
https://papers.nips.cc/paper/6998-efficient-sublinear-regret-algorithms-for-online-sparse-linear-regression-with-limited-observation
AUTHORS: Shinji Ito, Daisuke Hatano, Hanna Sumita, Akihiro Yabe, Takuro Fukunaga, Naonori Kakimura, Ken-Ichi Kawarabayashi
HIGHLIGHT: In this paper, we introduce mild assumptions to solve the problem.

393, TITLE: Mapping distinct timescales of functional interactions among brain networks
https://papers.nips.cc/paper/6999-mapping-distinct-timescales-of-functional-interactions-among-brain-networks
AUTHORS: Mali Sundaresan, Arshed Nabeel, Devarajan Sridharan
HIGHLIGHT: Here, we apply instantaneous and lag-based measures of conditional linear dependence, based on Granger-Geweke causality (GC), to infer network connections at distinct timescales from functional magnetic resonance imaging (fMRI) data.

394, TITLE: Multi-Armed Bandits with Metric Movement Costs
https://papers.nips.cc/paper/7000-multi-armed-bandits-with-metric-movement-costs
AUTHORS: Tomer Koren, Roi Livni, Yishay Mansour
HIGHLIGHT: Our main contribution gives a tight characterization of the expected minimax regret in this setting, in terms of a complexity measure $\mathcal{C}$ of the underlying metric which depends on its covering numbers.

395, TITLE: Learning A Structured Optimal Bipartite Graph for Co-Clustering
https://papers.nips.cc/paper/7001-learning-a-structured-optimal-bipartite-graph-for-co-clustering
AUTHORS: Feiping Nie, Xiaoqian Wang, Cheng Deng, Heng Huang
HIGHLIGHT: In this paper, we propose a novel co-clustering method to learn a bipartite graph with exactly k connected components, where k is the number of clusters.

396, TITLE: Learning Low-Dimensional Metrics
https://papers.nips.cc/paper/7002-learning-low-dimensional-metrics
AUTHORS: Blake Mason, Lalit Jain, Robert Nowak
HIGHLIGHT: This paper investigates the theoretical foundations of metric learning, focused on three key questions that are not fully addressed in prior work: 1) we consider learning general low-dimensional (low-rank) metrics as well sparse metrics;2) we develop upper and lower (minimax) bounds on the generalization error; 3)we quantify the sample complexity of metric learning in

40

terms of the dimension of the feature space and the dimension/rank of the underlying metric; 4) we also bound the accuracy of the learned metric relative to the underlying true generative metric.

397, TITLE: The Marginal Value of Adaptive Gradient Methods in Machine Learning
https://papers.nips.cc/paper/7003-the-marginal-value-of-adaptive-gradient-methods-in-machine-learning
AUTHORS: Ashia C. Wilson, Rebecca Roelofs, Mitchell Stern, Nati Srebro, Benjamin Recht
HIGHLIGHT: We construct an illustrative binary classification problem where the data is linearly separable, GD and SGD achieve zero test error, and AdaGrad, Adam, and RMSProp attain test errors arbitrarily close to half.

398, TITLE: Aggressive Sampling for Multi-class to Binary Reduction with Applications to Text Classification
https://papers.nips.cc/paper/7004-aggressive-sampling-for-multi-class-to-binary-reduction-with-applications-to-text-classification
AUTHORS: Bikash Joshi, Massih R. Amini, Ioannis Partalas, Franck Iutzeler, Yury Maximov
HIGHLIGHT: We propose a double sampling strategy on top of a multi-class to binary reduction strategy, which transforms the original multi-class problem into a binary classification problem over pairs of examples.

399, TITLE: Deconvolutional Paragraph Representation Learning
https://papers.nips.cc/paper/7005-deconvolutional-paragraph-representation-learning
AUTHORS: Yizhe Zhang, Dinghan Shen, Guoyin Wang, Zhe Gan, Ricardo Henao, Lawrence Carin
HIGHLIGHT: We propose a sequence-to-sequence, purely convolutional and deconvolutional autoencoding framework that is free of the above issue, while also being computationally efficient.

400, TITLE: Random Permutation Online Isotonic Regression
https://papers.nips.cc/paper/7006-random-permutation-online-isotonic-regression
AUTHORS: Wojciech Kotlowski, Wouter M. Koolen, Alan Malek
HIGHLIGHT: Here, we instead develop the more practical random permutation model.

401, TITLE: A Unified Game-Theoretic Approach to Multiagent Reinforcement Learning
https://papers.nips.cc/paper/7007-a-unified-game-theoretic-approach-to-multiagent-reinforcement-learning
AUTHORS: Marc Lanctot, Vinicius Zambaldi, Audrunas Gruslys, Angeliki Lazaridou, Karl Tuyls, Julien Perolat, David Silver, Thore Graepel
HIGHLIGHT: We introduce a new metric, joint-policy correlation, to quantify this effect.

402, TITLE: Inverse Filtering for Hidden Markov Models
https://papers.nips.cc/paper/7008-inverse-filtering-for-hidden-markov-models
AUTHORS: Robert Mattila, Cristian Rojas, Vikram Krishnamurthy, Bo Wahlberg
HIGHLIGHT: This paper considers a number of related inverse filtering problems for hidden Markov models (HMMs).

403, TITLE: Non-parametric Structured Output Networks
https://papers.nips.cc/paper/7009-non-parametric-structured-output-networks
AUTHORS: Andreas Lehrmann, Leonid Sigal
HIGHLIGHT: We propose non-parametric structured output networks (NSON), a modular approach that cleanly separates a non-parametric, structured posterior representation from a discriminative inference scheme but allows joint end-to-end training of both components.

404, TITLE: Learning Active Learning from Data
https://papers.nips.cc/paper/7010-learning-active-learning-from-data
AUTHORS: Ksenia Konyushkova, Raphael Sznitman, Pascal Fua
HIGHLIGHT: In this paper, we suggest a novel data-driven approach to active learning (AL).

405, TITLE: VAE Learning via Stein Variational Gradient Descent
https://papers.nips.cc/paper/7011-vae-learning-via-stein-variational-gradient-descent
AUTHORS: Yuchen Pu, Zhe Gan, Ricardo Henao, Chunyuan Li, Shaobo Han, Lawrence Carin
HIGHLIGHT: A new method for learning variational autoencoders (VAEs) is developed, based on Stein variational gradient descent.

406, TITLE: Reconstructing perceived faces from brain activations with deep adversarial neural decoding
https://papers.nips.cc/paper/7012-reconstructing-perceived-faces-from-brain-activations-with-deep-adversarial-neural-decoding
AUTHORS: Yagmur G??l?t?rk, Umut G??l?, Katja Seeliger, Sander Bosch, Rob van Lier, Marcel A. J. van Gerven
HIGHLIGHT: Here, we present a novel approach to solve the problem of reconstructing perceived stimuli from brain responses by combining probabilistic inference with deep learning.

407, TITLE: Efficient Use of Limited-Memory Accelerators for Linear Learning on Heterogeneous Systems
https://papers.nips.cc/paper/7013-efficient-use-of-limited-memory-accelerators-for-linear-learning-on-heterogeneous-systems
AUTHORS: Celestine D?nner, Thomas Parnell, Martin Jaggi
HIGHLIGHT: We propose a generic algorithmic building block to accelerate training of machine learning models on heterogeneous compute systems.

408, TITLE: Temporal Coherency based Criteria for Predicting Video Frames using Deep Multi-stage Generative Adversarial Networks
https://papers.nips.cc/paper/7014-temporal-coherency-based-criteria-for-predicting-video-frames-using-deep-multi-stage-generative-adversarial-networks
AUTHORS: Prateep Bhattacharjee, Sukhendu Das
HIGHLIGHT: In this paper, we deal with this problem using convolutional models within a multi-stage Generative Adversarial Networks (GAN) framework.

409, TITLE: Sobolev Training for Neural Networks
https://papers.nips.cc/paper/7015-sobolev-training-for-neural-networks
AUTHORS: Wojciech M. Czarnecki, Simon Osindero, Max Jaderberg, Grzegorz Swirszcz, Razvan Pascanu
HIGHLIGHT: At the heart of deep learning we aim to use neural networks as function approximators - training them to produce outputs from inputs in emulation of a ground truth function or data creation process.

410, TITLE: Multi-Information Source Optimization
https://papers.nips.cc/paper/7016-multi-information-source-optimization
AUTHORS: Matthias Poloczek, Jialei Wang, Peter Frazier
HIGHLIGHT: We present a novel algorithm that outperforms the state of the art for this problem by using a Gaussian process covariance kernel better suited to MISO than those used by previous approaches, and an acquisition function based on a one-step optimality analysis supported by efficient parallelization.

411, TITLE: Deep Reinforcement Learning from Human Preferences
https://papers.nips.cc/paper/7017-deep-reinforcement-learning-from-human-preferences
AUTHORS: Paul F. Christiano, Jan Leike, Tom Brown, Miljan Martic, Shane Legg, Dario Amodei
HIGHLIGHT: In this work, we explore goals defined in terms of (non-expert) human preferences between pairs of trajectory segments.

412, TITLE: On the Fine-Grained Complexity of Empirical Risk Minimization: Kernel Methods and Neural Networks
https://papers.nips.cc/paper/7018-on-the-fine-grained-complexity-of-empirical-risk-minimization-kernel-methods-and-neural-networks
AUTHORS: Arturs Backurs, Piotr Indyk, Ludwig Schmidt
HIGHLIGHT: We address this issue for multiple popular ERM problems including kernel SVMs, kernel ridge regression, and training the final layer of a neural network.

413, TITLE: Policy Gradient With Value Function Approximation For Collective Multiagent Planning
https://papers.nips.cc/paper/7019-policy-gradient-with-value-function-approximation-for-collective-multiagent-planning
AUTHORS: Duc Thien Nguyen, Akshat Kumar, Hoong Chuin Lau
HIGHLIGHT: Our main contribution is an actor-critic (AC) reinforcement learning method for optimizing CDec-POMDP policies.

414, TITLE: Adversarial Symmetric Variational Autoencoder
https://papers.nips.cc/paper/7020-adversarial-symmetric-variational-autoencoder
AUTHORS: Yuchen Pu, Weiyao Wang, Ricardo Henao, Liqun Chen, Zhe Gan, Chunyuan Li, Lawrence Carin
HIGHLIGHT: An extensive set of experiments is performed, in which we demonstrate state-of-the-art data reconstruction and generation on several image benchmarks datasets.

415, TITLE: Unified representation of tractography and diffusion-weighted MRI data using sparse multidimensional arrays
https://papers.nips.cc/paper/7021-unified-representation-of-tractography-and-diffusion-weighted-mri-data-using-sparse-multidimensional-arrays
AUTHORS: Cesar F. Caiafa, Olaf Sporns, Andrew Saykin, Franco Pestilli
HIGHLIGHT: In this paper, we introduce a method to encode dMRI signals and large connectomes, i.e., those that range from hundreds of thousands to millions of fascicles (bundles of neuronal axons), by using a sparse tensor decomposition.

416, TITLE: A Minimax Optimal Algorithm for Crowdsourcing
https://papers.nips.cc/paper/7022-a-minimax-optimal-algorithm-for-crowdsourcing
AUTHORS: Thomas Bonald, Richard Combes
HIGHLIGHT: We propose a novel lower bound on the minimax estimation error which applies to any estimation procedure.

417, TITLE: Estimating Accuracy from Unlabeled Data: A Probabilistic Logic Approach
https://papers.nips.cc/paper/7023-estimating-accuracy-from-unlabeled-data-a-probabilistic-logic-approach
AUTHORS: Emmanouil Platanios, Hoifung Poon, Tom M. Mitchell, Eric J. Horvitz
HIGHLIGHT: We propose an efficient method to estimate the accuracy of classifiers using only unlabeled data.

418, TITLE: A Decomposition of Forecast Error in Prediction Markets
https://papers.nips.cc/paper/7024-a-decomposition-of-forecast-error-in-prediction-markets
AUTHORS: Miro Dudik, Sebastien Lahaie, Ryan M. Rogers, Jennifer Wortman Vaughan
HIGHLIGHT: Our goal is to make explicit the tradeoffs between these error components, influenced by design decisions such as the functional form of the cost function and the amount of liquidity in the market.

419, TITLE: Safe Adaptive Importance Sampling
https://papers.nips.cc/paper/7025-safe-adaptive-importance-sampling
AUTHORS: Sebastian U. Stich, Anant Raj, Martin Jaggi
HIGHLIGHT: In this paper we propose an efficient approximation of gradient-based sampling, which is based on safe bounds on the gradient.

420, TITLE: Variational Walkback: Learning a Transition Operator as a Stochastic Recurrent Net
https://papers.nips.cc/paper/7026-variational-walkback-learning-a-transition-operator-as-a-stochastic-recurrent-net
AUTHORS: Anirudh Goyal ALIAS PARTH GOYAL, Nan Rosemary Ke, Surya Ganguli, Yoshua Bengio
HIGHLIGHT: We propose a novel method to {\it directly} learn a stochastic transition operator whose repeated application provides generated samples.

421, TITLE: Polynomial Codes: an Optimal Design for High-Dimensional Coded Matrix Multiplication
https://papers.nips.cc/paper/7027-polynomial-codes-an-optimal-design-for-high-dimensional-coded-matrix-multiplication
AUTHORS: Qian Yu, Mohammad Maddah-Ali, Salman Avestimehr
HIGHLIGHT: We propose a computation strategy that leverages ideas from coding theory to design intermediate computations at the worker nodes, in order to optimally deal with straggling workers.

422, TITLE: Unsupervised Learning of Disentangled Representations from Video
https://papers.nips.cc/paper/7028-unsupervised-learning-of-disentangled-representations-from-video
AUTHORS: Emily L. Denton, vighnesh Birodkar
HIGHLIGHT: We present a new model DRNET that learns disentangled image representations from video.

423, TITLE: Federated Multi-Task Learning
https://papers.nips.cc/paper/7029-federated-multi-task-learning
AUTHORS: Virginia Smith, Chao-Kai Chiang, Maziar Sanjabi, Ameet S. Talwalkar
HIGHLIGHT: In this work, we show that multi-task learning is naturally suited to handle the statistical challenges of this setting, and propose a novel systems-aware optimization method, MOCHA, that is robust to practical systems issues.

424, TITLE: Is Input Sparsity Time Possible for Kernel Low-Rank Approximation?
https://papers.nips.cc/paper/7030-is-input-sparsity-time-possible-for-kernel-low-rank-approximation
AUTHORS: Cameron Musco, David Woodruff
HIGHLIGHT: In this work we study the limits of computationally efficient low-rank kernel approximation.

425, TITLE: The Expxorcist: Nonparametric Graphical Models Via Conditional Exponential Densities
https://papers.nips.cc/paper/7031-the-expxorcist-nonparametric-graphical-models-via-conditional-exponential-densities
AUTHORS: Arun Suggala, Mladen Kolar, Pradeep K. Ravikumar
HIGHLIGHT: In this paper, we leverage recent developments to propose a class of non-parametric models which have very attractive computational and statistical properties.

426, TITLE: Improved Graph Laplacian via Geometric Self-Consistency
https://papers.nips.cc/paper/7032-improved-graph-laplacian-via-geometric-self-consistency
AUTHORS: Dominique Joncas, Marina Meila, James McQueen

HIGHLIGHT: We address the problem of setting the kernel bandwidth, epps, used by Manifold Learning algorithms to construct the graph Laplacian.

427, TITLE: Dual Path Networks
https://papers.nips.cc/paper/7033-dual-path-networks
AUTHORS: Yunpeng Chen, Jianan Li, Huaxin Xiao, Xiaojie Jin, Shuicheng Yan, Jiashi Feng
HIGHLIGHT: In this work, we present a simple, highly efficient and modularized Dual Path Network (DPN) for image classification which presents a new topology of connection paths internally.

428, TITLE: Faster and Non-ergodic O(1/K) Stochastic Alternating Direction Method of Multipliers
https://papers.nips.cc/paper/7034-faster-and-non-ergodic-o1k-stochastic-alternating-direction-method-of-multipliers
AUTHORS: Cong Fang, Feng Cheng, Zhouchen Lin
HIGHLIGHT: In this paper, we propose a new stochastic ADMM which elaborately integrates Nesterov's extrapolation and VR techniques.

429, TITLE: A Probabilistic Framework for Nonlinearities in Stochastic Neural Networks
https://papers.nips.cc/paper/7035-a-probabilistic-framework-for-nonlinearities-in-stochastic-neural-networks
AUTHORS: Qinliang Su, xuejun Liao, Lawrence Carin
HIGHLIGHT: We present a probabilistic framework for nonlinearities, based on doubly truncated Gaussian distributions.

430, TITLE: Distral: Robust multitask reinforcement learning
https://papers.nips.cc/paper/7036-distral-robust-multitask-reinforcement-learning
AUTHORS: Yee Teh, Victor Bapst, Wojciech M. Czarnecki, John Quan, James Kirkpatrick, Raia Hadsell, Nicolas Heess, Razvan Pascanu
HIGHLIGHT: We propose a new approach for joint training of multiple tasks, which we refer to as Distral (DIStill & TRAnsfer Learning).

431, TITLE: Online Learning of Optimal Bidding Strategy in Repeated Multi-Commodity Auctions
https://papers.nips.cc/paper/7037-online-learning-of-optimal-bidding-strategy-in-repeated-multi-commodity-auctions
AUTHORS: M. Sevi Baltaoglu, Lang Tong, Qing Zhao
HIGHLIGHT: As a bidding strategy, we propose a polynomial-time algorithm, inspired by the dynamic programming approach to the knapsack problem.

432, TITLE: Trimmed Density Ratio Estimation
https://papers.nips.cc/paper/7038-trimmed-density-ratio-estimation
AUTHORS: Song Liu, Akiko Takeda, Taiji Suzuki, Kenji Fukumizu
HIGHLIGHT: In this paper, we present a robust estimator which automatically identifies and trims outliers.

433, TITLE: Training recurrent networks to generate hypotheses about how the brain solves hard navigation problems
https://papers.nips.cc/paper/7039-training-recurrent-networks-to-generate-hypotheses-about-how-the-brain-solves-hard-navigation-problems
AUTHORS: Ingmar Kanitscheider, Ila Fiete
HIGHLIGHT: Our goal is to make sense of how the diverse phenomenology in the brain's spatial navigation circuits is related to their function.

434, TITLE: Visual Interaction Networks: Learning a Physics Simulator from Video
https://papers.nips.cc/paper/7040-visual-interaction-networks-learning-a-physics-simulator-from-video
AUTHORS: Nicholas Watters, Daniel Zoran, Theophane Weber, Peter Battaglia, Razvan Pascanu, Andrea Tacchetti
HIGHLIGHT: We introduce the Visual Interaction Network, a general-purpose model for learning the dynamics of a physical system from raw visual observations.

435, TITLE: Reconstruct & Crush Network
https://papers.nips.cc/paper/7041-reconstruct-crush-network
AUTHORS: Erinc Merdivan, Mohammad Reza Loghmani, Matthieu Geist
HIGHLIGHT: This article introduces an energy-based model that is adversarial regarding data: it minimizes the energy for a given data distribution (the positive samples) while maximizing the energy for another given data distribution (the negative or unlabeled samples).

436, TITLE: Streaming Robust Submodular Maximization: A Partitioned Thresholding Approach
https://papers.nips.cc/paper/7042-streaming-robust-submodular-maximization-a-partitioned-thresholding-approach

AUTHORS: Slobodan Mitrovic, Ilija Bogunovic, Ashkan Norouzi-Fard, Jakub M. Tarnawski, Volkan Cevher
HIGHLIGHT: We study the classical problem of maximizing a monotone submodular function subject to a cardinality constraint k, with two additional twists: (i) elements arrive in a streaming fashion, and (ii) m items from the algorithm's memory are removed after the stream is finished.

437, TITLE: Simple strategies for recovering inner products from coarsely quantized random projections
https://papers.nips.cc/paper/7043-simple-strategies-for-recovering-inner-products-from-coarsely-quantized-random-projections
AUTHORS: Ping Li, Martin Slawski
HIGHLIGHT: One implication is that in most scenarios of practical interest, there is no need for a sophisticated recovery approach like maximum likelihood estimation as considered in previous work on the subject.

438, TITLE: Discovering Potential Correlations via Hypercontractivity
https://papers.nips.cc/paper/7044-discovering-potential-correlations-via-hypercontractivity
AUTHORS: Hyeji Kim, Weihao Gao, Sreeram Kannan, Sewoong Oh, Pramod Viswanath
HIGHLIGHT: To bridge this gap, (i) we postulate a set of natural axioms that we expect a measure of potential correlation to satisfy; (ii) we show that the rate of information bottleneck, i.e., the hypercontractivity coefficient, satisfies all the proposed axioms; (iii) we provide a novel estimator to estimate the hypercontractivity coefficient from samples; and (iv) we provide numerical experiments demonstrating that this proposed estimator discovers potential correlations among various indicators of WHO datasets, is robust in discovering gene interactions from gene expression time series data, and is statistically more powerful than the estimators for other correlation measures in binary hypothesis testing of canonical examples of potential correlations.

439, TITLE: Doubly Stochastic Variational Inference for Deep Gaussian Processes
https://papers.nips.cc/paper/7045-doubly-stochastic-variational-inference-for-deep-gaussian-processes
AUTHORS: Hugh Salimbeni, Marc Deisenroth
HIGHLIGHT: We present a doubly stochastic variational inference algorithm, which does not force independence between layers.

440, TITLE: Ranking Data with Continuous Labels through Oriented Recursive Partitions
https://papers.nips.cc/paper/7046-ranking-data-with-continuous-labels-through-oriented-recursive-partitions
AUTHORS: St?phan Cl?men?on, Mastane Achab
HIGHLIGHT: From the theoretical side, we describe the optimal elements of this problem and provide statistical guarantees for empirical Kendall ? maximiza- tion under appropriate conditions for the class of scoring function candidates.

441, TITLE: Scalable Model Selection for Belief Networks
https://papers.nips.cc/paper/7047-scalable-model-selection-for-belief-networks
AUTHORS: Zhao Song, Yusuke Muraoka, Ryohei Fujimaki, Lawrence Carin
HIGHLIGHT: We propose a scalable algorithm for model selection in sigmoid belief networks (SBNs), based on the factorized asymptotic Bayesian (FAB) framework.

442, TITLE: Targeting EEG/LFP Synchrony with Neural Nets
https://papers.nips.cc/paper/7048-targeting-eeglfp-synchrony-with-neural-nets
AUTHORS: Yitong Li, michael Murias, samantha Major, geraldine Dawson, Kafui Dzirasa, Lawrence Carin, David E. Carlson
HIGHLIGHT: We consider the analysis of Electroencephalography (EEG) and Local Field Potential (LFP) datasets, which are "big" in terms of the size of recorded data but rarely have sufficient labels required to train complex models (e.g., conventional deep learning methods).

443, TITLE: Near-Optimal Edge Evaluation in Explicit Generalized Binomial Graphs
https://papers.nips.cc/paper/7049-near-optimal-edge-evaluation-in-explicit-generalized-binomial-graphs
AUTHORS: Sanjiban Choudhury, Shervin Javdani, Siddhartha Srinivasa, Sebastian Scherer
HIGHLIGHT: In this paper, we do so by drawing a novel equivalence between motion planning and the Bayesian active learning paradigm of decision region determination (DRD).

444, TITLE: Non-Stationary Spectral Kernels
https://papers.nips.cc/paper/7050-non-stationary-spectral-kernels
AUTHORS: Sami Remes, Markus Heinonen, Samuel Kaski
HIGHLIGHT: We propose non-stationary spectral kernels for Gaussian process regression by modelling the spectral density of a non-stationary kernel function as a mixture of input-dependent Gaussian process frequency density surfaces.

445, TITLE: Overcoming Catastrophic Forgetting by Incremental Moment Matching
https://papers.nips.cc/paper/7051-overcoming-catastrophic-forgetting-by-incremental-moment-matching

45

AUTHORS: Sang-Woo Lee, Jin-Hwa Kim, Jaehyun Jun, Jung-Woo Ha, Byoung-Tak Zhang
HIGHLIGHT: Here, we propose a method, i.e. incremental moment matching (IMM), to resolve this problem.

446, TITLE: Balancing information exposure in social networks
https://papers.nips.cc/paper/7052-balancing-information-exposure-in-social-networks
AUTHORS: Kiran Garimella, Aristides Gionis, Nikos Parotsidis, Nikolaj Tatti
HIGHLIGHT: In this paper we address the problem of balancing the information exposure} in a social network.

447, TITLE: SafetyNets: Verifiable Execution of Deep Neural Networks on an Untrusted Cloud
https://papers.nips.cc/paper/7053-safetynets-verifiable-execution-of-deep-neural-networks-on-an-untrusted-cloud
AUTHORS: Zahra Ghodsi, Tianyu Gu, Siddharth Garg
HIGHLIGHT: We propose SafetyNets, a framework that enables an untrusted server (the cloud) to provide a client with a short mathematical proof of the correctness of inference tasks that they perform on behalf of the client.

448, TITLE: Query Complexity of Clustering with Side Information
https://papers.nips.cc/paper/7054-query-complexity-of-clustering-with-side-information
AUTHORS: Arya Mazumdar, Barna Saha
HIGHLIGHT: In this paper, we provide a rigorous theoretical study of this basic problem of query complexity of interactive clustering, and give strong information theoretic lower bounds, as well as nearly matching upper bounds.

449, TITLE: QMDP-Net: Deep Learning for Planning under Partial Observability
https://papers.nips.cc/paper/7055-qmdp-net-deep-learning-for-planning-under-partial-observability
AUTHORS: Peter Karkus, David Hsu, Wee Sun Lee
HIGHLIGHT: This paper introduces the QMDP-net, a neural network architecture for planning under partial observability.

450, TITLE: Robust Optimization for Non-Convex Objectives
https://papers.nips.cc/paper/7056-robust-optimization-for-non-convex-objectives
AUTHORS: Robert S. Chen, Brendan Lucier, Yaron Singer, Vasilis Syrgkanis
HIGHLIGHT: We consider robust optimization problems, where the goal is to optimize in the worst case over a class of objective functions.

451, TITLE: Thy Friend is My Friend: Iterative Collaborative Filtering for Sparse Matrix Estimation
https://papers.nips.cc/paper/7057-thy-friend-is-my-friend-iterative-collaborative-filtering-for-sparse-matrix-estimation
AUTHORS: Christian Borgs, Jennifer Chayes, Christina E. Lee, Devavrat Shah
HIGHLIGHT: Inspired by classical collaborative filtering for recommendation systems, we propose a novel iterative, collaborative filtering-style algorithm for matrix estimation in this generic setting.

452, TITLE: Adaptive Classification for Prediction Under a Budget
https://papers.nips.cc/paper/7058-adaptive-classification-for-prediction-under-a-budget
AUTHORS: Feng Nan, Venkatesh Saligrama
HIGHLIGHT: We propose a novel adaptive approximation approach for test-time resource-constrained prediction motivated by Mobile, IoT, health, security and other applications, where constraints in the form of computation, communication, latency and feature acquisition costs arise.
We pose an empirical loss minimization problem with cost constraints to jointly train gating and prediction models.

453, TITLE: Convergence rates of a partition based Bayesian multivariate density estimation method
https://papers.nips.cc/paper/7059-convergence-rates-of-a-partition-based-bayesian-multivariate-density-estimation-method
AUTHORS: Linxi Liu, Dangna Li, Wing Hung Wong
HIGHLIGHT: We study a class of non-parametric density estimators under Bayesian settings.

454, TITLE: Affine-Invariant Online Optimization and the Low-rank Experts Problem
https://papers.nips.cc/paper/7060-affine-invariant-online-optimization-and-the-low-rank-experts-problem
AUTHORS: Tomer Koren, Roi Livni
HIGHLIGHT: We present a new affine-invariant optimization algorithm called Online Lazy Newton.

455, TITLE: Beyond Worst-case: A Probabilistic Analysis of Affine Policies in Dynamic Optimization
https://papers.nips.cc/paper/7061-beyond-worst-case-a-probabilistic-analysis-of-affine-policies-in-dynamic-optimization
AUTHORS: Omar El Housni, Vineet Goyal
HIGHLIGHT: In this paper, we aim to address this stark-contrast between the worst-case and the empirical performance of affine policies.

456, TITLE: A Unified Approach to Interpreting Model Predictions
https://papers.nips.cc/paper/7062-a-unified-approach-to-interpreting-model-predictions
AUTHORS: Scott M. Lundberg, Su-In Lee
HIGHLIGHT: To address this problem, we present a unified framework for interpreting predictions, SHAP (SHapley Additive exPlanations).

457, TITLE: Stochastic Approximation for Canonical Correlation Analysis
https://papers.nips.cc/paper/7063-stochastic-approximation-for-canonical-correlation-analysis
AUTHORS: Raman Arora, Teodor Vanislavov Marinov, Poorya Mianjy, Nati Srebro
HIGHLIGHT: We propose novel first-order stochastic approximation algorithms for canonical correlation analysis (CCA).

458, TITLE: Resurrecting the sigmoid in deep learning through dynamical isometry: theory and practice
https://papers.nips.cc/paper/7064-resurrecting-the-sigmoid-in-deep-learning-through-dynamical-isometry-theory-and-practice
AUTHORS: Jeffrey Pennington, Samuel Schoenholz, Surya Ganguli
HIGHLIGHT: We address this question by employing powerful tools from free probability theory to analytically compute the {\it entire} singular value distribution of a deep network's input-output Jacobian.

459, TITLE: Sample and Computationally Efficient Learning Algorithms under S-Concave Distributions
https://papers.nips.cc/paper/7065-sample-and-computationally-efficient-learning-algorithms-under-s-concave-distributions
AUTHORS: Maria-Florina F. Balcan, Hongyang Zhang
HIGHLIGHT: In this work, we introduce new convex geometry tools to study the properties of s-concave distributions and use these properties to provide bounds on quantities of interest to learning including the probability of disagreement between two halfspaces, disagreement outside a band, and the disagreement coefficient.

460, TITLE: Scalable Variational Inference for Dynamical Systems
https://papers.nips.cc/paper/7066-scalable-variational-inference-for-dynamical-systems
AUTHORS: Nico S. Gorbach, Stefan Bauer, Joachim M. Buhmann
HIGHLIGHT: Using an existing gradient matching approach, we propose a scalable variational inference framework which can infer states and parameters simultaneously, offers computational speedups, improved accuracy and works well even under model misspecifications in a partially observable system.

461, TITLE: Context Selection for Embedding Models
https://papers.nips.cc/paper/7067-context-selection-for-embedding-models
AUTHORS: Liping Liu, Francisco Ruiz, Susan Athey, David Blei
HIGHLIGHT: In this paper, we show that conditioning on all the elements in the context is not optimal.

462, TITLE: Working hard to know your neighbor's margins: Local descriptor learning loss
https://papers.nips.cc/paper/7068-working-hard-to-know-your-neighbors-margins-local-descriptor-learning-loss
AUTHORS: Anastasiia Mishchuk, Dmytro Mishkin, Filip Radenovic, Jiri Matas
HIGHLIGHT: We introduce a loss for metric learning, which is inspired by the Lowe's matching criterion for SIFT.

463, TITLE: Accelerated Stochastic Greedy Coordinate Descent by Soft Thresholding Projection onto Simplex
https://papers.nips.cc/paper/7069-accelerated-stochastic-greedy-coordinate-descent-by-soft-thresholding-projection-onto-simplex
AUTHORS: Chaobing Song, Shaobo Cui, Yong Jiang, Shu-Tao Xia
HIGHLIGHT: In this paper we study the well-known greedy coordinate descent (GCD) algorithm to solve ℓ_1-regularized problems and improve GCD by the two popular strategies: Nesterov's acceleration and stochastic optimization.

464, TITLE: Multi-Task Learning for Contextual Bandits
https://papers.nips.cc/paper/7070-multi-task-learning-for-contextual-bandits
AUTHORS: Aniket Anand Deshmukh, Urun Dogan, Clay Scott
HIGHLIGHT: In this work, we propose a multi-task learning framework for contextual bandit problems.

465, TITLE: Learning to Prune Deep Neural Networks via Layer-wise Optimal Brain Surgeon
https://papers.nips.cc/paper/7071-learning-to-prune-deep-neural-networks-via-layer-wise-optimal-brain-surgeon
AUTHORS: Xin Dong, Shangyu Chen, Sinno Pan
HIGHLIGHT: In this paper, we propose a new layer-wise pruning method for deep neural networks.

466, TITLE: Accelerated First-order Methods for Geodesically Convex Optimization on Riemannian Manifolds

https://papers.nips.cc/paper/7072-accelerated-first-order-methods-for-geodesically-convex-optimization-on-riemannian-manifolds
AUTHORS: Yuanyuan Liu, Fanhua Shang, James Cheng, Hong Cheng, Licheng Jiao
HIGHLIGHT: In this paper, we propose an accelerated first-order method for geodesically convex optimization, which is the generalization of the standard Nesterov's accelerated method from Euclidean space to nonlinear Riemannian space.

467, TITLE: Selective Classification for Deep Neural Networks
https://papers.nips.cc/paper/7073-selective-classification-for-deep-neural-networks
AUTHORS: Yonatan Geifman, Ran El-Yaniv
HIGHLIGHT: In this paper we propose a method to construct a selective classifier given a trained neural network.

468, TITLE: Minimax Estimation of Bandable Precision Matrices
https://papers.nips.cc/paper/7074-minimax-estimation-of-bandable-precision-matrices
AUTHORS: Addison Hu, Sahand Negahban
HIGHLIGHT: We establish minimax estimation bounds for estimating banded precision matrices under the spectral norm.

469, TITLE: Monte-Carlo Tree Search by Best Arm Identification
https://papers.nips.cc/paper/7075-monte-carlo-tree-search-by-best-arm-identification
AUTHORS: Emilie Kaufmann, Wouter M. Koolen
HIGHLIGHT: We study the game tree search problem, where the goal is to quickly identify the optimal move in a given game tree by sequentially sampling its stochastic payoffs.

470, TITLE: Group Additive Structure Identification for Kernel Nonparametric Regression
https://papers.nips.cc/paper/7076-group-additive-structure-identification-for-kernel-nonparametric-regression
AUTHORS: Chao Pan, Michael Zhu
HIGHLIGHT: The method utilizes a novel complexity measure we derive for group additive structures.

471, TITLE: Fast, Sample-Efficient Algorithms for Structured Phase Retrieval
https://papers.nips.cc/paper/7077-fast-sample-efficient-algorithms-for-structured-phase-retrieval
AUTHORS: Gauri Jagatap, Chinmay Hegde
HIGHLIGHT: We consider the problem of recovering a signal x in R^n, from magnitude-only measurements, $y\_i = |a\_i^T x|$ for i={1,2...m}.

472, TITLE: Hash Embeddings for Efficient Word Representations
https://papers.nips.cc/paper/7078-hash-embeddings-for-efficient-word-representations
AUTHORS: Dan Tito Svenstrup, Jonas Hansen, Ole Winther
HIGHLIGHT: We present hash embeddings, an efficient method for representing words in a continuous vector form.

473, TITLE: Online Learning for Multivariate Hawkes Processes
https://papers.nips.cc/paper/7079-online-learning-for-multivariate-hawkes-processes
AUTHORS: Yingxiang Yang, Jalal Etesami, Niao He, Negar Kiyavash
HIGHLIGHT: We develop a nonparametric and online learning algorithm that estimates the triggering functions of a multivariate Hawkes process (MHP).

474, TITLE: Maximum Margin Interval Trees
https://papers.nips.cc/paper/7080-maximum-margin-interval-trees
AUTHORS: Alexandre Drouin, Toby Hocking, Francois Laviolette
HIGHLIGHT: Whereas most existing algorithms for this task are linear models, in this paper we investigate learning nonlinear tree models.

475, TITLE: DropoutNet: Addressing Cold Start in Recommender Systems
https://papers.nips.cc/paper/7081-dropoutnet-addressing-cold-start-in-recommender-systems
AUTHORS: Maksims Volkovs, Guangwei Yu, Tomi Poutanen
HIGHLIGHT: Inspired by these results we propose a neural network based latent model called DropoutNet to address the cold start problem in recommender systems.

476, TITLE: A simple neural network module for relational reasoning
https://papers.nips.cc/paper/7082-a-simple-neural-network-module-for-relational-reasoning
AUTHORS: Adam Santoro, David Raposo, David G. Barrett, Mateusz Malinowski, Razvan Pascanu, Peter Battaglia, Timothy Lillicrap

HIGHLIGHT: In this paper we describe how to use Relation Networks (RNs) as a simple plug-and-play module to solve problems that fundamentally hinge on relational reasoning.

477, TITLE: Q-LDA: Uncovering Latent Patterns in Text-based Sequential Decision Processes
https://papers.nips.cc/paper/7083-q-lda-uncovering-latent-patterns-in-text-based-sequential-decision-processes
AUTHORS: Jianshu Chen, Chong Wang, Lin Xiao, Ji He, Lihong Li, Li Deng
HIGHLIGHT: In this paper, we present a probabilistic model, Q-LDA, to uncover latent patterns in text-based sequential decision processes.

478, TITLE: Online Reinforcement Learning in Stochastic Games
https://papers.nips.cc/paper/7084-online-reinforcement-learning-in-stochastic-games
AUTHORS: Chen-Yu Wei, Yi-Te Hong, Chi-Jen Lu
HIGHLIGHT: We propose the \textsc{UCSG} algorithm that achieves a sublinear regret compared to the game value when competing with an arbitrary opponent.

479, TITLE: Position-based Multiple-play Bandit Problem with Unknown Position Bias
https://papers.nips.cc/paper/7085-position-based-multiple-play-bandit-problem-with-unknown-position-bias
AUTHORS: Junpei Komiyama, Junya Honda, Akiko Takeda
HIGHLIGHT: We propose the Permutation Minimum Empirical Divergence (PMED) algorithm and derive its asymptotically optimal regret bound.

480, TITLE: Active Exploration for Learning Symbolic Representations
https://papers.nips.cc/paper/7086-active-exploration-for-learning-symbolic-representations
AUTHORS: Garrett Andersen, George Konidaris
HIGHLIGHT: We introduce an online active exploration algorithm for data-efficiently learning an abstract symbolic model of an environment.

481, TITLE: Clone MCMC: Parallel High-Dimensional Gaussian Gibbs Sampling
https://papers.nips.cc/paper/7087-clone-mcmc-parallel-high-dimensional-gaussian-gibbs-sampling
AUTHORS: Andrei-Cristian Barbos, Francois Caron, Jean-Fran?ois Giovannelli, Arnaud Doucet
HIGHLIGHT: We propose a generalized Gibbs sampler algorithm for obtaining samples approximately distributed from a high-dimensional Gaussian distribution.

482, TITLE: Fair Clustering Through Fairlets
https://papers.nips.cc/paper/7088-fair-clustering-through-fairlets
AUTHORS: Flavio Chierichetti, Ravi Kumar, Silvio Lattanzi, Sergei Vassilvitskii
HIGHLIGHT: En route we introduce the concept of fairlets, which are minimal sets that satisfy fair representation while approximately preserving the clustering objective.

483, TITLE: Polynomial time algorithms for dual volume sampling
https://papers.nips.cc/paper/7089-polynomial-time-algorithms-for-dual-volume-sampling
AUTHORS: Chengtao Li, Stefanie Jegelka, Suvrit Sra
HIGHLIGHT: This method was proposed by Avron and Boutsidis (2013), who showed it to be a promising method for column subset selection and its multiple applications.

484, TITLE: Hindsight Experience Replay
https://papers.nips.cc/paper/7090-hindsight-experience-replay
AUTHORS: Marcin Andrychowicz, Filip Wolski, Alex Ray, Jonas Schneider, Rachel Fong, Peter Welinder, Bob McGrew, Josh Tobin, OpenAI Pieter Abbeel, Wojciech Zaremba
HIGHLIGHT: We present a novel technique called Hindsight Experience Replay which allows sample-efficient learning from rewards which are sparse and binary and therefore avoid the need for complicated reward engineering.

485, TITLE: Stochastic and Adversarial Online Learning without Hyperparameters
https://papers.nips.cc/paper/7091-stochastic-and-adversarial-online-learning-without-hyperparameters
AUTHORS: Ashok Cutkosky, Kwabena A. Boahen
HIGHLIGHT: Here we introduce an online optimization algorithm that achieves $O(\log^4(T))$ regret in a wide class of stochastic settings while gracefully degrading to the optimal $O(\sqrt{T})$ regret in adversarial settings (up to logarithmic factors).

486, TITLE: Teaching Machines to Describe Images with Natural Language Feedback
https://papers.nips.cc/paper/7092-teaching-machines-to-describe-images-with-natural-language-feedback

AUTHORS: huan ling, Sanja Fidler
HIGHLIGHT: In this paper, we bring a human in the loop, and enable a human teacher to give feedback to a learning agent in the form of natural language.

487, TITLE: Perturbative Black Box Variational Inference
https://papers.nips.cc/paper/7093-perturbative-black-box-variational-inference
AUTHORS: Robert Bamler, Cheng Zhang, Manfred Opper, Stephan Mandt
HIGHLIGHT: In this paper, we view BBVI with generalized divergences as a form of estimating the marginal likelihood via biased importance sampling.

488, TITLE: GibbsNet: Iterative Adversarial Inference for Deep Graphical Models
https://papers.nips.cc/paper/7094-gibbsnet-iterative-adversarial-inference-for-deep-graphical-models
AUTHORS: Alex M. Lamb, Devon Hjelm, Yaroslav Ganin, Joseph Paul Cohen, Aaron C. Courville, Yoshua Bengio
HIGHLIGHT: We propose a novel approach to learning the joint distribution between the data and a latent code which uses an adversarially learned iterative procedure to gradually refine the joint distribution, $p(x, z)$, to better match with the data distribution on each step.

489, TITLE: PointNet++: Deep Hierarchical Feature Learning on Point Sets in a Metric Space
https://papers.nips.cc/paper/7095-pointnet-deep-hierarchical-feature-learning-on-point-sets-in-a-metric-space
AUTHORS: Charles Ruizhongtai Qi, Li Yi, Hao Su, Leonidas J. Guibas
HIGHLIGHT: In this work, we introduce a hierarchical neural network that applies PointNet recursively on a nested partitioning of the input point set.
With further observation that point sets are usually sampled with varying densities, which results in greatly decreased performance for networks trained on uniform densities, we propose novel set learning layers to adaptively combine features from multiple scales.

490, TITLE: Regularizing Deep Neural Networks by Noise: Its Interpretation and Optimization
https://papers.nips.cc/paper/7096-regularizing-deep-neural-networks-by-noise-its-interpretation-and-optimization
AUTHORS: Hyeonwoo Noh, Tackgeun You, Jonghwan Mun, Bohyung Han
HIGHLIGHT: This paper addresses the above issues by 1) interpreting that the conventional training methods with regularization by noise injection optimize the lower bound of the true objective and 2) proposing a technique to achieve a tighter lower bound using multiple noise samples per training example in a stochastic gradient descent iteration.

491, TITLE: Learning Graph Representations with Embedding Propagation
https://papers.nips.cc/paper/7097-learning-graph-representations-with-embedding-propagation
AUTHORS: Alberto Garcia Duran, Mathias Niepert
HIGHLIGHT: We propose EP, Embedding Propagation, an unsupervised learning framework for graph-structured data.

492, TITLE: Efficient Modeling of Latent Information in Supervised Learning using Gaussian Processes
https://papers.nips.cc/paper/7098-efficient-modeling-of-latent-information-in-supervised-learning-using-gaussian-processes
AUTHORS: Zhenwen Dai, Mauricio ?lvarez, Neil Lawrence
HIGHLIGHT: We present a new model called Latent Variable Multiple Output Gaussian Processes (LVMOGP) that allows to jointly model multiple conditions for regression and generalize to a new condition with a few data points at test time.

493, TITLE: A-NICE-MC: Adversarial Training for MCMC
https://papers.nips.cc/paper/7099-a-nice-mc-adversarial-training-for-mcmc
AUTHORS: Jiaming Song, Shengjia Zhao, Stefano Ermon
HIGHLIGHT: We propose A-NICE-MC, a novel method to train flexible parametric Markov chain kernels to produce samples with desired properties.

494, TITLE: Excess Risk Bounds for the Bayes Risk using Variational Inference in Latent Gaussian Models
https://papers.nips.cc/paper/7100-excess-risk-bounds-for-the-bayes-risk-using-variational-inference-in-latent-gaussian-models
AUTHORS: Rishit Sheth, Roni Khardon
HIGHLIGHT: To handle intractable inference, research in this area has developed new approximation methods that are fast and effective.

495, TITLE: Real-Time Bidding with Side Information
https://papers.nips.cc/paper/7101-real-time-bidding-with-side-information
AUTHORS: arthur flajolet, Patrick Jaillet
HIGHLIGHT: We consider the problem of repeated bidding in online advertising auctions when some side information (e.g. browser cookies) is available ahead of submitting a bid in the form of a d-dimensional vector.

496, TITLE:	Saliency-based Sequential Image Attention with Multiset Prediction
https://papers.nips.cc/paper/7102-saliency-based-sequential-image-attention-with-multiset-prediction
AUTHORS:	Sean Welleck, Jialin Mao, Kyunghyun Cho, Zheng Zhang
HIGHLIGHT:	We propose a hierarchical visual architecture that operates on a saliency map and uses a novel attention mechanism to sequentially focus on salient regions and take additional glimpses within those regions.

497, TITLE:	Variational Inference for Gaussian Process Models with Linear Complexity
https://papers.nips.cc/paper/7103-variational-inference-for-gaussian-process-models-with-linear-complexity
AUTHORS:	Ching-An Cheng, Byron Boots
HIGHLIGHT:	In this work, we propose a novel variational Gaussian process model that decouples the representation of mean and covariance functions in reproducing kernel Hilbert space.

498, TITLE:	K-Medoids For K-Means Seeding
https://papers.nips.cc/paper/7104-k-medoids-for-k-means-seeding
AUTHORS:	James Newling, Fran?ois Fleuret
HIGHLIGHT:	We introduce algorithmic improvements to CLARANS which improve its complexity and runtime, making it a viable initialization scheme for large datasets.

499, TITLE:	Identifying Outlier Arms in Multi-Armed Bandit
https://papers.nips.cc/paper/7105-identifying-outlier-arms-in-multi-armed-bandit
AUTHORS:	Honglei Zhuang, Chi Wang, Yifan Wang
HIGHLIGHT:	We propose two sampling strategies with theoretical guarantee, and analyze their sampling efficiency.

500, TITLE:	Online Learning with Transductive Regret
https://papers.nips.cc/paper/7106-online-learning-with-transductive-regret
AUTHORS:	Mehryar Mohri, Scott Yang
HIGHLIGHT:	We present a general and efficient online learning algorithm for minimizing transductive regret.

501, TITLE:	Riemannian approach to batch normalization
https://papers.nips.cc/paper/7107-riemannian-approach-to-batch-normalization
AUTHORS:	Minhyung Cho, Jaehyung Lee
HIGHLIGHT:	Riemannian approach to batch normalization

502, TITLE:	Self-supervised Learning of Motion Capture
https://papers.nips.cc/paper/7108-self-supervised-learning-of-motion-capture
AUTHORS:	Hsiao-Yu Tung, Hsiao-Wei Tung, Ersin Yumer, Katerina Fragkiadaki
HIGHLIGHT:	In this work, we propose a learning based motion capture model for single camera input.

503, TITLE:	Triangle Generative Adversarial Networks
https://papers.nips.cc/paper/7109-triangle-generative-adversarial-networks
AUTHORS:	Zhe Gan, Liqun Chen, Weiyao Wang, Yuchen Pu, Yizhe Zhang, Hao Liu, Chunyuan Li, Lawrence Carin
HIGHLIGHT:	Triangle Generative Adversarial Networks

504, TITLE:	PRUNE: Preserving Proximity and Global Ranking for Network Embedding
https://papers.nips.cc/paper/7110-prune-preserving-proximity-and-global-ranking-for-network-embedding
AUTHORS:	Yi-An Lai, Chin-Chi Hsu, Wen Hao Chen, Mi-Yen Yeh, Shou-De Lin
HIGHLIGHT:	A multi-task Siamese neural network structure is formulated to connect embedding vectors and our objective to preserve the global node ranking and local proximity of nodes.

505, TITLE:	Bayesian Optimization with Gradients
https://papers.nips.cc/paper/7111-bayesian-optimization-with-gradients
AUTHORS:	Jian Wu, Matthias Poloczek, Andrew G. Wilson, Peter Frazier
HIGHLIGHT:	In this paper we show how Bayesian optimization can exploit derivative information to find good solutions with fewer objective function evaluations.

506, TITLE:	Scalable trust-region method for deep reinforcement learning using Kronecker-factored approximation
https://papers.nips.cc/paper/7112-scalable-trust-region-method-for-deep-reinforcement-learning-using-kronecker-factored-approximation
AUTHORS:	Yuhuai Wu, Elman Mansimov, Roger B. Grosse, Shun Liao, Jimmy Ba

51

HIGHLIGHT:　　　　In this work, we propose to apply trust region optimization to deep reinforcement learning using a recently proposed Kronecker-factored approximation to the curvature.

507, TITLE:　　　　Renyi Differential Privacy Mechanisms for Posterior Sampling
https://papers.nips.cc/paper/7113-renyi-differential-privacy-mechanisms-for-posterior-sampling
AUTHORS:　　　　Joseph Geumlek, Shuang Song, Kamalika Chaudhuri
HIGHLIGHT:　　　　We propose novel RDP mechanisms as well as offering a new RDP analysis for an existing method in order to add value to the RDP framework.

508, TITLE:　　　　Online Learning with a Hint
https://papers.nips.cc/paper/7114-online-learning-with-a-hint
AUTHORS:　　　　Ofer Dekel, arthur flajolet, Nika Haghtalab, Patrick Jaillet
HIGHLIGHT:　　　　We study a variant of online linear optimization where the player receives a hint about the loss function at the beginning of each round.

509, TITLE:　　　　Identification of Gaussian Process State Space Models
https://papers.nips.cc/paper/7115-identification-of-gaussian-process-state-space-models
AUTHORS:　　　　Stefanos Eleftheriadis, Tom Nicholson, Marc Deisenroth, James Hensman
HIGHLIGHT:　　　　We provide a practical algorithm for efficiently computing a lower bound on the marginal likelihood using the reparameterisation trick.

510, TITLE:　　　　Robust Imitation of Diverse Behaviors
https://papers.nips.cc/paper/7116-robust-imitation-of-diverse-behaviors
AUTHORS:　　　　Ziyu Wang, Josh S. Merel, Scott E. Reed, Nando de Freitas, Gregory Wayne, Nicolas Heess
HIGHLIGHT:　　　　In this paper, we show how to combine the favourable aspects of these two approaches.

511, TITLE:　　　　Can Decentralized Algorithms Outperform Centralized Algorithms? A Case Study for Decentralized Parallel Stochastic Gradient Descent
https://papers.nips.cc/paper/7117-can-decentralized-algorithms-outperform-centralized-algorithms-a-case-study-for-decentralized-parallel-stochastic-gradient-descent
AUTHORS:　　　　Xiangru Lian, Ce Zhang, Huan Zhang, Cho-Jui Hsieh, Wei Zhang, Ji Liu
HIGHLIGHT:　　　　In this paper, we study a D-PSGD algorithm and provide the first theoretical analysis that indicates a regime in which decentralized algorithms might outperform centralized algorithms for distributed stochastic gradient descent.

512, TITLE:　　　　Local Aggregative Games
https://papers.nips.cc/paper/7118-local-aggregative-games
AUTHORS:　　　　Vikas Garg, Tommi Jaakkola
HIGHLIGHT:　　　　We focus on learning local aggregative games, where the payoff of each player is a function of its own action and the aggregate behavior of its neighbors in a connected digraph.

513, TITLE:　　　　A Sample Complexity Measure with Applications to Learning Optimal Auctions
https://papers.nips.cc/paper/7119-a-sample-complexity-measure-with-applications-to-learning-optimal-auctions
AUTHORS:　　　　Vasilis Syrgkanis
HIGHLIGHT:　　　　We introduce a new sample complexity measure, which we refer to as split-sample growth rate.

514, TITLE:　　　　Thinking Fast and Slow with Deep Learning and Tree Search
https://papers.nips.cc/paper/7120-thinking-fast-and-slow-with-deep-learning-and-tree-search
AUTHORS:　　　　Thomas Anthony, Zheng Tian, David Barber
HIGHLIGHT:　　　　In this paper, we present Expert Iteration (ExIt), a novel reinforcement learning algorithm which decomposes the problem into separate planning and generalisation tasks.

515, TITLE:　　　　EEG-GRAPH: A Factor-Graph-Based Model for Capturing Spatial, Temporal, and Observational Relationships in Electroencephalograms
https://papers.nips.cc/paper/7121-eeg-graph-a-factor-graph-based-model-for-capturing-spatial-temporal-and-observational-relationships-in-electroencephalograms
AUTHORS:　　　　Yogatheesan Varatharajah, Min Jin Chong, Krishnakant Saboo, Brent Berry, Benjamin Brinkmann, Gregory Worrell, Ravishankar Iyer
HIGHLIGHT:　　　　This paper presents a probabilistic-graphical model that can be used to infer characteristics of instantaneous brain activity by jointly analyzing spatial and temporal dependencies observed in electroencephalograms (EEG).

516, TITLE: Improving the Expected Improvement Algorithm
https://papers.nips.cc/paper/7122-improving-the-expected-improvement-algorithm
AUTHORS: Chao Qin, Diego Klabjan, Daniel Russo
HIGHLIGHT: To overcome this shortcoming, we introduce a simple modification of the expected improvement algorithm.

517, TITLE: Hybrid Reward Architecture for Reinforcement Learning
https://papers.nips.cc/paper/7123-hybrid-reward-architecture-for-reinforcement-learning
AUTHORS: Harm Van Seijen, Mehdi Fatemi, Joshua Romoff, Romain Laroche, Tavian Barnes, Jeffrey Tsang
HIGHLIGHT: This paper contributes towards tackling such challenging domains, by proposing a new method, called Hybrid
Reward Architecture (HRA).

518, TITLE: Approximate Supermodularity Bounds for Experimental Design
https://papers.nips.cc/paper/7124-approximate-supermodularity-bounds-for-experimental-design
AUTHORS: Luiz Chamon, Alejandro Ribeiro
HIGHLIGHT: This work provides performance guarantees for the greedy solution of experimental design problems.

519, TITLE: Maximizing Subset Accuracy with Recurrent Neural Networks in Multi-label Classification
https://papers.nips.cc/paper/7125-maximizing-subset-accuracy-with-recurrent-neural-networks-in-multi-label-classification
AUTHORS: Jinseok Nam, Eneldo Loza Menc?a, Hyunwoo J. Kim, Johannes F?rnkranz
HIGHLIGHT: In this paper, we replace classifier chains with recurrent neural networks, a sequence-to-sequence prediction
algorithm which has recently been successfully applied to sequential prediction tasks in many domains.

520, TITLE: AdaGAN: Boosting Generative Models
https://papers.nips.cc/paper/7126-adagan-boosting-generative-models
AUTHORS: Ilya O. Tolstikhin, Sylvain Gelly, Olivier Bousquet, Carl-Johann SIMON-GABRIEL, Bernhard Sch?lkopf
HIGHLIGHT: We propose an iterative procedure, called AdaGAN, where at every step we add a new component into a
mixture model by running a GAN algorithm on a re-weighted sample.

521, TITLE: Straggler Mitigation in Distributed Optimization Through Data Encoding
https://papers.nips.cc/paper/7127-straggler-mitigation-in-distributed-optimization-through-data-encoding
AUTHORS: Can Karakus, Yifan Sun, Suhas Diggavi, Wotao Yin
HIGHLIGHT: In this paper, we propose an alternate approach where we embed the redundancy directly in the data itself, and
allow the computation to proceed completely oblivious to encoding.

522, TITLE: Multi-View Decision Processes: The Helper-AI Problem
https://papers.nips.cc/paper/7128-multi-view-decision-processes-the-helper-ai-problem
AUTHORS: Christos Dimitrakakis, David C. Parkes, Goran Radanovic, Paul Tylkin
HIGHLIGHT: We consider a two-player sequential game in which agents have the same reward function but may disagree on
the transition probabilities of an underlying Markovian model of the world.

523, TITLE: A Greedy Approach for Budgeted Maximum Inner Product Search
https://papers.nips.cc/paper/7129-a-greedy-approach-for-budgeted-maximum-inner-product-search
AUTHORS: Hsiang-Fu Yu, Cho-Jui Hsieh, Qi Lei, Inderjit S. Dhillon
HIGHLIGHT: In this paper, we study the important problem of MIPS with a computational budget.

524, TITLE: SVD-Softmax: Fast Softmax Approximation on Large Vocabulary Neural Networks
https://papers.nips.cc/paper/7130-svd-softmax-fast-softmax-approximation-on-large-vocabulary-neural-networks
AUTHORS: Kyuhong Shim, Minjae Lee, Iksoo Choi, Yoonho Boo, Wonyong Sung
HIGHLIGHT: We propose a fast approximation method of a softmax function with a very large vocabulary using singular
value decomposition (SVD).

525, TITLE: Plan, Attend, Generate: Planning for Sequence-to-Sequence Models
https://papers.nips.cc/paper/7131-plan-attend-generate-planning-for-sequence-to-sequence-models
AUTHORS: Caglar Gulcehre, Francis Dutil, Adam Trischler, Yoshua Bengio
HIGHLIGHT: We develop a model which can plan ahead in the future when it computes its alignments between input and
output sequences, constructing a matrix of proposed future alignments and a commitment vector that governs whether to follow or
recompute the plan.

526, TITLE: Task-based End-to-end Model Learning in Stochastic Optimization
https://papers.nips.cc/paper/7132-task-based-end-to-end-model-learning-in-stochastic-optimization

AUTHORS: Priya Donti, Brandon Amos, J. Zico Kolter
HIGHLIGHT: This paper proposes an end-to-end approach for learning probabilistic machine learning models in a manner that directly captures the ultimate task-based objective for which they will be used, within the context of stochastic programming.

527, TITLE: ALICE: Towards Understanding Adversarial Learning for Joint Distribution Matching
https://papers.nips.cc/paper/7133-alice-towards-understanding-adversarial-learning-for-joint-distribution-matching
AUTHORS: Chunyuan Li, Hao Liu, Changyou Chen, Yuchen Pu, Liqun Chen, Ricardo Henao, Lawrence Carin
HIGHLIGHT: Within a framework of conditional entropy, we propose both adversarial and non-adversarial approaches to learn desirable matched joint distributions for unsupervised and supervised tasks.

528, TITLE: Finite Sample Analysis of the GTD Policy Evaluation Algorithms in Markov Setting
https://papers.nips.cc/paper/7134-finite-sample-analysis-of-the-gtd-policy-evaluation-algorithms-in-markov-setting
AUTHORS: Yue Wang, Wei Chen, Yuting Liu, Zhi-Ming Ma, Tie-Yan Liu
HIGHLIGHT: In this paper, in the realistic Markov setting, we derive the finite sample bounds for the general convex-concave saddle point problems, and hence for the GTD algorithms.

529, TITLE: On the Complexity of Learning Neural Networks
https://papers.nips.cc/paper/7135-on-the-complexity-of-learning-neural-networks
AUTHORS: Le Song, Santosh Vempala, John Wilmes, Bo Xie
HIGHLIGHT: We demonstrate here a comprehensive lower bound ruling out this possibility: for a wide class of activation functions (including all currently used), and inputs drawn from any logconcave distribution, there is a family of one-hidden-layer functions whose output is a sum gate that are hard to learn in a precise sense: any statistical query algorithm (which includes all known variants of stochastic gradient descent with any loss function) needs an exponential number of queries even using tolerance inversely proportional to the input dimensionality.

530, TITLE: Hierarchical Implicit Models and Likelihood-Free Variational Inference
https://papers.nips.cc/paper/7136-hierarchical-implicit-models-and-likelihood-free-variational-inference
AUTHORS: Dustin Tran, Rajesh Ranganath, David Blei
HIGHLIGHT: HIMs combine the idea of implicit densities with hierarchical Bayesian modeling thereby defining models via simulators of data with rich hidden structure.

531, TITLE: Semi-supervised Learning with GANs: Manifold Invariance with Improved Inference
https://papers.nips.cc/paper/7137-semi-supervised-learning-with-gans-manifold-invariance-with-improved-inference
AUTHORS: Abhishek Kumar, Prasanna Sattigeri, Tom Fletcher
HIGHLIGHT: Motivated by the ability of the GANs generator to capture the data manifold well, we propose to estimate the tangent space to the data manifold using GANs and employ it to inject invariances into the classifier.

532, TITLE: Approximation and Convergence Properties of Generative Adversarial Learning
https://papers.nips.cc/paper/7138-approximation-and-convergence-properties-of-generative-adversarial-learning
AUTHORS: Shuang Liu, Olivier Bousquet, Kamalika Chaudhuri
HIGHLIGHT: In this paper, we address these questions in a broad and unified setting by defining a notion of adversarial divergences that includes a number of recently proposed objective functions.

533, TITLE: From Bayesian Sparsity to Gated Recurrent Nets
https://papers.nips.cc/paper/7139-from-bayesian-sparsity-to-gated-recurrent-nets
AUTHORS: Hao He, Bo Xin, Satoshi Ikehata, David Wipf
HIGHLIGHT: As part of this development, we examine the parallels between latent variable trajectories operating across multiple time-scales during optimization, and the activations within deep network structures designed to adaptively model such characteristic sequences.

534, TITLE: Min-Max Propagation
https://papers.nips.cc/paper/7140-min-max-propagation
AUTHORS: Christopher Srinivasa, Inmar Givoni, Siamak Ravanbakhsh, Brendan J. Frey
HIGHLIGHT: We study the application of min-max propagation, a variation of belief propagation, for approximate min-max inference in factor graphs.

535, TITLE: What Uncertainties Do We Need in Bayesian Deep Learning for Computer Vision?
https://papers.nips.cc/paper/7141-what-uncertainties-do-we-need-in-bayesian-deep-learning-for-computer-vision
AUTHORS: Alex Kendall, Yarin Gal
HIGHLIGHT: For this we present a Bayesian deep learning framework combining input-dependent aleatoric uncertainty together with epistemic uncertainty.

536, TITLE: Gradient descent GAN optimization is locally stable
https://papers.nips.cc/paper/7142-gradient-descent-gan-optimization-is-locally-stable
AUTHORS: Vaishnavh Nagarajan, J. Zico Kolter
HIGHLIGHT: In this paper, we analyze the ``gradient descent'' form of GAN optimization, i.e., the natural setting where we simultaneously take small gradient steps in both generator and discriminator parameters.

537, TITLE: Toward Robustness against Label Noise in Training Deep Discriminative Neural Networks
https://papers.nips.cc/paper/7143-toward-robustness-against-label-noise-in-training-deep-discriminative-neural-networks
AUTHORS: Arash Vahdat
HIGHLIGHT: This paper proposes a novel framework for training deep convolutional neural networks from noisy labeled datasets that can be obtained cheaply.

538, TITLE: Dualing GANs
https://papers.nips.cc/paper/7144-dualing-gans
AUTHORS: Yujia Li, Alexander Schwing, Kuan-Chieh Wang, Richard Zemel
HIGHLIGHT: In this paper, we explore ways to tackle the instability problem by dualizing the discriminator.

539, TITLE: Deep Learning for Precipitation Nowcasting: A Benchmark and A New Model
https://papers.nips.cc/paper/7145-deep-learning-for-precipitation-nowcasting-a-benchmark-and-a-new-model
AUTHORS: Xingjian Shi, Zhihan Gao, Leonard Lausen, Hao Wang, Dit-Yan Yeung, Wai-kin Wong, Wang-chun WOO
HIGHLIGHT: To address these problems, we propose both a new model and a benchmark for precipitation nowcasting. Besides, we provide a benchmark that includes a real-world large-scale dataset from the Hong Kong Observatory, a new training loss, and a comprehensive evaluation protocol to facilitate future research and gauge the state of the art.

540, TITLE: Do Deep Neural Networks Suffer from Crowding?
https://papers.nips.cc/paper/7146-do-deep-neural-networks-suffer-from-crowding
AUTHORS: Anna Volokitin, Gemma Roig, Tomaso A. Poggio
HIGHLIGHT: In this work, we study the effect of crowding in artificial Deep Neural Networks (DNNs) for object recognition.

541, TITLE: Learning from Complementary Labels
https://papers.nips.cc/paper/7147-learning-from-complementary-labels
AUTHORS: Takashi Ishida, Gang Niu, Weihua Hu, Masashi Sugiyama
HIGHLIGHT: In this paper, we show that an unbiased estimator to the classification risk can be obtained only from complementarily labeled data, if a loss function satisfies a particular symmetric condition.

542, TITLE: Online control of the false discovery rate with decaying memory
https://papers.nips.cc/paper/7148-online-control-of-the-false-discovery-rate-with-decaying-memory
AUTHORS: Aaditya Ramdas, Fanny Yang, Martin J. Wainwright, Michael I. Jordan
HIGHLIGHT: This paper improves the class of generalized alpha-investing algorithms (GAI) in four ways : (a) we show how to uniformly improve the power of the entire class of GAI procedures under independence by awarding more alpha-wealth for each rejection, giving a near win-win resolution to a dilemma raised by Javanmard and Montanari, (b) we demonstrate how to incorporate prior weights to indicate domain knowledge of which hypotheses are likely to be null or non-null, (c) we allow for differing penalties for false discoveries to indicate that some hypotheses may be more meaningful/important than others, (d) we define a new quantity called the \emph{decaying memory false discovery rate, or $\memfdr$} that may be more meaningful for applications with an explicit time component, using a discount factor to incrementally forget past decisions and alleviate some potential problems that we describe and name ``piggybacking'' and ``alpha-death''.

543, TITLE: Learning from uncertain curves: The 2-Wasserstein metric for Gaussian processes
https://papers.nips.cc/paper/7149-learning-from-uncertain-curves-the-2-wasserstein-metric-for-gaussian-processes
AUTHORS: Anton Mallasto, Aasa Feragen
HIGHLIGHT: We introduce a novel framework for statistical analysis of populations of non-degenerate Gaussian processes (GPs), which are natural representations of uncertain curves.

544, TITLE: Discriminative State Space Models
https://papers.nips.cc/paper/7150-discriminative-state-space-models
AUTHORS: Vitaly Kuznetsov, Mehryar Mohri
HIGHLIGHT: In this paper, we introduce and analyze Discriminative State-Space Models for forecasting non-stationary time series.

545, TITLE: On Fairness and Calibration
https://papers.nips.cc/paper/7151-on-fairness-and-calibration
AUTHORS: Geoff Pleiss, Manish Raghavan, Felix Wu, Jon Kleinberg, Kilian Q. Weinberger
HIGHLIGHT: In this paper, we investigate the tension between minimizing error disparity across different population groups while maintaining calibrated probability estimates.

546, TITLE: Imagination-Augmented Agents for Deep Reinforcement Learning
https://papers.nips.cc/paper/7152-imagination-augmented-agents-for-deep-reinforcement-learning
AUTHORS: S?bastien Racani?re, Theophane Weber, David Reichert, Lars Buesing, Arthur Guez, Danilo Jimenez Rezende, Adri? Puigdom?nech Badia, Oriol Vinyals, Nicolas Heess, Yujia Li, Razvan Pascanu, Peter Battaglia, Demis Hassabis, David Silver, Daan Wierstra
HIGHLIGHT: We introduce Imagination-Augmented Agents (I2As), a novel architecture for deep reinforcement learning combining model-free and model-based aspects.

547, TITLE: Extracting low-dimensional dynamics from multiple large-scale neural population recordings by learning to predict correlations
https://papers.nips.cc/paper/7153-extracting-low-dimensional-dynamics-from-multiple-large-scale-neural-population-recordings-by-learning-to-predict-correlations
AUTHORS: Marcel Nonnenmacher, Srinivas C. Turaga, Jakob H. Macke
HIGHLIGHT: We propose an approach for extracting low-dimensional dynamics from multiple, sequential recordings.

548, TITLE: Unifying PAC and Regret: Uniform PAC Bounds for Episodic Reinforcement Learning
https://papers.nips.cc/paper/7154-unifying-pac-and-regret-uniform-pac-bounds-for-episodic-reinforcement-learning
AUTHORS: Christoph Dann, Tor Lattimore, Emma Brunskill
HIGHLIGHT: This paper introduces a new framework for theoretically measuring the performance of such algorithms called Uniform-PAC, which is a strengthening of the classical Probably Approximately Correct (PAC) framework.

549, TITLE: Gradients of Generative Models for Improved Discriminative Analysis of Tandem Mass Spectra
https://papers.nips.cc/paper/7155-gradients-of-generative-models-for-improved-discriminative-analysis-of-tandem-mass-spectra
AUTHORS: John T. Halloran, David M. Rocke
HIGHLIGHT: In this work, we leverage the log-likelihood gradients of generative models to improve the identification of such spectra.

550, TITLE: Asynchronous Parallel Coordinate Minimization for MAP Inference
https://papers.nips.cc/paper/7156-asynchronous-parallel-coordinate-minimization-for-map-inference
AUTHORS: Ofer Meshi, Alexander Schwing
HIGHLIGHT: In this work we propose to improve the efficiency of coordinate-minimization-based dual-decomposition solvers by running their updates asynchronously in parallel.

551, TITLE: Multiscale Quantization for Fast Similarity Search
https://papers.nips.cc/paper/7157-multiscale-quantization-for-fast-similarity-search
AUTHORS: Xiang Wu, Ruiqi Guo, Ananda Theertha Suresh, Sanjiv Kumar, Daniel N. Holtmann-Rice, David Simcha, Felix Yu
HIGHLIGHT: We propose a multiscale quantization approach for fast similarity search on large, high-dimensional datasets.

552, TITLE: Diverse and Accurate Image Description Using a Variational Auto-Encoder with an Additive Gaussian Encoding Space
https://papers.nips.cc/paper/7158-diverse-and-accurate-image-description-using-a-variational-auto-encoder-with-an-additive-gaussian-encoding-space
AUTHORS: Liwei Wang, Alexander Schwing, Svetlana Lazebnik
HIGHLIGHT: Instead, we propose two models that explicitly structure the latent space around K components corresponding to different types of image content, and combine components to create priors for images that contain multiple types of content simultaneously (e.g., several kinds of objects).

553, TITLE: Improved Training of Wasserstein GANs
https://papers.nips.cc/paper/7159-improved-training-of-wasserstein-gans
AUTHORS: Ishaan Gulrajani, Faruk Ahmed, Martin Arjovsky, Vincent Dumoulin, Aaron C. Courville
HIGHLIGHT: We propose an alternative to clipping weights: penalize the norm of gradient of the critic with respect to its input.

554, TITLE: Learning Populations of Parameters

https://papers.nips.cc/paper/7160-learning-populations-of-parameters
AUTHORS: Kevin Tian, Weihao Kong, Gregory Valiant
HIGHLIGHT: Consider the following estimation problem: there are n entities, each with an unknown parameter $p_i \in [0,1]$, and we observe n independent random variables, $X_1,\ldots,X_n$, with $X_i \sim $ Binomial(t, p_i).

555, TITLE: Clustering with Noisy Queries
https://papers.nips.cc/paper/7161-clustering-with-noisy-queries
AUTHORS: Arya Mazumdar, Barna Saha
HIGHLIGHT: In this paper, we provide a rigorous theoretical study of clustering with noisy queries.

556, TITLE: Higher-Order Total Variation Classes on Grids: Minimax Theory and Trend Filtering Methods
https://papers.nips.cc/paper/7162-higher-order-total-variation-classes-on-grids-minimax-theory-and-trend-filtering-methods
AUTHORS: Veeranjaneyulu Sadhanala, Yu-Xiang Wang, James L. Sharpnack, Ryan J. Tibshirani
HIGHLIGHT: We consider the problem of estimating the values of a function over n nodes of a d-dimensional grid graph (having equal side lengths $n^{1/d}$) from noisy observations.

557, TITLE: Training Quantized Nets: A Deeper Understanding
https://papers.nips.cc/paper/7163-training-quantized-nets-a-deeper-understanding
AUTHORS: Hao Li, Soham De, Zheng Xu, Christoph Studer, Hanan Samet, Tom Goldstein
HIGHLIGHT: In this work, we investigate training methods for quantized neural networks from a theoretical viewpoint.

558, TITLE: Permutation-based Causal Inference Algorithms with Interventions
https://papers.nips.cc/paper/7164-permutation-based-causal-inference-algorithms-with-interventions
AUTHORS: Yuhao Wang, Liam Solus, Karren Yang, Caroline Uhler
HIGHLIGHT: In this paper, we present two algorithms of this type and prove that both are consistent under the faithfulness assumption.

559, TITLE: Time-dependent spatially varying graphical models, with application to brain fMRI data analysis
https://papers.nips.cc/paper/7165-time-dependent-spatially-varying-graphical-models-with-application-to-brain-fmri-data-analysis
AUTHORS: Kristjan Greenewald, Seyoung Park, Shuheng Zhou, Alexander Giessing
HIGHLIGHT: In this work, we present an additive model for space-time data that splits the data into a temporally correlated component and a spatially correlated component.

560, TITLE: Gradient Methods for Submodular Maximization
https://papers.nips.cc/paper/7166-gradient-methods-for-submodular-maximization
AUTHORS: Hamed Hassani, Mahdi Soltanolkotabi, Amin Karbasi
HIGHLIGHT: In this paper, we study the problem of maximizing continuous submodular functions that naturally arise in many learning applications such as those involving utility functions in active learning and sensing, matrix approximations and network inference.

561, TITLE: Smooth Primal-Dual Coordinate Descent Algorithms for Nonsmooth Convex Optimization
https://papers.nips.cc/paper/7167-smooth-primal-dual-coordinate-descent-algorithms-for-nonsmooth-convex-optimization
AUTHORS: Ahmet Alacaoglu, Quoc Tran Dinh, Olivier Fercoq, Volkan Cevher
HIGHLIGHT: We propose a new randomized coordinate descent method for a convex optimization template with broad applications.

562, TITLE: The Importance of Communities for Learning to Influence
https://papers.nips.cc/paper/7168-the-importance-of-communities-for-learning-to-influence
AUTHORS: Eric Balkanski, Nicole Immorlica, Yaron Singer
HIGHLIGHT: In this paper we describe a simple algorithm for maximizing influence from training data.

563, TITLE: Multiplicative Weights Update with Constant Step-Size in Congestion Games: Convergence, Limit Cycles and Chaos
https://papers.nips.cc/paper/7169-multiplicative-weights-update-with-constant-step-size-in-congestion-games-convergence-limit-cycles-and-chaos
AUTHORS: Gerasimos Palaiopanos, Ioannis Panageas, Georgios Piliouras
HIGHLIGHT: We analyze MWU in congestion games where agents use \textit{arbitrary admissible constants} as learning rates ϵ and prove convergence to \textit{exact Nash equilibria}.

564, TITLE: Learning Neural Representations of Human Cognition across Many fMRI Studies

https://papers.nips.cc/paper/7170-learning-neural-representations-of-human-cognition-across-many-fmri-studies
AUTHORS: Arthur Mensch, Julien Mairal, Danilo Bzdok, Bertrand Thirion, Gael Varoquaux
HIGHLIGHT: We cast this challenge in a machine-learning approach to predict conditions from statistical brain maps across different studies.

565, TITLE: A KL-LUCB algorithm for Large-Scale Crowdsourcing
https://papers.nips.cc/paper/7171-a-kl-lucb-algorithm-for-large-scale-crowdsourcing
AUTHORS: Ervin Tanczos, Robert Nowak, Bob Mankoff
HIGHLIGHT: We develop an algorithm that is a fusion of lil-UCB and KL-LUCB, offering the best qualities of the two algorithms in one method.

566, TITLE: Collaborative Deep Learning in Fixed Topology Networks
https://papers.nips.cc/paper/7172-collaborative-deep-learning-in-fixed-topology-networks
AUTHORS: Zhanhong Jiang, Aditya Balu, Chinmay Hegde, Soumik Sarkar
HIGHLIGHT: In this context, this paper presents a new consensus-based distributed SGD (CDSGD) (and its momentum variant, CDMSGD) algorithm for collaborative deep learning over fixed topology networks that enables data parallelization as well as decentralized computation.

567, TITLE: Fast-Slow Recurrent Neural Networks
https://papers.nips.cc/paper/7173-fast-slow-recurrent-neural-networks
AUTHORS: Asier Mujika, Florian Meier, Angelika Steger
HIGHLIGHT: Here, we address this challenge by proposing a novel recurrent neural network (RNN) architecture, the Fast-Slow RNN (FS-RNN).

568, TITLE: Learning Disentangled Representations with Semi-Supervised Deep Generative Models
https://papers.nips.cc/paper/7174-learning-disentangled-representations-with-semi-supervised-deep-generative-models
AUTHORS: Siddharth Narayanaswamy, T. Brooks Paige, Jan-Willem van de Meent, Alban Desmaison, Noah Goodman, Pushmeet Kohli, Frank Wood, Philip Torr
HIGHLIGHT: We propose to learn such representations using model architectures that generalise from standard VAEs, employing a general graphical model structure in the encoder and decoder.

569, TITLE: Self-Supervised Intrinsic Image Decomposition
https://papers.nips.cc/paper/7175-self-supervised-intrinsic-image-decomposition
AUTHORS: Michael Janner, Jiajun Wu, Tejas D. Kulkarni, Ilker Yildirim, Josh Tenenbaum
HIGHLIGHT: In contrast to traditional fully supervised learning approaches, in this paper we propose learning intrinsic image decomposition by explaining the input image.

570, TITLE: Exploring Generalization in Deep Learning
https://papers.nips.cc/paper/7176-exploring-generalization-in-deep-learning
AUTHORS: Behnam Neyshabur, Srinadh Bhojanapalli, David Mcallester, Nati Srebro
HIGHLIGHT: With a goal of understanding what drives generalization in deep networks, we consider several recently suggested explanations, including norm-based control, sharpness and robustness.

571, TITLE: A framework for Multi-A(rmed)/B(andit) Testing with Online FDR Control
https://papers.nips.cc/paper/7177-a-framework-for-multi-armedbandit-testing-with-online-fdr-control
AUTHORS: Fanny Yang, Aaditya Ramdas, Kevin G. Jamieson, Martin J. Wainwright
HIGHLIGHT: We propose an alternative framework to existing setups for controlling false alarms when multiple A/B tests are run over time.

572, TITLE: Fader Networks:Manipulating Images by Sliding Attributes
https://papers.nips.cc/paper/7178-fader-networksmanipulating-images-by-sliding-attributes
AUTHORS: Guillaume Lample, Neil Zeghidour, Nicolas Usunier, Antoine Bordes, Ludovic DENOYER, Marc'Aurelio Ranzato
HIGHLIGHT: This paper introduces a new encoder-decoder architecture that is trained to reconstruct images by disentangling the salient information of the image and the values of attributes directly in the latent space.

573, TITLE: Action Centered Contextual Bandits
https://papers.nips.cc/paper/7179-action-centered-contextual-bandits
AUTHORS: Kristjan Greenewald, Ambuj Tewari, Susan Murphy, Predag Klasnja
HIGHLIGHT: We provide an extension of the linear model for contextual bandits that has two parts: baseline reward and treatment effect.

574, TITLE: Estimating Mutual Information for Discrete-Continuous Mixtures
https://papers.nips.cc/paper/7180-estimating-mutual-information-for-discrete-continuous-mixtures
AUTHORS: Weihao Gao, Sreeram Kannan, Sewoong Oh, Pramod Viswanath
HIGHLIGHT: In this paper, we develop a novel estimator for estimating mutual information in discrete-continuous mixtures.

575, TITLE: Attention is All you Need
https://papers.nips.cc/paper/7181-attention-is-all-you-need
AUTHORS: Ashish Vaswani, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan N. Gomez, Lukasz Kaiser,
Illia Polosukhin
HIGHLIGHT: We propose a novel, simple network architecture based solely onan attention mechanism, dispensing with
recurrence and convolutions entirely.Experiments on two machine translation tasks show these models to be superiorin quality while
being more parallelizable and requiring significantly less timeto train.

576, TITLE: Recurrent Ladder Networks
https://papers.nips.cc/paper/7182-recurrent-ladder-networks
AUTHORS: Isabeau Pr?mont-Schwarz, Alexander Ilin, Tele Hao, Antti Rasmus, Rinu Boney, Harri Valpola
HIGHLIGHT: We propose a recurrent extension of the Ladder networks whose structure is motivated by the inference required
in hierarchical latent variable models.

577, TITLE: Parameter-Free Online Learning via Model Selection
https://papers.nips.cc/paper/7183-parameter-free-online-learning-via-model-selection
AUTHORS: Dylan J. Foster, Satyen Kale, Mehryar Mohri, Karthik Sridharan
HIGHLIGHT: We introduce an efficient algorithmic framework for model selection in online learning, also known as
parameter-free online learning.

578, TITLE: Bregman Divergence for Stochastic Variance Reduction: Saddle-Point and Adversarial Prediction
https://papers.nips.cc/paper/7184-bregman-divergence-for-stochastic-variance-reduction-saddle-point-and-adversarial-prediction
AUTHORS: Zhan Shi, Xinhua Zhang, Yaoliang Yu
HIGHLIGHT: In this work we show that adversarial prediction under multivariate losses can be solved much faster than they
used to be.

579, TITLE: Unbounded cache model for online language modeling with open vocabulary
https://papers.nips.cc/paper/7185-unbounded-cache-model-for-online-language-modeling-with-open-vocabulary
AUTHORS: Edouard Grave, Moustapha M. Cisse, Armand Joulin
HIGHLIGHT: In this paper, we propose an extension of continuous cache models, which can scale to larger contexts.

580, TITLE: Predictive State Recurrent Neural Networks
https://papers.nips.cc/paper/7186-predictive-state-recurrent-neural-networks
AUTHORS: Carlton Downey, Ahmed Hefny, Byron Boots, Geoffrey J. Gordon, Boyue Li
HIGHLIGHT: We present a new model, Predictive State Recurrent Neural Networks (PSRNNs), for filtering and prediction in
dynamical systems.

581, TITLE: Early stopping for kernel boosting algorithms: A general analysis with localized complexities
https://papers.nips.cc/paper/7187-early-stopping-for-kernel-boosting-algorithms-a-general-analysis-with-localized-complexities
AUTHORS: Yuting Wei, Fanny Yang, Martin J. Wainwright
HIGHLIGHT: In this paper, for a relatively broad class of loss functions and boosting algorithms (including L^2-boost,
LogitBoost and AdaBoost, among others), we connect the performance of a stopped iterate to the localized Rademacher/Gaussian
complexity of the associated function class.

582, TITLE: SVCCA: Singular Vector Canonical Correlation Analysis for Deep Learning Dynamics and Interpretability
https://papers.nips.cc/paper/7188-svcca-singular-vector-canonical-correlation-analysis-for-deep-learning-dynamics-and-
interpretability
AUTHORS: Maithra Raghu, Justin Gilmer, Jason Yosinski, Jascha Sohl-Dickstein
HIGHLIGHT: We propose a new technique, Singular Vector Canonical Correlation Analysis (SVCCA), a tool for quickly
comparing two representations in a way that is both invariant to affine transform (allowing comparison between different layers and
networks) and fast to compute (allowing more comparisons to be calculated than with previous methods).

583, TITLE: Convolutional Phase Retrieval
https://papers.nips.cc/paper/7189-convolutional-phase-retrieval

AUTHORS:　　　　Qing Qu, Yuqian Zhang, Yonina Eldar, John Wright
HIGHLIGHT:　　　　We study the convolutional phase retrieval problem, which asks us to recover an unknown signal ${\mathbf x}$ of length n from m measurements consisting of the magnitude of its cyclic convolution with a known kernel $\mathbf a$ of length m.

584, TITLE:　　　　Estimating High-dimensional Non-Gaussian Multiple Index Models via Stein?s Lemma
https://papers.nips.cc/paper/7190-estimating-high-dimensional-non-gaussian-multiple-index-models-via-steins-lemma
AUTHORS:　　　　Zhuoran Yang, Krishnakumar Balasubramanian, Princeton Zhaoran Wang, Han Liu
HIGHLIGHT:　　　　To bypass the requirements of Gaussianity or elliptical symmetry of covariates in existing methods, we propose to leverage a second-order Stein's method with score function-based corrections.

585, TITLE:　　　　Gaussian Quadrature for Kernel Features
https://papers.nips.cc/paper/7191-gaussian-quadrature-for-kernel-features
AUTHORS:　　　　Tri Dao, Christopher M. De Sa, Christopher R?
HIGHLIGHT:　　　　The random Fourier features map is a technique commonly used to scale up kernel machines, but employing the randomized feature map means that $O(\epsilon^{-2})$ samples are required to achieve an approximation error of at most ϵ.

586, TITLE:　　　　Value Prediction Network
https://papers.nips.cc/paper/7192-value-prediction-network
AUTHORS:　　　　Junhyuk Oh, Satinder Singh, Honglak Lee
HIGHLIGHT:　　　　This paper proposes a novel deep reinforcement learning (RL) architecture, called Value Prediction Network (VPN), which integrates model-free and model-based RL methods into a single neural network.

587, TITLE:　　　　A Learning Error Analysis for Structured Prediction with Approximate Inference
https://papers.nips.cc/paper/7193-a-learning-error-analysis-for-structured-prediction-with-approximate-inference
AUTHORS:　　　　Yuanbin Wu, Man Lan, Shiliang Sun, Qi Zhang, Xuanjing Huang
HIGHLIGHT:　　　　In this work, we try to understand the differences between exact and approximate inference algorithms in structured prediction.

588, TITLE:　　　　Efficient Second-Order Online Kernel Learning with Adaptive Embedding
https://papers.nips.cc/paper/7194-efficient-second-order-online-kernel-learning-with-adaptive-embedding
AUTHORS:　　　　Daniele Calandriello, Alessandro Lazaric, Michal Valko
HIGHLIGHT:　　　　In this paper, we propose PROS-N-KONS, a method that combines Nystrom sketching to project the input point in a small, accurate embedded space, and performs efficient second-order updates in this space.

589, TITLE:　　　　Implicit Regularization in Matrix Factorization
https://papers.nips.cc/paper/7195-implicit-regularization-in-matrix-factorization
AUTHORS:　　　　Suriya Gunasekar, Blake E. Woodworth, Srinadh Bhojanapalli, Behnam Neyshabur, Nati Srebro
HIGHLIGHT:　　　　We study implicit regularization when optimizing an underdetermined quadratic objective over a matrix X with gradient descent on a factorization of X.

590, TITLE:　　　　Optimal Shrinkage of Singular Values Under Random Data Contamination
https://papers.nips.cc/paper/7196-optimal-shrinkage-of-singular-values-under-random-data-contamination
AUTHORS:　　　　Danny Barash, Matan Gavish
HIGHLIGHT:　　　　In this paper we show that common contamination models (including arbitrary combinations of uniform noise, missing values, outliers and corrupt entries) can be described efficiently using a single framework.

591, TITLE:　　　　Countering Feedback Delays in Multi-Agent Learning
https://papers.nips.cc/paper/7197-countering-feedback-delays-in-multi-agent-learning
AUTHORS:　　　　Zhengyuan Zhou, Panayotis Mertikopoulos, Nicholas Bambos, Peter W. Glynn, Claire Tomlin
HIGHLIGHT:　　　　We consider a model of game-theoretic learning based on online mirror descent (OMD) with asynchronous and delayed feedback information.

592, TITLE:　　　　Asynchronous Coordinate Descent under More Realistic Assumptions
https://papers.nips.cc/paper/7198-asynchronous-coordinate-descent-under-more-realistic-assumptions
AUTHORS:　　　　Tao Sun, Robert Hannah, Wotao Yin
HIGHLIGHT:　　　　In this paper, we argue that these assumptions either fail to hold or will imply less efficient implementations.

593, TITLE:　　　　Linear Convergence of a Frank-Wolfe Type Algorithm over Trace-Norm Balls
https://papers.nips.cc/paper/7199-linear-convergence-of-a-frank-wolfe-type-algorithm-over-trace-norm-balls

AUTHORS: Zeyuan Allen-Zhu, Elad Hazan, Wei Hu, Yuanzhi Li
HIGHLIGHT: We propose a rank-k variant of the classical Frank-Wolfe algorithm to solve convex optimization over a trace-norm ball.

594, TITLE: Hierarchical Clustering Beyond the Worst-Case
https://papers.nips.cc/paper/7200-hierarchical-clustering-beyond-the-worst-case
AUTHORS: Vincent Cohen-Addad, Varun Kanade, Frederik Mallmann-Trenn
HIGHLIGHT: In this paper, we consider a fairly general random graph model for hierarchical clustering, called the hierarchical stochastic blockmodel (HSBM), and show that in certain regimes the SVD approach of McSherry [5] combined with specific linkage methods results in a clustering that give an O(1)-approximation to Dasgupta's cost function.

595, TITLE: Invariance and Stability of Deep Convolutional Representations
https://papers.nips.cc/paper/7201-invariance-and-stability-of-deep-convolutional-representations
AUTHORS: Alberto Bietti, Julien Mairal
HIGHLIGHT: In this paper, we study deep signal representations that are near-invariant to groups of transformations and stable to the action of diffeomorphisms without losing signal information.

596, TITLE: Statistical Cost Sharing
https://papers.nips.cc/paper/7202-statistical-cost-sharing
AUTHORS: Eric Balkanski, Umar Syed, Sergei Vassilvitskii
HIGHLIGHT: We study the cost sharing problem for cooperative games in situations where the cost function C is not available via oracle queries, but must instead be learned from samples drawn from a distribution, represented as tuples (S, C(S)), for different subsets S of players.

597, TITLE: The Expressive Power of Neural Networks: A View from the Width
https://papers.nips.cc/paper/7203-the-expressive-power-of-neural-networks-a-view-from-the-width
AUTHORS: Zhou Lu, Hongming Pu, Feicheng Wang, Zhiqiang Hu, Liwei Wang
HIGHLIGHT: In this paper, we study how width affects the expressiveness of neural networks.

598, TITLE: Spectrally-normalized margin bounds for neural networks
https://papers.nips.cc/paper/7204-spectrally-normalized-margin-bounds-for-neural-networks
AUTHORS: Peter L. Bartlett, Dylan J. Foster, Matus J. Telgarsky
HIGHLIGHT: This paper presents a margin-based multiclass generalization bound for neural networks that scales with their margin-normalized "spectral complexity": their Lipschitz constant, meaning the product of the spectral norms of the weight matrices, times a certain correction factor.

599, TITLE: Robust and Efficient Transfer Learning with Hidden Parameter Markov Decision Processes
https://papers.nips.cc/paper/7205-robust-and-efficient-transfer-learning-with-hidden-parameter-markov-decision-processes
AUTHORS: Taylor W. Killian, Samuel Daulton, George Konidaris, Finale Doshi-Velez
HIGHLIGHT: We introduce a new formulation of the Hidden Parameter Markov Decision Process (HiP-MDP), a framework for modeling families of related tasks using low-dimensional latent embeddings.

600, TITLE: Population Matching Discrepancy and Applications in Deep Learning
https://papers.nips.cc/paper/7206-population-matching-discrepancy-and-applications-in-deep-learning
AUTHORS: Jianfei Chen, Chongxuan LI, Yizhong Ru, Jun Zhu
HIGHLIGHT: In this paper, we propose population matching discrepancy (PMD) for estimating the distribution distance based on samples, as well as an algorithm to learn the parameters of the distributions using PMD as an objective.

601, TITLE: Scalable Planning with Tensorflow for Hybrid Nonlinear Domains
https://papers.nips.cc/paper/7207-scalable-planning-with-tensorflow-for-hybrid-nonlinear-domains
AUTHORS: Ga Wu, Buser Say, Scott Sanner
HIGHLIGHT: Given recent deep learning results that demonstrate the ability to effectively optimize high-dimensional non-convex functions with gradient descent optimization on GPUs, we ask in this paper whether symbolic gradient optimization tools such as Tensorflow can be effective for planning in hybrid (mixed discrete and continuous) nonlinear domains with high dimensional state and action spaces?

602, TITLE: Boltzmann Exploration Done Right
https://papers.nips.cc/paper/7208-boltzmann-exploration-done-right
AUTHORS: Nicol? Cesa-Bianchi, Claudio Gentile, Gabor Lugosi, Gergely Neu
HIGHLIGHT: In this paper, we address several of these questions for the classic setup of stochastic multi-armed bandits.

603, TITLE: Learned in Translation: Contextualized Word Vectors
https://papers.nips.cc/paper/7209-learned-in-translation-contextualized-word-vectors
AUTHORS: Bryan McCann, James Bradbury, Caiming Xiong, Richard Socher
HIGHLIGHT: In this paper, we use a deep LSTM encoder from an attentional sequence-to-sequence model trained for machine translation (MT) to contextualize word vectors.

604, TITLE: Neural Discrete Representation Learning
https://papers.nips.cc/paper/7210-neural-discrete-representation-learning
AUTHORS: Aaron van den Oord, Oriol Vinyals, koray kavukcuoglu
HIGHLIGHT: In this paper, we propose a simple yet powerful generative model that learns such discrete representations.

605, TITLE: Generalizing GANs: A Turing Perspective
https://papers.nips.cc/paper/7211-generalizing-gans-a-turing-perspective
AUTHORS: Roderich Gross, Yue Gu, Wei Li, Melvin Gauci
HIGHLIGHT: In this paper we examine how these algorithms relate to the Turing test, and derive what - from a Turing perspective - can be considered their defining features.

606, TITLE: Scalable Log Determinants for Gaussian Process Kernel Learning
https://papers.nips.cc/paper/7212-scalable-log-determinants-for-gaussian-process-kernel-learning
AUTHORS: Kun Dong, David Eriksson, Hannes Nickisch, David Bindel, Andrew G. Wilson
HIGHLIGHT: We propose novel O(n) approaches to estimating these quantities from only fast matrix vector multiplications (MVMs).

607, TITLE: Poincar? Embeddings for Learning Hierarchical Representations
https://papers.nips.cc/paper/7213-poincare-embeddings-for-learning-hierarchical-representations
AUTHORS: Maximillian Nickel, Douwe Kiela
HIGHLIGHT: In this work, we introduce a new approach for learning hierarchical representations of symbolic data by embedding them into hyperbolic space -- or more precisely into an n-dimensional Poincaré ball.

608, TITLE: Learning Combinatorial Optimization Algorithms over Graphs
https://papers.nips.cc/paper/7214-learning-combinatorial-optimization-algorithms-over-graphs
AUTHORS: Elias Khalil, Hanjun Dai, Yuyu Zhang, Bistra Dilkina, Le Song
HIGHLIGHT: In this paper, we propose a unique combination of reinforcement learning and graph embedding to address this challenge.

609, TITLE: Robust Conditional Probabilities
https://papers.nips.cc/paper/7215-robust-conditional-probabilities
AUTHORS: Yoav Wald, Amir Globerson
HIGHLIGHT: Here we propose a framework for reasoning about conditional probabilities without assuming anything about the underlying distributions, except knowledge of their second order marginals, which can be estimated from data.

610, TITLE: Learning with Bandit Feedback in Potential Games
https://papers.nips.cc/paper/7216-learning-with-bandit-feedback-in-potential-games
AUTHORS: Am?lie Heliou, Johanne Cohen, Panayotis Mertikopoulos
HIGHLIGHT: In the bandit case, the same result holds for approximate Nash equilibria if we introduce a constant exploration factor that guarantees that action choice probabilities never become arbitrarily small.

611, TITLE: Multi-Agent Actor-Critic for Mixed Cooperative-Competitive Environments
https://papers.nips.cc/paper/7217-multi-agent-actor-critic-for-mixed-cooperative-competitive-environments
AUTHORS: Ryan Lowe, YI WU, Aviv Tamar, Jean Harb, OpenAI Pieter Abbeel, Igor Mordatch
HIGHLIGHT: We explore deep reinforcement learning methods for multi-agent domains.

612, TITLE: Communication-Efficient Distributed Learning of Discrete Distributions
https://papers.nips.cc/paper/7218-communication-efficient-distributed-learning-of-discrete-distributions
AUTHORS: Ilias Diakonikolas, Elena Grigorescu, Jerry Li, Abhiram Natarajan, Krzysztof Onak, Ludwig Schmidt
HIGHLIGHT: We initiate a systematic investigation of distribution learning (density estimation) when the data is distributed across multiple servers.

613, TITLE: Simple and Scalable Predictive Uncertainty Estimation using Deep Ensembles

https://papers.nips.cc/paper/7219-simple-and-scalable-predictive-uncertainty-estimation-using-deep-ensembles
AUTHORS: Balaji Lakshminarayanan, Alexander Pritzel, Charles Blundell
HIGHLIGHT: We propose an alternative to Bayesian NNs that is simple to implement, readily parallelizable, requires very little hyperparameter tuning, and yields high quality predictive uncertainty estimates.

614, TITLE: When Worlds Collide: Integrating Different Counterfactual Assumptions in Fairness
https://papers.nips.cc/paper/7220-when-worlds-collide-integrating-different-counterfactual-assumptions-in-fairness
AUTHORS: Chris Russell, Matt J. Kusner, Joshua Loftus, Ricardo Silva
HIGHLIGHT: In this paper, we show how it is possible to make predictions that are approximately fair with respect to multiple possible causal models at once, thus mitigating the problem of exact causal specification.

615, TITLE: Matrix Norm Estimation from a Few Entries
https://papers.nips.cc/paper/7221-matrix-norm-estimation-from-a-few-entries
AUTHORS: Ashish Khetan, Sewoong Oh
HIGHLIGHT: We propose a framework of first estimating the Schatten k-norms of a matrix for several values of k, and using these as surrogates for estimating spectral properties of interest, such as the spectrum itself or the rank.

616, TITLE: Neural Networks for Efficient Bayesian Decoding of Natural Images from Retinal Neurons
https://papers.nips.cc/paper/7222-neural-networks-for-efficient-bayesian-decoding-of-natural-images-from-retinal-neurons
AUTHORS: Nikhil Parthasarathy, Eleanor Batty, William Falcon, Thomas Rutten, Mohit Rajpal, E.J. Chichilnisky, Liam Paninski
HIGHLIGHT: Here we develop a new approximate Bayesian method for decoding natural images from the spiking activity of populations of retinal ganglion cells (RGCs).

617, TITLE: Causal Effect Inference with Deep Latent-Variable Models
https://papers.nips.cc/paper/7223-causal-effect-inference-with-deep-latent-variable-models
AUTHORS: Christos Louizos, Uri Shalit, Joris M. Mooij, David Sontag, Richard Zemel, Max Welling
HIGHLIGHT: A carefully designed observational study attempts to measure all important confounders.

618, TITLE: Learning Identifiable Gaussian Bayesian Networks in Polynomial Time and Sample Complexity
https://papers.nips.cc/paper/7224-learning-identifiable-gaussian-bayesian-networks-in-polynomial-time-and-sample-complexity
AUTHORS: Asish Ghoshal, Jean Honorio
HIGHLIGHT: In this paper we propose a provably polynomial-time algorithm for learning sparse Gaussian Bayesian networks with equal noise variance --- a class of Bayesian networks for which the DAG structure can be uniquely identified from observational data --- under high-dimensional settings.

619, TITLE: Gradient Episodic Memory for Continual Learning
https://papers.nips.cc/paper/7225-gradient-episodic-memory-for-continual-learning
AUTHORS: David Lopez-Paz, Marc'Aurelio Ranzato
HIGHLIGHT: To better understand this issue, we study the problem of continual learning, where the model observes, once and one by one, examples concerning a sequence of tasks.
First, we propose a set of metrics to evaluate models learning over a continuum of data.

620, TITLE: Effective Parallelisation for Machine Learning
https://papers.nips.cc/paper/7226-effective-parallelisation-for-machine-learning
AUTHORS: Michael Kamp, Mario Boley, Olana Missura, Thomas G?rtner
HIGHLIGHT: We present a novel parallelisation scheme that simplifies the adaptation of learning algorithms to growing amounts of data as well as growing needs for accurate and confident predictions in critical applications.

621, TITLE: Semisupervised Clustering, AND-Queries and Locally Encodable Source Coding
https://papers.nips.cc/paper/7227-semisupervised-clustering-and-queries-and-locally-encodable-source-coding
AUTHORS: Arya Mazumdar, Soumyabrata Pal
HIGHLIGHT: In this paper, we show that a recently popular model of semisupervised clustering is equivalent to locally encodable source coding.

622, TITLE: Clustering Stable Instances of Euclidean k-means.
https://papers.nips.cc/paper/7228-clustering-stable-instances-of-euclidean-k-means
AUTHORS: Aravindan Vijayaraghavan, Abhratanu Dutta, Alex Wang
HIGHLIGHT: We design efficient algorithms that provably recover the optimal clustering for instances that are additive perturbation stable.

623, TITLE: Good Semi-supervised Learning That Requires a Bad GAN
https://papers.nips.cc/paper/7229-good-semi-supervised-learning-that-requires-a-bad-gan
AUTHORS: Zihang Dai, Zhilin Yang, Fan Yang, William W. Cohen, Ruslan R. Salakhutdinov
HIGHLIGHT: Theoretically we show that given the discriminator objective, good semi-supervised learning indeed requires a bad generator, and propose the definition of a preferred generator.

624, TITLE: On Blackbox Backpropagation and Jacobian Sensing
https://papers.nips.cc/paper/7230-on-blackbox-backpropagation-and-jacobian-sensing
AUTHORS: Krzysztof M. Choromanski, Vikas Sindhwani
HIGHLIGHT: From a small number of calls to a given "blackbox" on random input perturbations, we show how to efficiently recover its unknown Jacobian, or estimate the left action of its Jacobian on a given vector.

625, TITLE: Protein Interface Prediction using Graph Convolutional Networks
https://papers.nips.cc/paper/7231-protein-interface-prediction-using-graph-convolutional-networks
AUTHORS: Alex Fout, Jonathon Byrd, Basir Shariat, Asa Ben-Hur
HIGHLIGHT: We consider the prediction of interfaces between proteins, a challenging problem with important applications in drug discovery and design, and examine the performance of existing and newly proposed spatial graph convolution operators for this task.

626, TITLE: Solid Harmonic Wavelet Scattering: Predicting Quantum Molecular Energy from Invariant Descriptors of 3D Electronic Densities
https://papers.nips.cc/paper/7232-solid-harmonic-wavelet-scattering-predicting-quantum-molecular-energy-from-invariant-descriptors-of-3d-electronic-densities
AUTHORS: Michael Eickenberg, Georgios Exarchakis, Matthew Hirn, Stephane Mallat
HIGHLIGHT: We introduce a solid harmonic wavelet scattering representation, invariant to rigid motion and stable to deformations, for regression and classification of 2D and 3D signals.

627, TITLE: Towards Generalization and Simplicity in Continuous Control
https://papers.nips.cc/paper/7233-towards-generalization-and-simplicity-in-continuous-control
AUTHORS: Aravind Rajeswaran, Kendall Lowrey, Emanuel V. Todorov, Sham M. Kakade
HIGHLIGHT: The remarkable successes of deep learning in speech recognition and computer vision have motivated efforts to adapt similar techniques to other problem domains, including reinforcement learning (RL).

628, TITLE: Random Projection Filter Bank for Time Series Data
https://papers.nips.cc/paper/7234-random-projection-filter-bank-for-time-series-data
AUTHORS: Amir-massoud Farahmand, Sepideh Pourazarm, Daniel Nikovski
HIGHLIGHT: We propose Random Projection Filter Bank (RPFB) as a generic and simple approach to extract features from time series data.

629, TITLE: Filtering Variational Objectives
https://papers.nips.cc/paper/7235-filtering-variational-objectives
AUTHORS: Chris J. Maddison, John Lawson, George Tucker, Nicolas Heess, Mohammad Norouzi, Andriy Mnih, Arnaud Doucet, Yee Teh
HIGHLIGHT: We present results that relate the tightness of FIVO's bound to the variance of the particle filter's estimator by considering the generic case of bounds defined as log-transformed likelihood estimators.

630, TITLE: On Frank-Wolfe and Equilibrium Computation
https://papers.nips.cc/paper/7236-on-frank-wolfe-and-equilibrium-computation
AUTHORS: Jacob D. Abernethy, Jun-Kun Wang
HIGHLIGHT: We consider the Frank-Wolfe (FW) method for constrained convex optimization, and we show that this classical technique can be interpreted from a different perspective: FW emerges as the computation of an equilibrium (saddle point) of a special convex-concave zero sum game.

631, TITLE: Modulating early visual processing by language
https://papers.nips.cc/paper/7237-modulating-early-visual-processing-by-language
AUTHORS: Harm de Vries, Florian Strub, Jeremie Mary, Hugo Larochelle, Olivier Pietquin, Aaron C. Courville
HIGHLIGHT: In this paper, we deviate from this classic pipeline and propose to modulate the \emph{entire visual processing} by a linguistic input.

632, TITLE: Learning Mixture of Gaussians with Streaming Data

https://papers.nips.cc/paper/7238-learning-mixture-of-gaussians-with-streaming-data
AUTHORS: Aditi Raghunathan, Prateek Jain, Ravishankar Krishnawamy
HIGHLIGHT: In this paper, we study the problem of learning a mixture of Gaussians with streaming data: given a stream of N points in d dimensions generated by an unknown mixture of k spherical Gaussians, the goal is to estimate the model parameters using a single pass over the data stream.

633, TITLE: Practical Hash Functions for Similarity Estimation and Dimensionality Reduction
https://papers.nips.cc/paper/7239-practical-hash-functions-for-similarity-estimation-and-dimensionality-reduction
AUTHORS: S?ren Dahlgaard, Mathias Knudsen, Mikkel Thorup
HIGHLIGHT: In this paper we focus on two prominent applications of hashing, namely similarity estimation with the one permutation hashing (OPH) scheme of Li et al. [NIPS'12] and feature hashing (FH) of Weinberger et al. [ICML'09], both of which have found numerous applications, i.e. in approximate near-neighbour search with LSH and large-scale classification with SVM.

634, TITLE: GANs Trained by a Two Time-Scale Update Rule Converge to a Local Nash Equilibrium
https://papers.nips.cc/paper/7240-gans-trained-by-a-two-time-scale-update-rule-converge-to-a-local-nash-equilibrium
AUTHORS: Martin Heusel, Hubert Ramsauer, Thomas Unterthiner, Bernhard Nessler, Sepp Hochreiter
HIGHLIGHT: We propose a two time-scale update rule (TTUR) for training GANs with stochastic gradient descent on arbitrary GAN loss functions.

635, TITLE: The Scaling Limit of High-Dimensional Online Independent Component Analysis
https://papers.nips.cc/paper/7241-the-scaling-limit-of-high-dimensional-online-independent-component-analysis
AUTHORS: Chuang Wang, Yue Lu
HIGHLIGHT: We analyze the dynamics of an online algorithm for independent component analysis in the high-dimensional scaling limit.

636, TITLE: Approximation Algorithms for <var>\ell_0</var>-Low Rank Approximation
https://papers.nips.cc/paper/7242-approximation-algorithms-for-ell_0-low-rank-approximation
AUTHORS: Karl Bringmann, Pavel Kolev, David Woodruff
HIGHLIGHT: We study the ℓ_0-Low Rank Approximation Problem, where the goal is, given an $m \times n$ matrix A, to output a rank-k matrix A' for which $\|A'-A\|_0$ is minimized.

637, TITLE: The power of absolute discounting: all-dimensional distribution estimation
https://papers.nips.cc/paper/7243-the-power-of-absolute-discounting-all-dimensional-distribution-estimation
AUTHORS: Moein Falahatgar, Mesrob I. Ohannessian, Alon Orlitsky, Venkatadheeraj Pichapati
HIGHLIGHT: In this paper, we rigorously explain the prowess of this estimator using less pessimistic notions.

638, TITLE: Few-Shot Adversarial Domain Adaptation
https://papers.nips.cc/paper/7244-few-shot-adversarial-domain-adaptation
AUTHORS: Saeid Motiian, Quinn Jones, Seyed Iranmanesh, Gianfranco Doretto
HIGHLIGHT: This work provides a framework for addressing the problem of supervised domain adaptation with deep models.

639, TITLE: Spectral Mixture Kernels for Multi-Output Gaussian Processes
https://papers.nips.cc/paper/7245-spectral-mixture-kernels-for-multi-output-gaussian-processes
AUTHORS: Gabriel Parra, Felipe Tobar
HIGHLIGHT: Spectral Mixture Kernels for Multi-Output Gaussian Processes

640, TITLE: Neural Expectation Maximization
https://papers.nips.cc/paper/7246-neural-expectation-maximization
AUTHORS: Klaus Greff, Sjoerd van Steenkiste, J?rgen Schmidhuber
HIGHLIGHT: In this paper, we explicitly formalize this problem as inference in a spatial mixture model where each component is parametrized by a neural network.

641, TITLE: Learning Linear Dynamical Systems via Spectral Filtering
https://papers.nips.cc/paper/7247-learning-linear-dynamical-systems-via-spectral-filtering
AUTHORS: Elad Hazan, Karan Singh, Cyril Zhang
HIGHLIGHT: We present an efficient and practical algorithm for the online prediction of discrete-time linear dynamical systems with a symmetric transition matrix.

642, TITLE: Z-Forcing: Training Stochastic Recurrent Networks
https://papers.nips.cc/paper/7248-z-forcing-training-stochastic-recurrent-networks

AUTHORS: Anirudh Goyal ALIAS PARTH GOYAL, Alessandro Sordoni, Marc-Alexandre C?t?, Nan Rosemary Ke, Yoshua Bengio
HIGHLIGHT: Many efforts have been devoted to training generative latent variable models with autoregressive decoders, such as recurrent neural networks (RNN).

643, TITLE: Learning Hierarchical Information Flow with Recurrent Neural Modules
https://papers.nips.cc/paper/7249-learning-hierarchical-information-flow-with-recurrent-neural-modules
AUTHORS: Danijar Hafner, Alexander Irpan, James Davidson, Nicolas Heess
HIGHLIGHT: We propose ThalNet, a deep learning model inspired by neocortical communication via the thalamus.

644, TITLE: Neural Variational Inference and Learning in Undirected Graphical Models
https://papers.nips.cc/paper/7250-neural-variational-inference-and-learning-in-undirected-graphical-models
AUTHORS: Volodymyr Kuleshov, Stefano Ermon
HIGHLIGHT: Here, we propose black-box learning and inference algorithms for undirected models that optimize a variational approximation to the log-likelihood of the model.

645, TITLE: Subspace Clustering via Tangent Cones
https://papers.nips.cc/paper/7251-subspace-clustering-via-tangent-cones
AUTHORS: Amin Jalali, Rebecca Willett
HIGHLIGHT: This paper proposes a new paradigm for subspace clustering that computes affinities based on the corresponding conic geometry.

646, TITLE: The Neural Hawkes Process: A Neurally Self-Modulating Multivariate Point Process
https://papers.nips.cc/paper/7252-the-neural-hawkes-process-a-neurally-self-modulating-multivariate-point-process
AUTHORS: Hongyuan Mei, Jason M. Eisner
HIGHLIGHT: Discovering such patterns can help us predict which type of event will happen next and when.

647, TITLE: Inverse Reward Design
https://papers.nips.cc/paper/7253-inverse-reward-design
AUTHORS: Dylan Hadfield-Menell, Smitha Milli, Pieter Abbeel, Stuart J. Russell, Anca Dragan
HIGHLIGHT: We introduce approximate methods for solving IRD problems, and use their solution to plan risk-averse behavior in test MDPs.

648, TITLE: Structured Bayesian Pruning via Log-Normal Multiplicative Noise
https://papers.nips.cc/paper/7254-structured-bayesian-pruning-via-log-normal-multiplicative-noise
AUTHORS: Kirill Neklyudov, Dmitry Molchanov, Arsenii Ashukha, Dmitry P. Vetrov
HIGHLIGHT: In the paper, we propose a new Bayesian model that takes into account the computational structure of neural net- works and provides structured sparsity, e.g. removes neurons and/or convolutional channels in CNNs.

649, TITLE: Attend and Predict: Understanding Gene Regulation by Selective Attention on Chromatin
https://papers.nips.cc/paper/7255-attend-and-predict-understanding-gene-regulation-by-selective-attention-on-chromatin
AUTHORS: Ritambhara Singh, Jack Lanchantin, Arshdeep Sekhon, Yanjun Qi
HIGHLIGHT: This paper presents an attention-based deep learning approach; AttentiveChrome, that uses a unified architecture to model and to interpret dependencies among chromatin factors for controlling gene regulation.

650, TITLE: Acceleration and Averaging in Stochastic Descent Dynamics
https://papers.nips.cc/paper/7256-acceleration-and-averaging-in-stochastic-descent-dynamics
AUTHORS: Walid Krichene, Peter L. Bartlett
HIGHLIGHT: Building on an averaging formulation of accelerated mirror descent, we propose a stochastic variant in which the gradient is contaminated by noise, and study the resulting stochastic differential equation.

651, TITLE: Kernel functions based on triplet comparisons
https://papers.nips.cc/paper/7257-kernel-functions-based-on-triplet-comparisons
AUTHORS: Matth?us Kleindessner, Ulrike von Luxburg
HIGHLIGHT: Given only information in the form of similarity triplets "Object A is more similar to object B than to object C" about a data set, we propose two ways of defining a kernel function on the data set.

652, TITLE: An Error Detection and Correction Framework for Connectomics
https://papers.nips.cc/paper/7258-an-error-detection-and-correction-framework-for-connectomics
AUTHORS: Jonathan Zung, Ignacio Tartavull, Kisuk Lee, H. Sebastian Seung

HIGHLIGHT: We define and study error detection and correction tasks that are useful for 3D reconstruction of neurons from electron microscopic imagery, and for image segmentation more generally.

653, TITLE: Style Transfer from Non-Parallel Text by Cross-Alignment
https://papers.nips.cc/paper/7259-style-transfer-from-non-parallel-text-by-cross-alignment
AUTHORS: Tianxiao Shen, Tao Lei, Regina Barzilay, Tommi Jaakkola
HIGHLIGHT: We assume a shared latent content distribution across different text corpora, and propose a method that leverages refined alignment of latent representations to perform style transfer.

654, TITLE: Cross-Spectral Factor Analysis
https://papers.nips.cc/paper/7260-cross-spectral-factor-analysis
AUTHORS: Neil Gallagher, Kyle R. Ulrich, Austin Talbot, Kafui Dzirasa, Lawrence Carin, David E. Carlson
HIGHLIGHT: To facilitate understanding of network-level synchronization between brain regions, we introduce a novel model of multisite low-frequency neural recordings, such as local field potentials (LFPs) and electroencephalograms (EEGs).

655, TITLE: Stochastic Submodular Maximization: The Case of Coverage Functions
https://papers.nips.cc/paper/7261-stochastic-submodular-maximization-the-case-of-coverage-functions
AUTHORS: Mohammad Karimi, Mario Lucic, Hamed Hassani, Andreas Krause
HIGHLIGHT: We seek to unleash the power of stochastic continuous optimization, namely stochastic gradient descent and its variants, to such discrete problems.
We first introduce the problem of stochastic submodular optimization, where one needs to optimize a submodular objective which is given as an expectation.

656, TITLE: Affinity Clustering: Hierarchical Clustering at Scale
https://papers.nips.cc/paper/7262-affinity-clustering-hierarchical-clustering-at-scale
AUTHORS: Mohammadhossein Bateni, Soheil Behnezhad, Mahsa Derakhshan, MohammadTaghi Hajiaghayi, Raimondas Kiveris, Silvio Lattanzi, Vahab Mirrokni
HIGHLIGHT: In particular, we propose affinity, a novel hierarchical clustering based on Boruvka's MST algorithm.

657, TITLE: Unsupervised Transformation Learning via Convex Relaxations
https://papers.nips.cc/paper/7263-unsupervised-transformation-learning-via-convex-relaxations
AUTHORS: Tatsunori B. Hashimoto, Percy S. Liang, John C. Duchi
HIGHLIGHT: We propose an unsupervised approach to learn such transformations by attempting to reconstruct an image from a linear combination of transformations of its nearest neighbors.

658, TITLE: A Sharp Error Analysis for the Fused Lasso, with Application to Approximate Changepoint Screening
https://papers.nips.cc/paper/7264-a-sharp-error-analysis-for-the-fused-lasso-with-application-to-approximate-changepoint-screening
AUTHORS: Kevin Lin, James L. Sharpnack, Alessandro Rinaldo, Ryan J. Tibshirani
HIGHLIGHT: In the 1-dimensional multiple changepoint detection problem, we derive a new fast error rate for the fused lasso estimator, under the assumption that the mean vector has a sparse number of changepoints.

659, TITLE: Linear Time Computation of Moments in Sum-Product Networks
https://papers.nips.cc/paper/7265-linear-time-computation-of-moments-in-sum-product-networks
AUTHORS: Han Zhao, Geoffrey J. Gordon
HIGHLIGHT: We propose an optimal linear-time algorithm that works even when the SPN is a general directed acyclic graph (DAG), which significantly broadens the applicability of Bayesian online algorithms for SPNs.

660, TITLE: A Meta-Learning Perspective on Cold-Start Recommendations for Items
https://papers.nips.cc/paper/7266-a-meta-learning-perspective-on-cold-start-recommendations-for-items
AUTHORS: Manasi Vartak, Arvind Thiagarajan, Conrado Miranda, Jeshua Bratman, Hugo Larochelle
HIGHLIGHT: In this paper, we present a meta-learning strategy to address item cold-start when new items arrive continuously.

661, TITLE: Predicting Scene Parsing and Motion Dynamics in the Future
https://papers.nips.cc/paper/7267-predicting-scene-parsing-and-motion-dynamics-in-the-future
AUTHORS: Xiaojie Jin, Huaxin Xiao, Xiaohui Shen, Jimei Yang, Zhe Lin, Yunpeng Chen, Zequn Jie, Jiashi Feng, Shuicheng Yan
HIGHLIGHT: In this paper, we propose a novel model to predict the scene parsing and motion dynamics in unobserved future video frames simultaneously.

662, TITLE:	Sticking the Landing: Simple, Lower-Variance Gradient Estimators for Variational Inference
https://papers.nips.cc/paper/7268-sticking-the-landing-simple-lower-variance-gradient-estimators-for-variational-inference
AUTHORS:	Geoffrey Roeder, Yuhuai Wu, David K. Duvenaud
HIGHLIGHT:	We propose a simple and general variant of the standard reparameterized gradient estimator for the variational evidence lower bound.

663, TITLE:	Efficient Approximation Algorithms for Strings Kernel Based Sequence Classification
https://papers.nips.cc/paper/7269-efficient-approximation-algorithms-for-strings-kernel-based-sequence-classification
AUTHORS:	Muhammad Farhan, Juvaria Tariq, Arif Zaman, Mudassir Shabbir, Imdad Ullah Khan
HIGHLIGHT:	In this work, we develop novel techniques to efficiently and accurately estimate the pairwise similarity score, which enables us to use much larger values of k and m, and get higher predictive accuracy.

664, TITLE:	Kernel Feature Selection via Conditional Covariance Minimization
https://papers.nips.cc/paper/7270-kernel-feature-selection-via-conditional-covariance-minimization
AUTHORS:	Jianbo Chen, Mitchell Stern, Martin J. Wainwright, Michael I. Jordan
HIGHLIGHT:	We propose a method for feature selection that employs kernel-based measures of independence to find a subset of covariates that is maximally predictive of the response.

665, TITLE:	Convergence of Gradient EM on Multi-component Mixture of Gaussians
https://papers.nips.cc/paper/7271-convergence-of-gradient-em-on-multi-component-mixture-of-gaussians
AUTHORS:	Bowei Yan, Mingzhang Yin, Purnamrita Sarkar
HIGHLIGHT:	In this paper, we study convergence properties of the gradient variant of Expectation-Maximization algorithm~\cite{lange1995gradient} for Gaussian Mixture Models for arbitrary number of clusters and mixing coefficients.

666, TITLE:	Real Time Image Saliency for Black Box Classifiers
https://papers.nips.cc/paper/7272-real-time-image-saliency-for-black-box-classifiers
AUTHORS:	Piotr Dabkowski, Yarin Gal
HIGHLIGHT:	In this work we develop a fast saliency detection method that can be applied to any differentiable image classifier.

667, TITLE:	Houdini: Fooling Deep Structured Visual and Speech Recognition Models with Adversarial Examples
https://papers.nips.cc/paper/7273-houdini-fooling-deep-structured-visual-and-speech-recognition-models-with-adversarial-examples
AUTHORS:	Moustapha M. Cisse, Yossi Adi, Natalia Neverova, Joseph Keshet
HIGHLIGHT:	We introduce a novel flexible approach named Houdini for generating adversarial examples specifically tailored for the final performance measure of the task considered, be it combinatorial and non-decomposable.

668, TITLE:	Efficient and Flexible Inference for Stochastic Systems
https://papers.nips.cc/paper/7274-efficient-and-flexible-inference-for-stochastic-systems
AUTHORS:	Stefan Bauer, Nico S. Gorbach, Djordje Miladinovic, Joachim M. Buhmann
HIGHLIGHT:	We provide a grid free and flexible algorithm offering parameter and state inference for stochastic systems and compare our approch based on variational approximations to state of the art methods showing significant advantages both in runtime and accuracy.

669, TITLE:	When Cyclic Coordinate Descent Outperforms Randomized Coordinate Descent
https://papers.nips.cc/paper/7275-when-cyclic-coordinate-descent-outperforms-randomized-coordinate-descent
AUTHORS:	Mert Gurbuzbalaban, Asuman Ozdaglar, Pablo A. Parrilo, Nuri Vanli
HIGHLIGHT:	In this paper, we provide examples and more generally problem classes for which CCD (or CD with any deterministic order) is faster than RCD in terms of asymptotic worst-case convergence.

670, TITLE:	Active Learning from Peers
https://papers.nips.cc/paper/7276-active-learning-from-peers
AUTHORS:	Keerthiram Murugesan, Jaime Carbonell
HIGHLIGHT:	The paper develops the new algorithm to exhibit this behavior and proves a theoretical mistake bound for the method compared to the best linear predictor in hindsight.

671, TITLE:	Experimental Design for Learning Causal Graphs with Latent Variables
https://papers.nips.cc/paper/7277-experimental-design-for-learning-causal-graphs-with-latent-variables
AUTHORS:	Murat Kocaoglu, Karthikeyan Shanmugam, Elias Bareinboim
HIGHLIGHT:	We propose an efficient randomized algorithm that can learn the observable graph using $O(d\log^2 n)$ interventions where d is the degree of the graph.

672, TITLE:　　　　Learning to Model the Tail
https://papers.nips.cc/paper/7278-learning-to-model-the-tail
AUTHORS:　　　　Yu-Xiong Wang, Deva Ramanan, Martial Hebert
HIGHLIGHT:　　　　We describe an approach to learning from long-tailed, imbalanced datasets that are prevalent in real-world settings.

673, TITLE:　　　　Stochastic Mirror Descent in Variationally Coherent Optimization Problems
https://papers.nips.cc/paper/7279-stochastic-mirror-descent-in-variationally-coherent-optimization-problems
AUTHORS:　　　　Zhengyuan Zhou, Panayotis Mertikopoulos, Nicholas Bambos, Stephen Boyd, Peter W. Glynn
HIGHLIGHT:　　　　In this paper, we examine a class of non-convex stochastic optimization problems which we call variationally coherent, and which properly includes pseudo-/quasiconvex and star-convex optimization problems.

674, TITLE:　　　　On Separability of Loss Functions, and Revisiting Discriminative Vs Generative Models
https://papers.nips.cc/paper/7280-on-separability-of-loss-functions-and-revisiting-discriminative-vs-generative-models
AUTHORS:　　　　Adarsh Prasad, Alexandru Niculescu-Mizil, Pradeep K. Ravikumar
HIGHLIGHT:　　　　We revisit the classical analysis of generative vs discriminative models for general exponential families, and high-dimensional settings.

675, TITLE:　　　　Maxing and Ranking with Few Assumptions
https://papers.nips.cc/paper/7281-maxing-and-ranking-with-few-assumptions
AUTHORS:　　　　Moein Falahatgar, Yi Hao, Alon Orlitsky, Venkatadheeraj Pichapati, Vaishakh Ravindrakumar
HIGHLIGHT:　　　　With just one simple natural assumption: strong stochastic transitivity, we show that maxing can be performed with linearly many comparisons yet ranking requires quadratically many.

676, TITLE:　　　　On clustering network-valued data
https://papers.nips.cc/paper/7282-on-clustering-network-valued-data
AUTHORS:　　　　Soumendu Sundar Mukherjee, Purnamrita Sarkar, Lizhen Lin
HIGHLIGHT:　　　　When node correspondence is present, we cluster networks by summarizing a network by its graphon estimate, whereas when node correspondence is not present, we propose a novel solution for clustering such networks by associating a computationally feasible feature vector to each network based on trace of powers of the adjacency matrix.

677, TITLE:　　　　A General Framework for Robust Interactive Learning
https://papers.nips.cc/paper/7283-a-general-framework-for-robust-interactive-learning
AUTHORS:　　　　Ehsan Emamjomeh-Zadeh, David Kempe
HIGHLIGHT:　　　　We propose a general framework for interactively learning models, such as (binary or non-binary) classifiers, orderings/rankings of items, or clusterings of data points.

678, TITLE:　　　　Multi-view Matrix Factorization for Linear Dynamical System Estimation
https://papers.nips.cc/paper/7284-multi-view-matrix-factorization-for-linear-dynamical-system-estimation
AUTHORS:　　　　Mahdi Karami, Martha White, Dale Schuurmans, Csaba Szepesvari
HIGHLIGHT:　　　　In this paper, we instead reconsider likelihood maximization and develop an optimization based strategy for recovering the latent states and transition parameters.

679, TITLE:　　　　Mean Field Residual Networks: On the Edge of Chaos
https://papers.nips.cc/paper/6879-mean-field-residual-networks-on-the-edge-of-chaos
AUTHORS:　　　　Ge Yang, Samuel Schoenholz
HIGHLIGHT:　　　　We study randomly initialized residual networks using mean field theory and the theory of difference equations.