

1, TITLE: Automated Mechanism Design for Strategic Classification: Abstract for KDD'21 Keynote Talk

<https://dl.acm.org/doi/abs/10.1145/3447548.3469650>

AUTHORS: Vincent Conitzer

HIGHLIGHT: Automated Mechanism Design for Strategic Classification

2, TITLE: Data Science for Assembly Engineering

<https://dl.acm.org/doi/abs/10.1145/3447548.3469649>

AUTHORS: Sharon C. Glotzer

HIGHLIGHT: In this talk, we discuss the applications of data science and data-driven thinking to molecular and materials simulation.

3, TITLE: Safe Learning in Robotics

<https://dl.acm.org/doi/abs/10.1145/3447548.3469648>

AUTHORS: Claire Tomlin

HIGHLIGHT: We present a controller synthesis technique based on the computation of reachable sets, using optimal control and game theory. Then, we present methods for combining reachability with learning-based methods, to enable performance improvement while maintaining safety and to move towards safe robot control with learned models of the dynamics and the environment

4, TITLE: On the Nature of Data Science

<https://dl.acm.org/doi/abs/10.1145/3447548.3469651>

AUTHORS: Jeffrey Ullman

HIGHLIGHT: To support my argument, I shall give a brief introduction to two algorithms that are important in data science but that are neither machine learning nor statistics: locality-sensitive hashing and counting distinct elements.

5, TITLE: LawyerPAN: A Proficiency Assessment Network for Trial Lawyers

<https://dl.acm.org/doi/abs/10.1145/3447548.3467218>

AUTHORS: Yanqing An, Qi Liu, Han Wu, Kai Zhang, Linan Yue, Mingyue Cheng, Hongke Zhao, Enhong Chen

HIGHLIGHT: To this end, we propose a novel proficiency assessment network for trial lawyers (LawyerPAN) to quantify lawyer proficiency through online litigation records.

6, TITLE: Fine-Grained System Identification of Nonlinear Neural Circuits

<https://dl.acm.org/doi/abs/10.1145/3447548.3467402>

AUTHORS: Dawna Bagherian, James Gornet, Jeremy Bernstein, Yu-Li Ni, Yisong Yue, Markus Meister

HIGHLIGHT: We study the problem of sparse nonlinear model recovery of high dimensional compositional functions.

7, TITLE: Why Attentions May Not Be Interpretable?

<https://dl.acm.org/doi/abs/10.1145/3447548.3467307>

AUTHORS: Bing Bai, Jian Liang, Guanhua Zhang, Hao Li, Kun Bai, Fei Wang

HIGHLIGHT: In this paper, we demonstrate that one root cause of this phenomenon is the combinatorial shortcuts, which means that, in addition to the highlighted parts, the attention weights themselves may carry extra information that could be utilized by downstream models after attention layers.

8, TITLE: Multi-facet Contextual Bandits: A Neural Network Perspective

<https://dl.acm.org/doi/abs/10.1145/3447548.3467299>

AUTHORS: Yikun Ban, Jingrui He, Curtiss B. Cook

HIGHLIGHT: In this paper, we study a novel problem of multi-facet bandits involving a group of bandits, each characterizing the users' needs from one unique aspect.

9, TITLE: Partial Label Dimensionality Reduction via Confidence-Based Dependence Maximization

<https://dl.acm.org/doi/abs/10.1145/3447548.3467313>

AUTHORS: Wei-Xuan Bao, Jun-Yi Hang, Min-Ling Zhang

HIGHLIGHT: In this paper, a novel partial label dimensionality reduction approach named CENDA is proposed via confidence-based dependence maximization.

10, TITLE: Uplift Modeling with Generalization Guarantees

<https://dl.acm.org/doi/abs/10.1145/3447548.3467395>

AUTHORS: Artem Betlei, Eustache Diemert, Massih-Reza Amini

HIGHLIGHT: In this paper, we consider the task of ranking individuals based on the potential benefit of being "treated" (e.g. by a drug or exposure to recommendations or ads), referred to as Uplift Modeling in the literature.

- 11, TITLE: Fast One-class Classification using Class Boundary-preserving Random Projections
<https://dl.acm.org/doi/abs/10.1145/3447548.3467440>
AUTHORS: Arindam Bhattacharya, Sumanth Varambally, Amitabha Bagchi, Srikanta Bedathur
HIGHLIGHT: In this paper, we present Fast Random projection-based One-Class Classification (FROCC), an extremely efficient, scalable and easily parallelizable method for one-class classification with provable theoretical guarantees.
- 12, TITLE: Causal Models for Real Time Bidding with Repeated User Interactions
<https://dl.acm.org/doi/abs/10.1145/3447548.3467280>
AUTHORS: Martin Bompaire, Alexandre Gilotte, Benjamin Heymann
HIGHLIGHT: The purpose of the present paper is to discuss how such an estimation should be made when a user has already been shown one or more displays.
- 13, TITLE: Aggregating Complex Annotations via Merging and Matching
<https://dl.acm.org/doi/abs/10.1145/3447548.3467411>
AUTHORS: Alexander Braylan, Matthew Lease
HIGHLIGHT: We address two distinct challenges in this work. Firstly, how can a general aggregation model support merging of complex labels across diverse annotation tasks? Secondly, for multi-object annotation tasks that require annotators to provide multiple labels for each item being annotated (e.g., labeling named-entities in a text or visual entities in an image), how do we match which annotator label refers to which entity, such that only matching labels are aggregated across annotators?
- 14, TITLE: How Interpretable and Trustworthy are GAMs?
<https://dl.acm.org/doi/abs/10.1145/3447548.3467453>
AUTHORS: Chun-Hao Chang, Sarah Tan, Ben Lengerich, Anna Goldenberg, Rich Caruana
HIGHLIGHT: In this paper, we quantitatively and qualitatively investigate a variety of GAM algorithms on real and simulated datasets.
- 15, TITLE: Graph Deep Factors for Forecasting with Applications to Cloud Resource Allocation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467357>
AUTHORS: Hongjie Chen, Ryan A. Rossi, Kanak Mahadik, Sungchul Kim, Hoda Eldardiry
HIGHLIGHT: In this work, we propose a deep hybrid probabilistic graph-based forecasting framework called Graph Deep Factors (GraphDF) that goes beyond these two extremes by allowing nodes and their time-series to be connected to others in an arbitrary fashion.
- 16, TITLE: On Breaking Truss-Based Communities
<https://dl.acm.org/doi/abs/10.1145/3447548.3467365>
AUTHORS: Huiping Chen, Alessio Conte, Roberto Grossi, Grigorios Loukides, Solon P. Pissis, Michelle Sweering
HIGHLIGHT: We introduce the problem of identifying a smallest edge subset of a given graph whose removal makes the graph k -truss-free.
- 17, TITLE: PAR-GAN: Improving the Generalization of Generative Adversarial Networks Against Membership Inference Attacks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467445>
AUTHORS: Junjie Chen, Wendy Hui Wang, Hongchang Gao, Xinghua Shi
HIGHLIGHT: In this paper, we seek to improve the generalization of GANs from a perspective of privacy protection, specifically in terms of defending against the membership inference attack (MIA) which aims to infer whether a particular sample was used for model training.
- 18, TITLE: Learning Elastic Embeddings for Customizing On-Device Recommenders
<https://dl.acm.org/doi/abs/10.1145/3447548.3467220>
AUTHORS: Tong Chen, Hongzhi Yin, Yujia Zheng, Zi Huang, Yang Wang, Meng Wang
HIGHLIGHT: In this paper, we present a novel lightweight recommendation paradigm that allows a well-trained recommender to be customized for arbitrary device-specific memory constraints without retraining.
- 19, TITLE: Causal Understanding of Fake News Dissemination on Social Media
<https://dl.acm.org/doi/abs/10.1145/3447548.3467321>
AUTHORS: Lu Cheng, Ruocheng Guo, Kai Shu, Huan Liu
HIGHLIGHT: Drawing on causal inference theories, we first propose a principled approach to alleviating selection bias in fake news dissemination. We then consider the learned unbiased fake news sharing behavior as the surrogate confounder that can fully capture the causal links between user attributes and user susceptibility.

- 20, TITLE: Interpreting Internal Activation Patterns in Deep Temporal Neural Networks by Finding Prototypes
<https://dl.acm.org/doi/abs/10.1145/3447548.3467346>
AUTHORS: Sohee Cho, Wonjoon Chang, Ginkyeng Lee, Jaesik Choi
HIGHLIGHT: To address this issue, we propose a new framework with which to visualize temporal representations learned in deep neural networks without hand-crafted segmentation labels.
- 21, TITLE: Improve Learning from Crowds via Generative Augmentation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467409>
AUTHORS: Zhendong Chu, Hongning Wang
HIGHLIGHT: In this paper, we study how to handle sparsity in crowdsourced data using data augmentation.
- 22, TITLE: Graph Infomax Adversarial Learning for Treatment Effect Estimation with Networked Observational Data
<https://dl.acm.org/doi/abs/10.1145/3447548.3467302>
AUTHORS: Zhixuan Chu, Stephen L. Rathbun, Sheng Li
HIGHLIGHT: In this paper, we propose a Graph Infomax Adversarial Learning (GIAL) model for treatment effect estimation, which makes full use of the network structure to capture more information by recognizing the imbalance in network structure.
- 23, TITLE: Graph Similarity Description: How Are These Graphs Similar?
<https://dl.acm.org/doi/abs/10.1145/3447548.3467257>
AUTHORS: Corinna Coupette, Jilles Vreeken
HIGHLIGHT: To discover good models, we propose Momo, which breaks the problem into two parts and introduces efficient algorithms for each.
- 24, TITLE: Bavarian: Betweenness Centrality Approximation with Variance-Aware Rademacher Averages
<https://dl.acm.org/doi/abs/10.1145/3447548.3467354>
AUTHORS: Cyrus Cousins, Chloe Wohlgemuth, Matteo Riondato
HIGHLIGHT: We present Bavarian, a collection of sampling-based algorithms for approximating the Betweenness Centrality (BC) of all vertices in a graph.
- 25, TITLE: Towards Model-Agnostic Post-Hoc Adjustment for Balancing Ranking Fairness and Algorithm Utility
<https://dl.acm.org/doi/abs/10.1145/3447548.3467251>
AUTHORS: Sen Cui, Weishen Pan, Changshui Zhang, Fei Wang
HIGHLIGHT: By formulating this problem as the identification of an optimal warping path across different protected groups, we propose a non-parametric method to search for such an optimal path through a dynamic programming process.
- 26, TITLE: Labeled Data Generation with Inexact Supervision
<https://dl.acm.org/doi/abs/10.1145/3447548.3467306>
AUTHORS: Enyan Dai, Kai Shu, Yiwei Sun, Suhang Wang
HIGHLIGHT: We propose a novel generative framework named as ADDES which can synthesize high-quality labeled data for target classification tasks by learning from data with inexact supervision and the relations between inexact supervision and target classes.
- 27, TITLE: NRGNN: Learning a Label Noise Resistant Graph Neural Network on Sparsely and Noisily Labeled Graphs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467364>
AUTHORS: Enyan Dai, Charu Aggarwal, Suhang Wang
HIGHLIGHT: To alleviate the negative effects of label noise, we propose to link the unlabeled nodes with labeled nodes of high feature similarity to bring more clean label information.
- 28, TITLE: PID-GAN: A GAN Framework based on a Physics-informed Discriminator for Uncertainty Quantification with Physics
<https://dl.acm.org/doi/abs/10.1145/3447548.3467449>
AUTHORS: Arka Daw, M. Maruf, Anuj Karpatne
HIGHLIGHT: To this end, we propose a novel physics-informed GAN architecture, termed PID-GAN, where the knowledge of physics is used to inform the learning of both the generator and discriminator models, making ample use of unlabeled data instances.
- 29, TITLE: MiniRocket: A Very Fast (Almost) Deterministic Transform for Time Series Classification
<https://dl.acm.org/doi/abs/10.1145/3447548.3467231>
AUTHORS: Angus Dempster, Daniel F. Schmidt, Geoffrey I. Webb
HIGHLIGHT: We reformulate Rocket into a new method, MiniRocket. MiniRocket is up to 75 times faster than Rocket on larger datasets, and almost deterministic (and optionally, fully deterministic), while maintaining essentially the same accuracy.

- 30, TITLE: Mutual Information Preserving Back-propagation: Learn to Invert for Faithful Attribution
<https://dl.acm.org/doi/abs/10.1145/3447548.3467310>
AUTHORS: Huiqi Deng, Na Zou, Weifu Chen, Guocan Feng, Mengnan Du, Xia Hu
HIGHLIGHT: The basic idea is to learn a source signal by back-propagation such that the mutual information between input and output should be as much as possible preserved in the mutual information between input and the source signal.
- 31, TITLE: ST-Norm: Spatial and Temporal Normalization for Multi-variate Time Series Forecasting
<https://dl.acm.org/doi/abs/10.1145/3447548.3467330>
AUTHORS: Jinliang Deng, Xiushi Chen, Renhe Jiang, Xuan Song, Ivor W. Tsang
HIGHLIGHT: To this end, we propose two kinds of normalization modules -- temporal and spatial normalization -- which separately refine the high-frequency component and the local component underlying the raw data.
- 32, TITLE: DiffMG: Differentiable Meta Graph Search for Heterogeneous Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467447>
AUTHORS: Yuhui Ding, Quanming Yao, Huan Zhao, Tong Zhang
HIGHLIGHT: In this paper, we propose a novel framework to automatically utilize task-dependent semantic information which is encoded in heterogeneous information networks (HINs).
- 33, TITLE: Global Neighbor Sampling for Mixed CPU-GPU Training on Giant Graphs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467437>
AUTHORS: Jialin Dong, Da Zheng, Lin F. Yang, George Karypis
HIGHLIGHT: To address this issue, we propose Global Neighborhood Sampling that aims at training GNNs on giant graphs specifically for mixed CPU-GPU training.
- 34, TITLE: Individual Fairness for Graph Neural Networks: A Ranking based Approach
<https://dl.acm.org/doi/abs/10.1145/3447548.3467266>
AUTHORS: Yushun Dong, Jian Kang, Hanghang Tong, Jundong Li
HIGHLIGHT: Toward this goal, in this paper, we make an initial investigation to enhance the individual fairness of GNNs and propose a novel ranking based framework---REDRESS.
- 35, TITLE: Sylvester Tensor Equation for Multi-Way Association
<https://dl.acm.org/doi/abs/10.1145/3447548.3467336>
AUTHORS: Boxin Du, Lihui Liu, Hanghang Tong
HIGHLIGHT: In this paper, we formulate multi-way association as a convex optimization problem, whose optimal solution can be obtained by a Sylvester tensor equation.
- 36, TITLE: TabularNet: A Neural Network Architecture for Understanding Semantic Structures of Tabular Data
<https://dl.acm.org/doi/abs/10.1145/3447548.3467228>
AUTHORS: Lun Du, Fei Gao, Xu Chen, Ran Jia, Junshan Wang, Jiang Zhang, Shi Han, Dongmei Zhang
HIGHLIGHT: To simultaneously extract spatial and relational information from tables, we propose a novel neural network architecture, TabularNet.
- 37, TITLE: When Comparing to Ground Truth is Wrong: On Evaluating GNN Explanation Methods
<https://dl.acm.org/doi/abs/10.1145/3447548.3467283>
AUTHORS: Lukas Faber, Amin K. Moghaddam, Roger Wattenhofer
HIGHLIGHT: We propose three novel benchmarks: (i) pattern detection, (ii) community detection, and (iii) handling negative evidence and gradient saturation.
- 38, TITLE: Large-Scale Subspace Clustering via k-Factorization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467267>
AUTHORS: Jicong Fan
HIGHLIGHT: This paper presents a method called k-Factorization Subspace Clustering (k-FSC) for large-scale subspace clustering.
- 39, TITLE: Gaussian Process with Graph Convolutional Kernel for Relational Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467327>
AUTHORS: Jinyuan Fang, Shangsong Liang, Zaiqiao Meng, Qiang Zhang

HIGHLIGHT: To model the complex and non-differentiable functions over relational data, we propose a novel Graph Convolutional Kernel, which enables to incorporate relational structures to feature-based kernels to capture the statistical structure of data.

40, **TITLE:** Spatial-Temporal Graph ODE Networks for Traffic Flow Forecasting

<https://dl.acm.org/doi/abs/10.1145/3447548.3467430>

AUTHORS: Zheng Fang, Qingqing Long, Guojie Song, Kunqing Xie

HIGHLIGHT: To this end, we propose Spatial-Temporal Graph Ordinary Differential Equation Networks (STGODE). Specifically, we capture spatial-temporal dynamics through a tensor-based ordinary differential equation (ODE), as a result, deeper networks can be constructed and spatial-temporal features are utilized synchronously.

41, **TITLE:** Multiple-Instance Learning from Similar and Dissimilar Bags

<https://dl.acm.org/doi/abs/10.1145/3447548.3467318>

AUTHORS: Lei Feng, Senlin Shu, Yuzhou Cao, Lue Tao, Hongxin Wei, Tao Xiang, Bo An, Gang Niu

HIGHLIGHT: Therefore, in this paper, we for the first time investigate MIL from only similar and dissimilar bags.

42, **TITLE:** Differentiable Pattern Set Mining

<https://dl.acm.org/doi/abs/10.1145/3447548.3467348>

AUTHORS: Jonas Fischer, Jilles Vreeken

HIGHLIGHT: Here, we propose a gradient based optimization approach that allows us to efficiently discover high-quality pattern sets from data of millions of rows and hundreds of thousands of features.

43, **TITLE:** ProgRPGAN: Progressive GAN for Route Planning

<https://dl.acm.org/doi/abs/10.1145/3447548.3467406>

AUTHORS: Tao-yang Fu, Wang-Chien Lee

HIGHLIGHT: By exploring global knowledge of geographical areas and topological structures of road networks to facilitate route planning, in this work, we propose a novel Generative Adversarial Network (GAN) framework, namely Progressive Route Planning GAN (ProgRPGAN), for route planning in road networks.

44, **TITLE:** Probabilistic and Dynamic Molecule-Disease Interaction Modeling for Drug Discovery

<https://dl.acm.org/doi/abs/10.1145/3447548.3467286>

AUTHORS: Tianfan Fu, Cao Xiao, Cheng Qian, Lucas M. Glass, Jimeng Sun

HIGHLIGHT: In this work, we propose PRIME to leverage high-quality drug molecules and drug-disease relations in historical clinical trials to narrow down the molecular search space in drug discovery.

45, **TITLE:** Efficient Data-specific Model Search for Collaborative Filtering

<https://dl.acm.org/doi/abs/10.1145/3447548.3467399>

AUTHORS: Chen Gao, Quanming Yao, Depeng Jin, Yong Li

HIGHLIGHT: In this paper, motivated by the recent advances in automated machine learning (AutoML), we propose to design a data-specific CF model by AutoML techniques.

46, **TITLE:** Unsupervised Graph Alignment with Wasserstein Distance Discriminator

<https://dl.acm.org/doi/abs/10.1145/3447548.3467332>

AUTHORS: Ji Gao, Xiao Huang, Jundong Li

HIGHLIGHT: Motivated by the success of graph convolution networks (GCNs) in fusing network and node attributes for various learning tasks, we aim to tackle the graph alignment problem on the basis of GCNs.

47, **TITLE:** Maxmin-Fair Ranking: Individual Fairness under Group-Fairness Constraints

<https://dl.acm.org/doi/abs/10.1145/3447548.3467349>

AUTHORS: David Garcia-Soriano, Francesco Bonchi

HIGHLIGHT: We study a novel problem of fairness in ranking aimed at minimizing the amount of individual unfairness introduced when enforcing group-fairness constraints.

48, **TITLE:** Boosted Second Price Auctions: Revenue Optimization for Heterogeneous Bidders

<https://dl.acm.org/doi/abs/10.1145/3447548.3467454>

AUTHORS: Negin Golrezaei, Max Lin, Vahab Mirrokni, Hamid Nazerzadeh

HIGHLIGHT: We propose a data-driven approach to optimize boost values using the previous bids of the bidders.

49, **TITLE:** Meaning Error Rate: ASR domain-specific metric framework

<https://dl.acm.org/doi/abs/10.1145/3447548.3467372>

AUTHORS: Ludmila Gordeeva, Vasily Ershov, Oleg Gulyaev, Igor Kuralenok
HIGHLIGHT: In our work, we build a speech recognition quality evaluation framework that unifies feedback coming from different types of customers into a single metric.

50, TITLE: Towards Computing a Near-Maximum Weighted Independent Set on Massive Graphs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467232>
AUTHORS: Jiewei Gu, Weiguo Zheng, Yuzheng Cai, Peng Peng
HIGHLIGHT: In this paper, we study the problem of maximum weighted independent set (MWIS) that is defined as the set of independent vertices with the largest weight.

51, TITLE: UCPhrase: Unsupervised Context-aware Quality Phrase Tagging
<https://dl.acm.org/doi/abs/10.1145/3447548.3467397>
AUTHORS: Xiaotao Gu, Zihan Wang, Zhenyu Bi, Yu Meng, Liyuan Liu, Jiawei Han, Jingbo Shang
HIGHLIGHT: In this work, we propose UCPhrase, a novel unsupervised context-aware quality phrase tagger.

52, TITLE: Learning from Imbalanced and Incomplete Supervision with Its Application to Ride-Sharing Liability Judgment
<https://dl.acm.org/doi/abs/10.1145/3447548.3467305>
AUTHORS: Lan-Zhe Guo, Zhi Zhou, Jie-Jing Shao, Qi Zhang, Feng Kuang, Gao-Le Li, Zhang-Xun Liu, Guo-Bin Wu, Nan Ma, Qun Li, Yu-Feng Li
HIGHLIGHT: In this paper, we consider the problem of learning from imbalanced and incomplete supervision, where only a small subset of labeled data is available and the label distribution is highly imbalanced.

53, TITLE: Dual Graph enhanced Embedding Neural Network for CTR Prediction
<https://dl.acm.org/doi/abs/10.1145/3447548.3467384>
AUTHORS: Wei Guo, Rong Su, Renhao Tan, Huifeng Guo, Yingxue Zhang, Zhirong Liu, Ruiming Tang, Xiuqiang He
HIGHLIGHT: To solve these problems, we propose a novel module named Dual Graph enhanced Embedding, which is compatible with various CTR prediction models to alleviate these two problems.

54, TITLE: Deep Generative Models for Spatial Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467394>
AUTHORS: Xiaojie Guo, Yuanqi Du, Liang Zhao
HIGHLIGHT: To address these challenges, we first propose a novel objective for joint spatial-network disentanglement from the perspective of information bottleneck as well as a novel optimization algorithm to optimize the intractable objective. Based on this, a spatial-network variational autoencoder (SND-VAE) with a new spatial-network message passing neural network (S-MPNN) is proposed to discover the independent and dependent latent factors of spatial and networks.

55, TITLE: Subset Node Representation Learning over Large Dynamic Graphs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467393>
AUTHORS: Xingzhi Guo, Baojian Zhou, Steven Skiena
HIGHLIGHT: In this paper, we propose a new method, namely Dynamic Personalized PageRank Embedding (DynamicPPE) for learning a target subset of node representations over large-scale dynamic networks.

56, TITLE: Generalized Zero-Shot Extreme Multi-label Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467426>
AUTHORS: Nilesh Gupta, Sakina Bohra, Yashoteja Prabhu, Saurabh Purohit, Manik Varma
HIGHLIGHT: As a remedy, this paper proposes a novel approach called ZestXML for the task of Generalized Zero-shot XML (GZXML) where relevant labels have to be chosen from all available seen and unseen labels.

57, TITLE: Graph Summarization with Controlled Utility Loss
<https://dl.acm.org/doi/abs/10.1145/3447548.3467359>
AUTHORS: Mahdi Hajiabadi, Jasbir Singh, Venkatesh Srinivasan, Alex Thomo
HIGHLIGHT: We present new algorithms for graph summarization where the loss in utility is fully controllable by the user.

58, TITLE: Dynamic and Multi-faceted Spatio-temporal Deep Learning for Traffic Speed Forecasting
<https://dl.acm.org/doi/abs/10.1145/3447548.3467275>
AUTHORS: Liangzhe Han, Bowen Du, Leilei Sun, Yanjie Fu, Yisheng Lv, Hui Xiong
HIGHLIGHT: To this end, in this paper, we aim to explore these dynamic and multi-faceted spatio-temporal characteristics inherent in traffic data for further unleashing the power of DGNNs for better traffic speed forecasting.

59, TITLE: A Graph-based Approach for Trajectory Similarity Computation in Spatial Networks

<https://dl.acm.org/doi/abs/10.1145/3447548.3467337>

AUTHORS: Peng Han, Jin Wang, Di Yao, Shuo Shang, Xiangliang Zhang

HIGHLIGHT: In this paper, we study the problem of trajectory similarity computation over spatial network, where the real distances between objects are reflected by the network distance.

60, TITLE: Adaptive Transfer Learning on Graph Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3447548.3467450>

AUTHORS: Xueting Han, Zhenhuan Huang, Bang An, Jing Bai

HIGHLIGHT: To solve such problems, we propose a new transfer learning paradigm on GNNs which could effectively leverage self-supervised tasks as auxiliary tasks to help the target task.

61, TITLE: PETGEN: Personalized Text Generation Attack on Deep Sequence Embedding-based Classification Models

<https://dl.acm.org/doi/abs/10.1145/3447548.3467390>

AUTHORS: Bing He, Mustaque Ahamad, Srijan Kumar

HIGHLIGHT: We propose a novel end-to-end Personalized Text Generation Attack model, called PETGEN, that simultaneously reduces the efficacy of the detection model and generates posts that have several key desirable properties.

62, TITLE: Pruning-Aware Merging for Efficient Multitask Inference

<https://dl.acm.org/doi/abs/10.1145/3447548.3467271>

AUTHORS: Xiaoxi He, Dawei Gao, Zimu Zhou, Yongxin Tong, Lothar Thiele

HIGHLIGHT: On this basis, we propose Pruning-Aware Merging (PAM), a heuristic network merging scheme to construct a multitask network that approximates these conditions.

63, TITLE: DARING: Differentiable Causal Discovery with Residual Independence

<https://dl.acm.org/doi/abs/10.1145/3447548.3467439>

AUTHORS: Yue He, Peng Cui, Zheyang Shen, Renzhe Xu, Furui Liu, Yong Jiang

HIGHLIGHT: In this paper, we provide the justification that their proneness to erroneous structures is mainly caused by the over-reconstruction problem, i.e., the noises of variables are absorbed into the variable reconstruction process, leading to the dependency among variable reconstruction residuals, and thus raise structure identifiability problems according to FCM theories.

64, TITLE: PcDGAN: A Continuous Conditional Diverse Generative Adversarial Network For Inverse Design

<https://dl.acm.org/doi/abs/10.1145/3447548.3467414>

AUTHORS: Amin Heyrani Nobari, Wei Chen, Faez Ahmed

HIGHLIGHT: We propose a new model, named Performance Conditioned Diverse Generative Adversarial Network (PcDGAN), which introduces a singular vicinal loss combined with a Determinantal Point Processes (DPP) based loss function to enhance diversity.

65, TITLE: Federated Adversarial Debiasing for Fair and Transferable Representations

<https://dl.acm.org/doi/abs/10.1145/3447548.3467281>

AUTHORS: Junyuan Hong, Zhuangdi Zhu, Shuyang Yu, Zhangyang Wang, Hiroko H. Dodge, Jiayu Zhou

HIGHLIGHT: In this work, we study these barriers and address them by proposing a novel approach Federated Adversarial Debiasing (FADE).

66, TITLE: Uncertainty-Aware Reliable Text Classification

<https://dl.acm.org/doi/abs/10.1145/3447548.3467382>

AUTHORS: Yibo Hu, Latifur Khan

HIGHLIGHT: We propose an inexpensive framework that adopts both auxiliary outliers and pseudo off-manifold samples to train the model with prior knowledge of a certain class, which has high vacuity for OOD samples.

67, TITLE: HMRL: Hyper-Meta Learning for Sparse Reward Reinforcement Learning Problem

<https://dl.acm.org/doi/abs/10.1145/3447548.3467242>

AUTHORS: Yun Hua, Xiangfeng Wang, Bo Jin, Wenhao Li, Junchi Yan, Xiaofeng He, Hongyuan Zha

HIGHLIGHT: In this respect, we develop a novel meta reinforcement learning framework called Hyper-Meta RL(HMRL), for sparse reward RL problems.

68, TITLE: Representation Learning on Knowledge Graphs for Node Importance Estimation

<https://dl.acm.org/doi/abs/10.1145/3447548.3467342>

AUTHORS: Han Huang, Leilei Sun, Bowen Du, Chuanren Liu, Weifeng Lv, Hui Xiong

HIGHLIGHT: To this end, in this paper, we propose a representation learning framework to leverage the rich information inherent in these multifarious nodes and edges for improving node importance estimation in knowledge graphs.

69, TITLE: Metric Learning via Penalized Optimization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467369>
AUTHORS: Hao Huang, Yanan Peng, Ting Gan, Weiping Tu, Ruiting Zhou, Sai Wu
HIGHLIGHT: Towards this, we formulate metric learning as a penalized optimization problem, and provide design guideline, paradigms with a general formula, as well as two representative instantiations for the penalty term.

70, TITLE: MixGCF: An Improved Training Method for Graph Neural Network-based Recommender Systems
<https://dl.acm.org/doi/abs/10.1145/3447548.3467408>
AUTHORS: Tinglin Huang, Yuxiao Dong, Ming Ding, Zhen Yang, Wenzheng Feng, Xinyu Wang, Jie Tang
HIGHLIGHT: In this work, we propose to study negative sampling by leveraging both the user-item graph structure and GNNs' aggregation process.

71, TITLE: Scaling Up Graph Neural Networks Via Graph Coarsening
<https://dl.acm.org/doi/abs/10.1145/3447548.3467256>
AUTHORS: Zengfeng Huang, Shengzhong Zhang, Chong Xi, Tang Liu, Min Zhou
HIGHLIGHT: In this paper, we take a different approach and propose to use graph coarsening for scalable training of GNNs, which is generic, extremely simple and has sublinear memory and time costs during training.

72, TITLE: A Broader Picture of Random-walk Based Graph Embedding
<https://dl.acm.org/doi/abs/10.1145/3447548.3467300>
AUTHORS: Zexi Huang, Arlei Silva, Ambuj Singh
HIGHLIGHT: This paper addresses these challenges with an analytical framework for random-walk based graph embedding that consists of three components: a random-walk process, a similarity function, and an embedding algorithm.

73, TITLE: DisenQNet: Disentangled Representation Learning for Educational Questions
<https://dl.acm.org/doi/abs/10.1145/3447548.3467347>
AUTHORS: Zhenya Huang, Xin Lin, Hao Wang, Qi Liu, Enhong Chen, Jianhui Ma, Yu Su, Wei Tong
HIGHLIGHT: In this paper, we aim to learn the disentangled representations of questions.

74, TITLE: Coupled Graph ODE for Learning Interacting System Dynamics
<https://dl.acm.org/doi/abs/10.1145/3447548.3467385>
AUTHORS: Zijie Huang, Yizhou Sun, Wei Wang
HIGHLIGHT: In this paper, we propose coupled graph ODE: a novel latent ordinary differential equation (ODE) generative model that learns the coupled dynamics of nodes and edges with a graph neural network (GNN) based ODE in a continuous manner.

75, TITLE: TrajNet: A Trajectory-Based Deep Learning Model for Traffic Prediction
<https://dl.acm.org/doi/abs/10.1145/3447548.3467236>
AUTHORS: Bo Hui, Da Yan, Haiquan Chen, Wei-Shinn Ku
HIGHLIGHT: Our model, called TrajNet, captures the spatial dependency of traffic flow by propagating information along real trajectories.

76, TITLE: Fast and Memory-Efficient Tucker Decomposition for Answering Diverse Time Range Queries
<https://dl.acm.org/doi/abs/10.1145/3447548.3467290>
AUTHORS: Jun-Gi Jang, U Kang
HIGHLIGHT: In this paper, we propose Zoom-Tucker, a fast and memory-efficient Tucker decomposition method for finding hidden factors of temporal tensor data in an arbitrary time range.

77, TITLE: ACE-NODE: Attentive Co-Evolving Neural Ordinary Differential Equations
<https://dl.acm.org/doi/abs/10.1145/3447548.3467419>
AUTHORS: Sheo Yon Jhin, Minju Jo, Taeyong Kong, Jinsung Jeon, Noseong Park
HIGHLIGHT: To this end, we present a novel method of attentive dual co-evolving NODE (ACE-NODE): one main NODE for a downstream machine learning task and the other for providing attention to the main NODE.

78, TITLE: Cross-Network Learning with Partially Aligned Graph Convolutional Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467282>
AUTHORS: Meng Jiang
HIGHLIGHT: In this paper, I propose partially aligned graph convolutional networks to learn node representations across the models.

79, TITLE: Pre-training on Large-Scale Heterogeneous Graph
<https://dl.acm.org/doi/abs/10.1145/3447548.3467396>
AUTHORS: Xunqiang Jiang, Tianrui Jia, Yuan Fang, Chuan Shi, Zhe Lin, Hui Wang
HIGHLIGHT: In this paper, we first study the problem of pre-training on large-scale heterogeneous graph and propose a novel pre-training GNN framework, named PT-HGNN.

80, TITLE: Weakly Supervised Spatial Deep Learning based on Imperfect Vector Labels with Registration Errors
<https://dl.acm.org/doi/abs/10.1145/3447548.3467301>
AUTHORS: Zhe Jiang, Wenchong He, Marcus Kirby, Sultan Asiri, Da Yan
HIGHLIGHT: To fill the gap, this paper proposes a spatial learning framework based on Expectation-Maximization that iteratively updates deep neural network parameters while inferring true vector label locations.

81, TITLE: Towards a Better Understanding of Linear Models for Recommendation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467428>
AUTHORS: Ruoming Jin, Dong Li, Jing Gao, Zhi Liu, Li Chen, Yang Zhou
HIGHLIGHT: In this work, we aim to theoretically understand the relationship between these two approaches, which are the cornerstones of model-based recommendations.

82, TITLE: Learning to Walk across Time for Interpretable Temporal Knowledge Graph Completion
<https://dl.acm.org/doi/abs/10.1145/3447548.3467292>
AUTHORS: Jaehun Jung, Jinhong Jung, U Kang
HIGHLIGHT: In this paper, we propose T-GAP, a novel model for TKG completion that maximally utilizes both temporal information and graph structure in its encoder and decoder.

83, TITLE: A Hyper-surface Arrangement Model of Ranking Distributions
<https://dl.acm.org/doi/abs/10.1145/3447548.3467253>
AUTHORS: Shizuo Kaji, Akira Horiguchi, Takuro Abe, Yohsuke Watanabe
HIGHLIGHT: In this paper, we propose a geometric model for ranking distributions.

84, TITLE: Preference Amplification in Recommender Systems
<https://dl.acm.org/doi/abs/10.1145/3447548.3467298>
AUTHORS: Dimitris Kalimeris, Smriti Bhagat, Shankar Kalyanaraman, Udi Weinsberg
HIGHLIGHT: We propose a theoretical framework for studying such amplification in a matrix factorization based recommender system.

85, TITLE: Topology Distillation for Recommender System
<https://dl.acm.org/doi/abs/10.1145/3447548.3467319>
AUTHORS: SeongKu Kang, Junyoung Hwang, Wonbin Kweon, Hwanjo Yu
HIGHLIGHT: This paper proposes a new topology distillation approach that guides the student by transferring the topological structure built upon the relations in the teacher space.

86, TITLE: Learning to Embed Categorical Features without Embedding Tables for Recommendation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467304>
AUTHORS: Wang-Cheng Kang, Derek Zhiyuan Cheng, Tiansheng Yao, Xinyang Yi, Ting Chen, Lichan Hong, Ed H. Chi
HIGHLIGHT: In this paper, we propose an alternative embedding framework Deep Hash Embedding (DHE), replacing embedding tables by a deep embedding network to compute embeddings on the fly.

87, TITLE: Joint Graph Embedding and Alignment with Spectral Pivot
<https://dl.acm.org/doi/abs/10.1145/3447548.3467377>
AUTHORS: Paris A. Karakasis, Aritra Konar, Nicholas D. Sidiropoulos
HIGHLIGHT: This paper proposes a new approach for graph alignment, a core problem in graph mining.

88, TITLE: Auditing for Diversity Using Representative Examples
<https://dl.acm.org/doi/abs/10.1145/3447548.3467433>
AUTHORS: Vijay Keswani, L. Elisa Celis
HIGHLIGHT: We propose a cost-effective approach to approximate the disparity of a given unlabeled dataset, with respect to a protected attribute, using a control set of labeled representative examples.

89, TITLE: Q-Learning Lagrange Policies for Multi-Action Restless Bandits
<https://dl.acm.org/doi/abs/10.1145/3447548.3467370>

AUTHORS: Jackson A. Killian, Arpita Biswas, Sanket Shah, Milind Tambe
HIGHLIGHT: We address this restrictive assumption, designing the first algorithms for learning good policies for Multi-action RMABs online using combinations of Lagrangian relaxation and Q-learning.

90, TITLE: A Color-blind 3-Approximation for Chromatic Correlation Clustering and Improved Heuristics
<https://dl.acm.org/doi/abs/10.1145/3447548.3467446>
AUTHORS: Nicolas Klodt, Lars Seifert, Arthur Zahn, Katrin Casel, Davis Issac, Tobias Friedrich
HIGHLIGHT: Our main theoretical contribution is an alternative analysis of the famous Pivot algorithm for CC.

91, TITLE: Fast Rotation Kernel Density Estimation over Data Streams
<https://dl.acm.org/doi/abs/10.1145/3447548.3467356>
AUTHORS: Runze Lei, Pinghui Wang, Rundong Li, Peng Jia, Junzhou Zhao, Xiaohong Guan, Chao Deng
HIGHLIGHT: Although there are sketch methods designed for kernel density estimation over data streams, they still suffer from high computational costs. To address this problem, in this paper, we propose a novel Rotation Kernel.

92, TITLE: Dip-based Deep Embedded Clustering with k-Estimation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467316>
AUTHORS: Collin Leiber, Lena G. M. Bauer, Benjamin Schelling, Christian Böhm, Claudia Plant
HIGHLIGHT: In this paper, we present the novel clustering algorithm DipDECK, which can estimate the number of clusters simultaneously to improving a Deep Learning-based clustering objective.

93, TITLE: Large-Scale Data-Driven Airline Market Influence Maximization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467423>
AUTHORS: Duanshun Li, Jing Liu, Jinsung Jeon, Seoyoung Hong, Thai Le, Dongwon Lee, Noseong Park
HIGHLIGHT: We present a prediction-driven optimization framework to maximize the market influence in the US domestic air passenger transportation market by adjusting flight frequencies.

94, TITLE: Physical Equation Discovery Using Physics-Consistent Neural Network (PCNN) Under Incomplete Observability
<https://dl.acm.org/doi/abs/10.1145/3447548.3467448>
AUTHORS: Haoran Li, Yang Weng
HIGHLIGHT: To open the black box as much as possible, we propose a Physics-Consistent Neural Network (PCNN) for physical systems with the following properties: (1) PCNN can be shrunk to physical equations for sub-areas with full observability, (2) PCNN reduces unobservable areas into some virtual nodes, leading to a reduced network.

95, TITLE: Shapley Counterfactual Credits for Multi-Agent Reinforcement Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467420>
AUTHORS: Jiahui Li, Kun Kuang, Baoxiang Wang, Furui Liu, Long Chen, Fei Wu, Jun Xiao
HIGHLIGHT: We propose Shapley Counterfactual Credit Assignment, a novel method for explicit credit assignment which accounts for the coalition of agents.

96, TITLE: A Difficulty-Aware Framework for Churn Prediction and Intervention in Games
<https://dl.acm.org/doi/abs/10.1145/3447548.3467277>
AUTHORS: Jiayu Li, Hongyu Lu, Chenyang Wang, Weizhi Ma, Min Zhang, Xiangyu Zhao, Wei Qi, Yiqun Liu, Shaoping Ma
HIGHLIGHT: In this paper, a novel Difficulty-Aware Framework (DAF) for churn prediction and intervention is proposed.

97, TITLE: Dimensionwise Separable 2-D Graph Convolution for Unsupervised and Semi-Supervised Learning on Graphs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467413>
AUTHORS: Qimai LI, Xiaotong Zhang, Han Liu, Quanyu Dai, Xiao-Ming Wu
HIGHLIGHT: In this paper, we explore 2-D graph convolution to jointly model object links and attribute relations for graph representation learning.

98, TITLE: An Efficient and Scalable Algorithm for Estimating Kemeny's Constant of a Markov Chain on Large Graphs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467431>
AUTHORS: Shiju Li, Xin Huang, Chul-Ho Lee
HIGHLIGHT: In this paper, we propose a simple yet computationally efficient Monte Carlo algorithm to approximate the Kemeny's constant, which is equipped with an $(\hat{\mu}, \hat{\Gamma})$ -approximation estimator.

99, TITLE: Structure-aware Interactive Graph Neural Networks for the Prediction of Protein-Ligand Binding Affinity

<https://dl.acm.org/doi/abs/10.1145/3447548.3467311>

AUTHORS: Shuangli Li, Jingbo Zhou, Tong Xu, Liang Huang, Fan Wang, Haoyi Xiong, Weili Huang, Dejing Dou, Hui Xiong

HIGHLIGHT: To this end, we propose a structure-aware interactive graph neural network (SIGN) which consists of two components: polar-inspired graph attention layers (PGAL) and pairwise interactive pooling (PiPool).

100, TITLE: Mitigating Performance Saturation in Neural Marked Point Processes: Architectures and Loss Functions

<https://dl.acm.org/doi/abs/10.1145/3447548.3467436>

AUTHORS: Tianbo Li, Tianze Luo, Yiping Ke, Sinno Jialin Pan

HIGHLIGHT: Based on this observation, we propose a simple graph-based network structure called GCHP, which utilizes only graph convolutional layers, thus it can be easily accelerated by the parallel mechanism.

101, TITLE: FedRS: Federated Learning with Restricted Softmax for Label Distribution Non-IID Data

<https://dl.acm.org/doi/abs/10.1145/3447548.3467254>

AUTHORS: Xin-Chun Li, De-Chuan Zhan

HIGHLIGHT: In this paper, we focus on a special kind of non-iid scene, i.e., label distribution skew, where each client can only access a partial set of the whole class set.

102, TITLE: Efficient Collaborative Filtering via Data Augmentation and Step-size Optimization

<https://dl.acm.org/doi/abs/10.1145/3447548.3467380>

AUTHORS: Xuejun Liao, Patrick Koch, Shunping Huang, Yan Xu

HIGHLIGHT: In this paper, we introduce a new algorithm, termed Data Augmentation with Optimal Step-size (DAOS), which alleviates the drawback of softImpute-ALS while still maintaining its low cost of computation per iteration.

103, TITLE: Learning Multiple Stock Trading Patterns with Temporal Routing Adaptor and Optimal Transport

<https://dl.acm.org/doi/abs/10.1145/3447548.3467358>

AUTHORS: Hengxu Lin, Dong Zhou, Weiqing Liu, Jiang Bian

HIGHLIGHT: In this paper, we propose a novel architecture, Temporal Routing Adaptor (TRA), to empower existing stock prediction models with the ability to model multiple stock trading patterns.

104, TITLE: What Do You See?: Evaluation of Explainable Artificial Intelligence (XAI) Interpretability through Neural Backdoors

<https://dl.acm.org/doi/abs/10.1145/3447548.3467213>

AUTHORS: Yi-Shan Lin, Wen-Chuan Lee, Z. Berkay Celik

HIGHLIGHT: In this paper, we propose backdoor trigger patterns--hidden malicious functionalities that cause misclassification--to automate the evaluation of saliency explanations.

105, TITLE: Multi-view Correlation based Black-box Adversarial Attack for 3D Object Detection

<https://dl.acm.org/doi/abs/10.1145/3447548.3467432>

AUTHORS: Bingyu Liu, Yuhong Guo, Jianan Jiang, Jian Tang, Weihong Deng

HIGHLIGHT: To this end, we propose a simple multi-view correlation based adversarial attack method for the camera-LiDAR fusion 3D object detection models and focus on the black-box attack setting which is more practical in real-world systems.

106, TITLE: ControlBurn: Feature Selection by Sparse Forests

<https://dl.acm.org/doi/abs/10.1145/3447548.3467387>

AUTHORS: Brian Liu, Miaolan Xie, Madeleine Udell

HIGHLIGHT: In this paper we present ControlBurn, a feature selection algorithm that uses a weighted LASSO-based feature selection method to prune unnecessary features from tree ensembles, just as low-intensity fire reduces overgrown vegetation.

107, TITLE: Reinforced Anchor Knowledge Graph Generation for News Recommendation Reasoning

<https://dl.acm.org/doi/abs/10.1145/3447548.3467315>

AUTHORS: Danyang Liu, Jianxun Lian, Zheng Liu, Xiting Wang, Guangzhong Sun, Xing Xie

HIGHLIGHT: In this paper, we fill the research gap by proposing a novel recommendation reasoning paradigm AnchorKG.

108, TITLE: Signed Graph Neural Network with Latent Groups

<https://dl.acm.org/doi/abs/10.1145/3447548.3467355>

AUTHORS: Haoxin Liu, Ziwei Zhang, Peng Cui, Yafeng Zhang, Qiang Cui, Jiashuo Liu, Wenwu Zhu

HIGHLIGHT: To solve this problem, we propose Group Signed Graph Neural Network (GS-GNN) model for signed graph representation learning beyond the balance theory assumption.

- 109, TITLE: NewsEmbed: Modeling News through Pre-trained Document Representations
<https://dl.acm.org/doi/abs/10.1145/3447548.3467392>
AUTHORS: Jialu Liu, Tianqi Liu, Cong Yu
HIGHLIGHT: In this work, we address those two challenges by proposing a novel approach to mine semantically-relevant fresh documents, and their topic labels, with little human supervision.
- 110, TITLE: Neural-Answering Logical Queries on Knowledge Graphs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467375>
AUTHORS: Lihui Liu, Boxin Du, Heng Ji, ChengXiang Zhai, Hanghang Tong
HIGHLIGHT: In this paper, we propose an embedding based method (NewLook) to address these limitations.
- 111, TITLE: Online Additive Quantization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467441>
AUTHORS: Qi Liu, Jin Zhang, Defu Lian, Yong Ge, Jianhui Ma, Enhong Chen
HIGHLIGHT: To close the gap, we propose an online additive quantization algorithm (online AQ) to dynamically update quantization codebooks with the incoming streaming data.
- 112, TITLE: Tail-GNN: Tail-Node Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467276>
AUTHORS: Zemin Liu, Trung-Kien Nguyen, Yuan Fang
HIGHLIGHT: Toward robust tail node embedding, in this paper we propose a novel graph neural network called Tail-GNN.
- 113, TITLE: Dialogue Based Disease Screening Through Domain Customized Reinforcement Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467255>
AUTHORS: Zhuo Liu, Yanxuan Li, Xingzhi Sun, Fei Wang, Gang Hu, Guotong Xie
HIGHLIGHT: In this paper, we study the problem of leveraging dialogue agents learned from reinforcement learning (RL) that can interact with patients for automatic disease screening.
- 114, TITLE: HGK-GNN: Heterogeneous Graph Kernel based Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467429>
AUTHORS: Qingqing Long, Lingjun Xu, Zheng Fang, Guojie Song
HIGHLIGHT: To this end, we introduce graph kernel to HGNNs and develop a Heterogeneous Graph Kernel-based Graph Neural Networks (HGK-GNN).
- 115, TITLE: Leveraging Latent Features for Local Explanations
<https://dl.acm.org/doi/abs/10.1145/3447548.3467265>
AUTHORS: Ronny Luss, Pin-Yu Chen, Amit Dhurandhar, Prasanna Sattigeri, Yunfeng Zhang, Karthikeyan Shanmugam, Chun-Chen Tu
HIGHLIGHT: In this paper, we investigate a new direction by leveraging latent features to generate contrastive explanations; predictions are explained not only by highlighting aspects that are in themselves sufficient to justify the classification, but also by new aspects which if added will change the classification.
- 116, TITLE: Are we really making much progress?: Revisiting, benchmarking and refining heterogeneous graph neural networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467350>
AUTHORS: Qingsong Lv, Ming Ding, Qiang Liu, Yuxiang Chen, Wenzheng Feng, Siming He, Chang Zhou, Jianguo Jiang, Yuxiao Dong, Jie Tang
HIGHLIGHT: In this work, we present a systematical reproduction of 12 recent HGNNs by using their official codes, datasets, settings, and hyperparameters, revealing surprising findings about the progress of HGNNs.
- 117, TITLE: Graph Adversarial Attack via Rewiring
<https://dl.acm.org/doi/abs/10.1145/3447548.3467416>
AUTHORS: Yao Ma, Suhang Wang, Tyler Derr, Lingfei Wu, Jiliang Tang
HIGHLIGHT: In this paper, we propose a graph rewiring operation to perform the attack.
- 118, TITLE: BLOCKSET (Block-Aligned Serialized Trees): Reducing Inference Latency for Tree ensemble Deployment
<https://dl.acm.org/doi/abs/10.1145/3447548.3467368>
AUTHORS: Meghana Madhyastha, Kunal Lillaney, James Browne, Joshua T. Vogelstein, Randal Burns
HIGHLIGHT: We present methods to serialize and deserialize gradient-boosted trees and random forests that optimize inference latency when models are not loaded into memory.

- 119, TITLE: Needle in a Haystack: Label-Efficient Evaluation under Extreme Class Imbalance
<https://dl.acm.org/doi/abs/10.1145/3447548.3467435>
AUTHORS: Neil G. Marchant, Benjamin I. P. Rubinstein
HIGHLIGHT: This paper develops a framework for online evaluation based on adaptive importance sampling.
- 120, TITLE: Temporal Graph Signal Decomposition
<https://dl.acm.org/doi/abs/10.1145/3447548.3467379>
AUTHORS: Maxwell J. McNeil, Lin Zhang, Petko Bogdanov
HIGHLIGHT: We propose a general, dictionary-based framework for temporal graph signal decomposition (TGSD).
- 121, TITLE: Cross-Node Federated Graph Neural Network for Spatio-Temporal Data Modeling
<https://dl.acm.org/doi/abs/10.1145/3447548.3467371>
AUTHORS: Chuizheng Meng, Sirisha Rambhatla, Yan Liu
HIGHLIGHT: To bridge this gap, we propose a federated spatio-temporal model -- Cross-Node Federated Graph Neural Network (CNFGNN) -- which explicitly encodes the underlying graph structure using graph neural network (GNN)-based architecture under the constraint of cross-node federated learning, which requires that data in a network of nodes is generated locally on each node and remains decentralized.
- 122, TITLE: MULTIVERSE: Mining Collective Data Science Knowledge from Code on the Web to Suggest Alternative Analysis Approaches
<https://dl.acm.org/doi/abs/10.1145/3447548.3467455>
AUTHORS: Mike A. Merrill, Ge Zhang, Tim Althoff
HIGHLIGHT: Here, we formulate the tasks of identifying decision points and suggesting alternative analysis approaches as a classification task and a sequence-to-sequence prediction task, respectively.
- 123, TITLE: DeGNN: Improving Graph Neural Networks with Graph Decomposition
<https://dl.acm.org/doi/abs/10.1145/3447548.3467312>
AUTHORS: Xupeng Miao, Nezihe Merve Gürel, Wentao Zhang, Zhichao Han, Bo Li, Wei Min, Susie Xi Rao, Hansheng Ren, Yinan Shan, Yingxia Shao, Yujie Wang, Fan Wu, Hui Xue, Yaming Yang, Zitao Zhang, Yang Zhao, Shuai Zhang, Yujing Wang, Bin Cui, Ce Zhang
HIGHLIGHT: In this work, we propose a simple yet efficient graph decomposition approach to improve the performance of general graph neural networks.
- 124, TITLE: Semi-Supervised Deep Learning for Multiplex Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467443>
AUTHORS: Anasua Mitra, Priyesh Vijayan, Ranbir Sanasam, Diganta Goswami, Srinivasan Parthasarathy, Balaraman Ravindran
HIGHLIGHT: In this work, we present a novel semi-supervised approach for structure-aware representation learning on multiplex networks.
- 125, TITLE: Scalable Hierarchical Agglomerative Clustering
<https://dl.acm.org/doi/abs/10.1145/3447548.3467404>
AUTHORS: Nicholas Monath, Kumar Avinava Dubey, Guru Guruganesh, Manzil Zaheer, Amr Ahmed, Andrew McCallum, Gokhan Mergen, Marc Najork, Mert Terzihan, Bryon Tjanaka, Yuan Wang, Yuchen Wu
HIGHLIGHT: In this paper, we present a scalable, agglomerative method for hierarchical clustering that does not sacrifice quality and scales to billions of data points.
- 126, TITLE: An Efficient Framework for Balancing Submodularity and Cost
<https://dl.acm.org/doi/abs/10.1145/3447548.3467367>
AUTHORS: Sofia Maria Nikolakaki, Alina Ene, Evimaria Terzi
HIGHLIGHT: In this paper, we consider a generalization of the above formulation where the goal is to optimize a function that maximizes the submodular function \mathcal{F} minus a linear cost function cost.
- 127, TITLE: Filtration Curves for Graph Representation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467442>
AUTHORS: Leslie O'Bray, Bastian Rieck, Karsten Borgwardt
HIGHLIGHT: In this work, we complement these two perspectives with a third way of representing graphs: using filtration curves from topological data analysis that capture both edge weight information and global graph structure.
- 128, TITLE: Dynamic Hawkes Processes for Discovering Time-evolving Communities' States behind Diffusion Processes

<https://dl.acm.org/doi/abs/10.1145/3447548.3467248>

AUTHORS: Maya Okawa, Tomoharu Iwata, Yusuke Tanaka, Hiroyuki Toda, Takeshi Kurashima, Hisashi Kashima
HIGHLIGHT: In this paper, we propose a novel Hawkes process model that is able to capture the underlying dynamics of community states behind the diffusion processes and predict the occurrences of events based on the dynamics.

129, TITLE: Explaining Algorithmic Fairness Through Fairness-Aware Causal Path Decomposition

<https://dl.acm.org/doi/abs/10.1145/3447548.3467258>

AUTHORS: Weishen Pan, Sen Cui, Jiang Bian, Changshui Zhang, Fei Wang

HIGHLIGHT: In this paper, we propose to study the problem of identification of the source of model disparities.

130, TITLE: Toward Deep Supervised Anomaly Detection: Reinforcement Learning from Partially Labeled Anomaly Data

<https://dl.acm.org/doi/abs/10.1145/3447548.3467417>

AUTHORS: Guansong Pang, Anton van den Hengel, Chunhua Shen, Longbing Cao

HIGHLIGHT: We propose here instead a deep reinforcement learning-based approach that enables an end-to-end optimization of the detection of both labeled and unlabeled anomalies.

131, TITLE: Fast and Accurate Partial Fourier Transform for Time Series Data

<https://dl.acm.org/doi/abs/10.1145/3447548.3467293>

AUTHORS: Yong-chan Park, Jun-Gi Jang, U Kang

HIGHLIGHT: In this paper, we propose Partial Fourier Transform (PFT), an efficient and accurate algorithm for computing only a part of Fourier coefficients.

132, TITLE: Faster and Generalized Temporal Triangle Counting, via Degeneracy Ordering

<https://dl.acm.org/doi/abs/10.1145/3447548.3467374>

AUTHORS: Noujan Pashanasangi, C. Seshadhri

HIGHLIGHT: Our main result is a new algorithm, DOTTT (Degeneracy Oriented Temporal Triangle Totaler), that exactly counts all directed variants of $(d1,3, d1,2, d2,3)$ -temporal triangles.

133, TITLE: Local Algorithms for Estimating Effective Resistance

<https://dl.acm.org/doi/abs/10.1145/3447548.3467361>

AUTHORS: Pan Peng, Daniel Lopatta, Yuichi Yoshida, Gramoz Goranci

HIGHLIGHT: In this work, we design several local algorithms for estimating effective resistances, which are algorithms that only read a small portion of the input while still having provable performance guarantees.

134, TITLE: Simple Yet Efficient Algorithms for Maximum Inner Product Search via Extreme Order Statistics

<https://dl.acm.org/doi/abs/10.1145/3447548.3467345>

AUTHORS: Ninh Pham

HIGHLIGHT: We present a novel dimensionality reduction method for the approximate maximum inner product search (MIPS), named CEOs, based on the theory of concomitants of extreme order statistics.

135, TITLE: MaNIACS: Approximate Mining of Frequent Subgraph Patterns through Sampling

<https://dl.acm.org/doi/abs/10.1145/3447548.3467344>

AUTHORS: Giulia Preti, Gianmarco De Francisci Morales, Matteo Riondato

HIGHLIGHT: We present MaNIACS, a sampling-based randomized algorithm for computing high-quality approximations of the collection of the subgraph patterns that are frequent in a single, large, vertex-labeled graph, according to the Minimum Node Image-based (MNI) frequency measure.

136, TITLE: Learning to Recommend Visualizations from Data

<https://dl.acm.org/doi/abs/10.1145/3447548.3467224>

AUTHORS: Xin Qian, Ryan A. Rossi, Fan Du, Sungchul Kim, Eunye Koh, Sana Malik, Tak Yeon Lee, Joel Chan

HIGHLIGHT: In this work, we propose the first end-to-end ML-based visualization recommendation system that leverages a large corpus of datasets and their relevant visualizations to learn a visualization recommendation model automatically.

137, TITLE: Network-Wide Traffic States Imputation Using Self-interested Coalitional Learning

<https://dl.acm.org/doi/abs/10.1145/3447548.3467424>

AUTHORS: Huiling qin, Xianyuan Zhan, Yuanxun Li, Xiaodu Yang, Yu Zheng

HIGHLIGHT: In this study, we focus on developing a robust and interpretable network-wide traffic state imputation framework using partially observed traffic information.

138, TITLE: Retrieval & Interaction Machine for Tabular Data Prediction

<https://dl.acm.org/doi/abs/10.1145/3447548.3467216>

AUTHORS: Jiarui Qin, Weinan Zhang, Rong Su, Zhirong Liu, Weiwen Liu, Ruiming Tang, Xiuqiang He, Yong Yu
HIGHLIGHT: In this work, we propose a general learning framework named Retrieval & Interaction Machine (RIM) that fully exploits both cross-row and cross-column patterns among tabular data.

139, TITLE: ImGAGN: Imbalanced Network Embedding via Generative Adversarial Graph Networks

<https://dl.acm.org/doi/abs/10.1145/3447548.3467334>

AUTHORS: Liang Qu, Huaisheng Zhu, Ruiqi Zheng, Yuhui Shi, Hongzhi Yin

HIGHLIGHT: To bridge this gap, in this paper, we present a generative adversarial graph network model, called ImGAGN to address the imbalanced classification problem on graphs.

140, TITLE: Individual Treatment Prescription Effect Estimation in a Low Compliance Setting

<https://dl.acm.org/doi/abs/10.1145/3447548.3467343>

AUTHORS: Thibaud Rahier, Amélie Héliou, Matthieu Martin, Christophe Renaudin, Eustache Diemert

HIGHLIGHT: We propose a new approach for the estimation of the IPE that takes advantage of observed compliance information to prevent signal fading.

141, TITLE: MTrajRec: Map-Constrained Trajectory Recovery via Seq2Seq Multi-task Learning

<https://dl.acm.org/doi/abs/10.1145/3447548.3467238>

AUTHORS: Huimin Ren, Sijie Ruan, Yanhua Li, Jie Bao, Chuishi Meng, Ruiyuan Li, Yu Zheng

HIGHLIGHT: In this paper, we propose a Map-constrained Trajectory Recovery framework, MTrajRec, to recover the fine-grained points in trajectories and map match them on the road network in an end-to-end manner.

142, TITLE: ProtoPShare: Prototypical Parts Sharing for Similarity Discovery in Interpretable Image Classification

<https://dl.acm.org/doi/abs/10.1145/3447548.3467245>

AUTHORS: Dawid Rymarczyk,  ukasz Struski, Jacek Tabor, Bartosz Zieli ski

HIGHLIGHT: In this work, we introduce an extension to ProtoPNet called ProtoPShare which shares prototypical parts between classes.

143, TITLE: Spectral Clustering of Attributed Multi-relational Graphs

<https://dl.acm.org/doi/abs/10.1145/3447548.3467381>

AUTHORS: Ylli Sadikaj, Yllka Velaj, Sahar Behzadi, Claudia Plant

HIGHLIGHT: In this paper, we propose SpectralMix, a joint dimensionality reduction technique for multi-relational graphs with categorical node attributes.

144, TITLE: Identifying Coordinated Accounts on Social Media through Hidden Influence and Group Behaviours

<https://dl.acm.org/doi/abs/10.1145/3447548.3467391>

AUTHORS: Karishma Sharma, Yizhou Zhang, Emilio Ferrara, Yan Liu

HIGHLIGHT: To address these drawbacks, we propose a generative model, AMDN-HAGE (Attentive Mixture Density Network with Hidden Account Group Estimation) which jointly models account activities and hidden group behaviours based on Temporal Point Processes (TPP) and Gaussian Mixture Model (GMM), to capture inherent characteristics of coordination which is, accounts that coordinate must strongly influence each other's activities, and collectively appear anomalous from normal accounts.

145, TITLE: Learning Process-consistent Knowledge Tracing

<https://dl.acm.org/doi/abs/10.1145/3447548.3467237>

AUTHORS: Shuanghong Shen, Qi Liu, Enhong Chen, Zhenya Huang, Wei Huang, Yu Yin, Yu Su, Shijin Wang

HIGHLIGHT: In this paper, we explore a new paradigm for the KT task and propose a novel model named Learning Process-consistent Knowledge Tracing (LPKT), which monitors students' knowledge state through directly modeling their learning process.

146, TITLE: Simple and Efficient Hard Label Black-box Adversarial Attacks in Low Query Budget Regimes

<https://dl.acm.org/doi/abs/10.1145/3447548.3467386>

AUTHORS: Satya Narayan Shukla, Anit Kumar Sahu, Devin Willmott, Zico Kolter

HIGHLIGHT: We propose a simple and efficient Bayesian Optimization (BO) based approach for developing black-box adversarial attacks.

147, TITLE: Fruit-fly Inspired Neighborhood Encoding for Classification

<https://dl.acm.org/doi/abs/10.1145/3447548.3467246>

AUTHORS: Kaushik Sinha, Parikshit Ram

HIGHLIGHT: We propose a new classifier that effectively encodes the different local neighborhoods for each class with a per-class Fly Bloom Filter.

- 148, TITLE: Deep Clustering based Fair Outlier Detection
<https://dl.acm.org/doi/abs/10.1145/3447548.3467225>
AUTHORS: Hanyu Song, Peizhao Li, Hongfu Liu
HIGHLIGHT: In this paper, we focus on the fairness issues regarding unsupervised outlier detection.
- 149, TITLE: Robust Learning by Self-Transition for Handling Noisy Labels
<https://dl.acm.org/doi/abs/10.1145/3447548.3467222>
AUTHORS: Hwanjun Song, Minseok Kim, Dongmin Park, Yooju Shin, Jae-Gil Lee
HIGHLIGHT: Thus, to counter the label noise challenge, we propose a novel self-transitional learning method called MORPH, which automatically switches its learning phase at the transition point from seeding to evolution.
- 150, TITLE: Triangle-aware Spectral Sparsifiers and Community Detection
<https://dl.acm.org/doi/abs/10.1145/3447548.3467260>
AUTHORS: Konstantinos Sotiropoulos, Charalampos E. Tsourakakis
HIGHLIGHT: In this work we advance the understanding of triangle-based graph partitioning in two ways.
- 151, TITLE: Probabilistic Gradient Boosting Machines for Large-Scale Probabilistic Regression
<https://dl.acm.org/doi/abs/10.1145/3447548.3467278>
AUTHORS: Olivier Sprangers, Sebastian Schelter, Maarten de Rijke
HIGHLIGHT: We propose Probabilistic Gradient Boosting Machines (PGBM), a method to create probabilistic predictions with a single ensemble of decision trees in a computationally efficient manner.
- 152, TITLE: Redescription Model Mining
<https://dl.acm.org/doi/abs/10.1145/3447548.3467366>
AUTHORS: Felix I. Stamm, Martin Becker, Markus Strohmaier, Florian Lemmerich
HIGHLIGHT: This paper introduces Redescription Model Mining, a novel approach to identify interpretable patterns across two datasets that share only a subset of attributes and have no common instances.
- 153, TITLE: A Stagewise Hyperparameter Scheduler to Improve Generalization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467287>
AUTHORS: Jianhui Sun, Ying Yang, Guangxu Xun, Aidong Zhang
HIGHLIGHT: This paper focuses on how to efficiently tune a large class of multistage momentum variants to improve generalization.
- 154, TITLE: Breaking the Limit of Graph Neural Networks by Improving the Assortativity of Graphs with Local Mixing Patterns
<https://dl.acm.org/doi/abs/10.1145/3447548.3467373>
AUTHORS: Susheel Suresh, Vinit Budde, Jennifer Neville, Pan Li, Jianzhu Ma
HIGHLIGHT: To break this limit, in this work, we focus on transforming the input graph into a computation graph which contains both proximity and structural information as distinct type of edges.
- 155, TITLE: Norm Adjusted Proximity Graph for Fast Inner Product Retrieval
<https://dl.acm.org/doi/abs/10.1145/3447548.3467412>
AUTHORS: Shulong Tan, Zhaozhuo Xu, Weijie Zhao, Hongliang Fei, Zhixin Zhou, Ping Li
HIGHLIGHT: In this paper, we propose a new index graph construction method named norm adjusted proximity graph (NAPG), for efficient MIPS.
- 156, TITLE: Analysis and Applications of Class-wise Robustness in Adversarial Training
<https://dl.acm.org/doi/abs/10.1145/3447548.3467403>
AUTHORS: Qi Tian, Kun Kuang, Kelu Jiang, Fei Wu, Yisen Wang
HIGHLIGHT: In this paper, we propose to analyze the class-wise robustness in adversarial training.
- 157, TITLE: Choice Set Confounding in Discrete Choice
<https://dl.acm.org/doi/abs/10.1145/3447548.3467378>
AUTHORS: Kiran Tomlinson, Johan Ugander, Austin R. Benson
HIGHLIGHT: To address this issue, we adapt methods from causal inference to the discrete choice setting.
- 158, TITLE: Learning Interpretable Feature Context Effects in Discrete Choice
<https://dl.acm.org/doi/abs/10.1145/3447548.3467250>

AUTHORS: Kiran Tomlinson, Austin R. Benson
HIGHLIGHT: Here, we develop discrete choice models that capture a broad range of context effects, which are learned from choice data rather than baked into the model.

159, TITLE: Statistical Models Coupling Allows for Complex Local Multivariate Time Series Analysis
<https://dl.acm.org/doi/abs/10.1145/3447548.3467362>
AUTHORS: Veronica Tozzo, Federico Ciech, Davide Garbarino, Alessandro Verri
HIGHLIGHT: To this aim, we propose a novel flexible method for data-mining, forecasting and causal patterns detection that leverages the coupling of Hidden Markov Models and Gaussian Graphical Models.

160, TITLE: The Generalized Mean Densest Subgraph Problem
<https://dl.acm.org/doi/abs/10.1145/3447548.3467398>
AUTHORS: Nate Veldt, Austin R. Benson, Jon Kleinberg
HIGHLIGHT: In this paper we introduce a new family of dense subgraph objectives, parameterized by a single parameter p , based on computing generalized means of degree sequences of a subgraph.

161, TITLE: Environment Agnostic Invariant Risk Minimization for Classification of Sequential Datasets
<https://dl.acm.org/doi/abs/10.1145/3447548.3467324>
AUTHORS: Praveen Venkateswaran, Vinod Muthusamy, Vatche Isahagian, Nalini Venkatasubramanian
HIGHLIGHT: In this work, we present an environment-agnostic approach to develop generalizable models for classification tasks in sequential datasets without needing prior knowledge of environments.

162, TITLE: Alphacore: Data Depth based Core Decomposition
<https://dl.acm.org/doi/abs/10.1145/3447548.3467322>
AUTHORS: Friedhelm Victor, Cuneyt G. Akcora, Yulia R. Gel, Murat Kantarcioglu
HIGHLIGHT: We propose a novel unsupervised core decomposition method that can be easily applied to directed and weighted networks.

163, TITLE: Multi-Objective Model-based Reinforcement Learning for Infectious Disease Control
<https://dl.acm.org/doi/abs/10.1145/3447548.3467303>
AUTHORS: Runzhe Wan, Xinyu Zhang, Rui Song
HIGHLIGHT: In this work, we propose a Multi-Objective Model-based Reinforcement Learning framework to facilitate data-driven decision-making and minimize the overall long-term cost.

164, TITLE: Certified Robustness of Graph Neural Networks against Adversarial Structural Perturbation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467295>
AUTHORS: Binghui Wang, Jinyuan Jia, Xiaoyu Cao, Neil Zhenqiang Gong
HIGHLIGHT: We aim to defend against such attacks via developing certifiably robust GNNs.

165, TITLE: Privacy-Preserving Representation Learning on Graphs: A Mutual Information Perspective
<https://dl.acm.org/doi/abs/10.1145/3447548.3467273>
AUTHORS: Binghui Wang, Jiayi Guo, Ang Li, Yiran Chen, Hai Li
HIGHLIGHT: To address the issue, we propose a privacy-preserving representation learning framework on graphs from the mutual information perspective.

166, TITLE: JOHAN: A Joint Online Hurricane Trajectory and Intensity Forecasting Framework
<https://dl.acm.org/doi/abs/10.1145/3447548.3467400>
AUTHORS: Ding Wang, Pang-Ning Tan
HIGHLIGHT: In this paper, we present a novel online learning framework called JOHAN that simultaneously predicts the trajectory and intensity of a hurricane based on outputs produced by an ensemble of dynamic (physical) hurricane models.

167, TITLE: Approximate Graph Propagation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467243>
AUTHORS: Hanzhi Wang, Mingguo He, Zhewei Wei, Sibow Wang, Ye Yuan, Xiaoyong Du, Ji-Rong Wen
HIGHLIGHT: In this paper, we propose Approximate Graph Propagation (AGP), a unified randomized algorithm that computes various proximity queries and GNN feature propagations, including transition probabilities, Personalized PageRank, heat kernel PageRank, Katz, SGC, GDC, and APPNP.

168, TITLE: Relational Message Passing for Knowledge Graph Completion
<https://dl.acm.org/doi/abs/10.1145/3447548.3467247>

- AUTHORS: Hongwei Wang, Hongyu Ren, Jure Leskovec
HIGHLIGHT: In this work, we propose a relational message passing method for knowledge graph completion.
- 169, TITLE: Deep Learning Embeddings for Data Series Similarity Search
<https://dl.acm.org/doi/abs/10.1145/3447548.3467317>
AUTHORS: Qitong Wang, Themis Palpanas
HIGHLIGHT: In this work, we propose Deep Embedding Approximation (DEA), a novel family of data series summarization techniques based on deep neural networks.
- 170, TITLE: Deconfounded Recommendation for Alleviating Bias Amplification
<https://dl.acm.org/doi/abs/10.1145/3447548.3467249>
AUTHORS: Wenjie Wang, Fuli Feng, Xiangnan He, Xiang Wang, Tat-Seng Chua
HIGHLIGHT: In this work, we scrutinize the cause-effect factors for bias amplification, identifying the main reason lies in the confounding effect of imbalanced item distribution on user representation and prediction score.
- 171, TITLE: Self-supervised Heterogeneous Graph Neural Network with Co-contrastive Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467415>
AUTHORS: Xiao Wang, Nian Liu, Hui Han, Chuan Shi
HIGHLIGHT: In this paper, we study the problem of self-supervised HGNNs and propose a novel co-contrastive learning mechanism for HGNNs, named HeCo.
- 172, TITLE: Meta Self-training for Few-shot Neural Sequence Labeling
<https://dl.acm.org/doi/abs/10.1145/3447548.3467235>
AUTHORS: Yaqing Wang, Subhabrata Mukherjee, Haoda Chu, Yuancheng Tu, Ming Wu, Jing Gao, Ahmed Hassan Awadallah
HIGHLIGHT: In this work, we develop techniques to address the label scarcity challenge for neural sequence labeling models.
- 173, TITLE: Understanding and Improving Fairness-Accuracy Trade-offs in Multi-Task Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467326>
AUTHORS: Yuyan Wang, Xuezhi Wang, Alex Beutel, Flavien Prost, Jilin Chen, Ed H. Chi
HIGHLIGHT: In this paper, we are concerned with how group fairness (e.g., equal opportunity, equalized odds) as an ML fairness concept plays out in the multi-task scenario.
- 174, TITLE: Error-Bounded Online Trajectory Simplification with Multi-Agent Reinforcement Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467351>
AUTHORS: Zheng Wang, Cheng Long, Gao Cong, Qianru Zhang
HIGHLIGHT: In this paper, we propose a multi-agent reinforcement learning method called MARL4TS for EB-OTS.
- 175, TITLE: Zero-shot Node Classification with Decomposed Graph Prototype Network
<https://dl.acm.org/doi/abs/10.1145/3447548.3467230>
AUTHORS: Zheng Wang, Jialong Wang, Yuchen Guo, Zhiguo Gong
HIGHLIGHT: In this paper, we study this zero-shot node classification (ZNC) problem which has a two-stage nature: (1) acquiring high-quality class semantic descriptions (CSDs) for knowledge transfer, and (2) designing a well generalized graph-based learning model.
- 176, TITLE: TUTA: Tree-based Transformers for Generally Structured Table Pre-training
<https://dl.acm.org/doi/abs/10.1145/3447548.3467434>
AUTHORS: Zhiruo Wang, Haoyu Dong, Ran Jia, Jia Li, Zhiyi Fu, Shi Han, Dongmei Zhang
HIGHLIGHT: We propose TUTA, a unified pre-training architecture for understanding generally structured tables.
- 177, TITLE: Model-Agnostic Counterfactual Reasoning for Eliminating Popularity Bias in Recommender System
<https://dl.acm.org/doi/abs/10.1145/3447548.3467289>
AUTHORS: Tianxin Wei, Fuli Feng, Jiawei Chen, Ziwei Wu, Jinfeng Yi, Xiangnan He
HIGHLIGHT: In this work, we explore the popularity bias issue from a novel and fundamental perspective --- cause-effect.
- 178, TITLE: Probabilistic Label Tree for Streaming Multi-Label Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467226>
AUTHORS: Tong Wei, Jiang-Xin Shi, Yu-Feng Li
HIGHLIGHT: To cope with this challenge, in this paper, we present a new learning framework, i.e., the probabilistic streaming label tree(PsLt).

- 179, TITLE: Towards Robust Prediction on Tail Labels
<https://dl.acm.org/doi/abs/10.1145/3447548.3467223>
AUTHORS: Tong Wei, Wei-Wei Tu, Yu-Feng Li, Guo-Ping Yang
HIGHLIGHT: To alleviate this problem, in this work, we show theoretical and experimental evidence for the inferior performance of representative XML methods on tail labels.
- 180, TITLE: Enhancing SVMs with Problem Context Aware Pipeline
<https://dl.acm.org/doi/abs/10.1145/3447548.3467291>
AUTHORS: Zeyi Wen, Zhishang Zhou, Hanfeng Liu, Bingsheng He, Xia Li, Jian Chen
HIGHLIGHT: In this paper, we propose techniques to enhance SVMs with an automatic pipeline which exploits the context of the learning problem.
- 181, TITLE: Triple Adversarial Learning for Influence based Poisoning Attack in Recommender Systems
<https://dl.acm.org/doi/abs/10.1145/3447548.3467335>
AUTHORS: Chenwang Wu, Defu Lian, Yong Ge, Zhihao Zhu, Enhong Chen
HIGHLIGHT: To this end, we propose a triple adversarial learning for influence based poisoning attack (TrialAttack), a flexible end-to-end poisoning framework to generate non-notable and harmful user profiles.
- 182, TITLE: Quantifying Uncertainty in Deep Spatiotemporal Forecasting
<https://dl.acm.org/doi/abs/10.1145/3447548.3467325>
AUTHORS: Dongxia Wu, Liyao Gao, Matteo Chinazzi, Xinyue Xiong, Alessandro Vespignani, Yi-An Ma, Rose Yu
HIGHLIGHT: In this paper, we describe two types of spatiotemporal forecasting problems: regular grid-based and graph-based.
- 183, TITLE: Indirect Invisible Poisoning Attacks on Domain Adaptation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467214>
AUTHORS: Jun Wu, Jingrui He
HIGHLIGHT: To demonstrate the adversarial vulnerability of existing domain adaptation techniques, in this paper, we propose a generic data poisoning attack framework named I2Attack for domain adaptation with the following properties: (1) perceptibly unnoticeable: all the poisoned inputs are natural-looking; (2) adversarially indirect: only source examples are maliciously manipulated; (3) algorithmically invisible: both source classification error and marginal domain discrepancy between source and target domains will not increase.
- 184, TITLE: MapEmbed: Perfect Hashing with High Load Factor and Fast Update
<https://dl.acm.org/doi/abs/10.1145/3447548.3467240>
AUTHORS: Yuhan Wu, Zirui Liu, Xiang Yu, Jie Gui, Haochen Gan, Yuhao Han, Tao Li, Ori Rottenstreich, Tong Yang
HIGHLIGHT: To address this issue, we propose a novel hashing scheme, namely MapEmbed Hashing.
- 185, TITLE: Geometric Graph Representation Learning on Protein Structure Prediction
<https://dl.acm.org/doi/abs/10.1145/3447548.3467323>
AUTHORS: Tian Xia, Wei-Shinn Ku
HIGHLIGHT: The present research explores the geometry deep learning of three-dimensional graphs on protein structures and proposes a graph neural network architecture to address these challenges.
- 186, TITLE: Forecasting Interaction Order on Temporal Graphs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467341>
AUTHORS: Wenwen Xia, Yuchen Li, Jianwei Tian, Shenghong Li
HIGHLIGHT: In this paper, we focus on such an interaction order prediction problem among a given node set on temporal graphs.
- 187, TITLE: Learning How to Propagate Messages in Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467451>
AUTHORS: Teng Xiao, Zhengyu Chen, Donglin Wang, Suhang Wang
HIGHLIGHT: We introduce the optimal propagation steps as latent variables to help find the maximum-likelihood estimation of the GNN parameters in a variational Expectation- Maximization (VEM) framework.
- 188, TITLE: Partial Multi-Label Learning with Meta Disambiguation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467259>
AUTHORS: Ming-Kun Xie, Feng Sun, Sheng-Jun Huang

HIGHLIGHT: In this paper, we propose a novel approach for partial multi-label learning with meta disambiguation (PML-MD).

189, **TITLE:** Contrastive Multi-View Multiplex Network Embedding with Applications to Robust Network Alignment
<https://dl.acm.org/doi/abs/10.1145/3447548.3467227>
AUTHORS: Hao Xiong, Junchi Yan, Li Pan
HIGHLIGHT: We propose an end-to-end contrastive framework called cM2NE for MNE, utilizing multiple structural views for each layer and learning with several plug-in components for different scenarios.

190, **TITLE:** Removing Disparate Impact on Model Accuracy in Differentially Private Stochastic Gradient Descent
<https://dl.acm.org/doi/abs/10.1145/3447548.3467268>
AUTHORS: Depeng Xu, Wei Du, Xintao Wu
HIGHLIGHT: In this work, we study the inequality in utility loss due to differential privacy, which compares the changes in prediction accuracy w.r.t. each group between the private model and the non-private model.

191, **TITLE:** NAS-BERT: Task-Agnostic and Adaptive-Size BERT Compression with Neural Architecture Search
<https://dl.acm.org/doi/abs/10.1145/3447548.3467262>
AUTHORS: Jin Xu, Xu Tan, Renqian Luo, Kaitao Song, Jian Li, Tao Qin, Tie-Yan Liu
HIGHLIGHT: In this work, we aim to compress BERT and address the following two challenging practical issues: (1) The compression algorithm should be able to output multiple compressed models with different sizes and latencies, in order to support devices with different memory and latency limitations; (2) The algorithm should be downstream task agnostic, so that the compressed models are generally applicable for different downstream tasks.

192, **TITLE:** Exploring Self-Supervised Representation Ensembles for COVID-19 Cough Classification
<https://dl.acm.org/doi/abs/10.1145/3447548.3467263>
AUTHORS: Hao Xue, Flora D. Salim
HIGHLIGHT: In this paper, we propose a novel self-supervised learning enabled framework for COVID-19 cough classification.

193, **TITLE:** MTC: Multiresolution Tensor Completion from Partial and Coarse Observations
<https://dl.acm.org/doi/abs/10.1145/3447548.3467261>
AUTHORS: Chaoqi Yang, Navjot Singh, Cao Xiao, Cheng Qian, Edgar Solomonik, Jimeng Sun
HIGHLIGHT: In this paper, we are given a subset of the tensor and some aggregated/coarse observations (along one or more modes) and seek to recover the original fine-granular tensor with low-rank factorization.

194, **TITLE:** Model-Based Counterfactual Synthesizer for Interpretation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467333>
AUTHORS: Fan Yang, Sahan Suresh Alva, Jiahao Chen, Xia Hu
HIGHLIGHT: To address these limitations, we propose a Model-based Counterfactual Synthesizer (MCS) framework for interpreting machine learning models.

195, **TITLE:** Discrete-time Temporal Network Embedding via Implicit Hierarchical Learning in Hyperbolic Space
<https://dl.acm.org/doi/abs/10.1145/3447548.3467422>
AUTHORS: Menglin Yang, Min Zhou, Marcus Kalander, Zengfeng Huang, Irwin King
HIGHLIGHT: To explore these properties of a complex temporal network, we propose a hyperbolic temporal graph network (HTGN) that fully takes advantage of the exponential capacity and hierarchical awareness of hyperbolic geometry.

196, **TITLE:** Numerical Formula Recognition from Tables
<https://dl.acm.org/doi/abs/10.1145/3447548.3467425>
AUTHORS: Qingping Yang, Yixuan Cao, Hongwei Li, Ping Luo
HIGHLIGHT: This paper introduces the problem of numerical formula recognition from tables, namely recognizing all numerical formulas inside a given table.

197, **TITLE:** TopNet: Learning from Neural Topic Model to Generate Long Stories
<https://dl.acm.org/doi/abs/10.1145/3447548.3467410>
AUTHORS: Yazheng Yang, Boyuan Pan, Deng Cai, Huan Sun
HIGHLIGHT: In this paper, we propose TopNet to alleviate this problem, by leveraging the recent advances in neural topic modeling to obtain high-quality skeleton words to complement the short input.

198, **TITLE:** Context-aware Outstanding Fact Mining from Knowledge Graphs

<https://dl.acm.org/doi/abs/10.1145/3447548.3467272>

AUTHORS: Yueji Yang, Yuchen Li, Panagiotis Karras, Anthony K. H. Tung
HIGHLIGHT: In this paper, we introduce the novel problem of mining Context-aware Outstanding Facts (COFs) for a target entity under a given context specified by a context entity.

199, TITLE: Energy-Efficient Models for High-Dimensional Spike Train Classification using Sparse Spiking Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3447548.3467252>

AUTHORS: Hang Yin, John Boaz Lee, Xiangnan Kong, Thomas Hartvigsen, Sihong Xie
HIGHLIGHT: In this paper, we study the problem of energy-efficient SNNs with sparsely-connected neurons.

200, TITLE: Defending Privacy Against More Knowledgeable Membership Inference Attackers

<https://dl.acm.org/doi/abs/10.1145/3447548.3467444>

AUTHORS: Yu Yin, Ke Chen, Lidan Shou, Gang Chen
HIGHLIGHT: We present definitions for utility and privacy of target classifier, and formulate the design goal of the defense method as an optimization problem. We also conduct theoretical analysis on the respective forms of the optimization for three adversary models, namely black-box, white-box, and crystal-box, and prove that the optimization problem is NP-hard.

201, TITLE: Accurate Multivariate Stock Movement Prediction via Data-Axis Transformer with Multi-Level Contexts

<https://dl.acm.org/doi/abs/10.1145/3447548.3467297>

AUTHORS: Jaemin Yoo, Yejun Soun, Yong-chan Park, U Kang
HIGHLIGHT: In this work, we propose DTML (Data-axis Transformer with Multi-Level contexts), a novel approach for stock movement prediction that learns the correlations between stocks in an end-to-end way.

202, TITLE: Performance-Adaptive Sampling Strategy Towards Fast and Accurate Graph Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3447548.3467284>

AUTHORS: Minji Yoon, Théophile Gervet, Baoxu Shi, Sufeng Niu, Qi He, Jaewon Yang
HIGHLIGHT: In this paper, we propose a performance-adaptive sampling strategy PASS that samples neighbors informative for a target task.

203, TITLE: Extremely Compact Non-local Representation Learning

<https://dl.acm.org/doi/abs/10.1145/3447548.3467239>

AUTHORS: Ansheng You, Xiangzeng Zhou, Yingya Zhang, Pan Pan, Yinghui Xu
HIGHLIGHT: In this paper, we propose an extremely compact non-local learning module (CoNL) with high-order reasoning based on a graph convolution as the core.

204, TITLE: Fed2: Feature-Aligned Federated Learning

<https://dl.acm.org/doi/abs/10.1145/3447548.3467309>

AUTHORS: Fuxun Yu, Weishan Zhang, Zhuwei Qin, Zirui Xu, Di Wang, Chenchen Liu, Zhi Tian, Xiang Chen
HIGHLIGHT: In this work, we propose Fed2, a feature-aligned federated learning framework to resolve this issue by establishing a firm structure-feature alignment across the collaborative models.

205, TITLE: A Novel Multi-View Clustering Method for Unknown Mapping Relationships Between Cross-View Samples

<https://dl.acm.org/doi/abs/10.1145/3447548.3467294>

AUTHORS: Hong Yu, Jia Tang, Guoyin Wang, Xinbo Gao
HIGHLIGHT: Thus, this paper proposes a novel multi-view clustering method for unknown mapping relationships between cross-view samples based on the framework of non-negative matrix factorization, as an attempt to solve this problem.

206, TITLE: Socially-Aware Self-Supervised Tri-Training for Recommendation

<https://dl.acm.org/doi/abs/10.1145/3447548.3467340>

AUTHORS: Junliang Yu, Hongzhi Yin, Min Gao, Xin Xia, Xiangliang Zhang, Nguyen Quoc Viet Hung
HIGHLIGHT: To capture these signals, a general socially-aware SSL framework that integrates tri-training is proposed in this paper.

207, TITLE: Efficient Optimization Methods for Extreme Similarity Learning with Nonlinear Embeddings

<https://dl.acm.org/doi/abs/10.1145/3447548.3467363>

AUTHORS: Bowen Yuan, Yu-Sheng Li, Pengrui Quan, Chih-Jen Lin
HIGHLIGHT: We study the problem of learning similarity by using nonlinear embedding models (e.g., neural networks) from all possible pairs.

- 208, TITLE: Enhancing Taxonomy Completion with Concept Generation via Fusing Relational Representations
<https://dl.acm.org/doi/abs/10.1145/3447548.3467308>
AUTHORS: Qingkai Zeng, Jinfeng Lin, Wenhao Yu, Jane Cleland-Huang, Meng Jiang
HIGHLIGHT: To resolve the limitations of extraction-based methods, we propose GenTaxo to enhance taxonomy completion by identifying positions in existing taxonomies that need new concepts and then generating appropriate concept names.
- 209, TITLE: A Transformer-based Framework for Multivariate Time Series Representation Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467401>
AUTHORS: George Zerveas, Srideepika Jayaraman, Dhaval Patel, Anuradha Bhamidipaty, Carsten Eickhoff
HIGHLIGHT: We present a novel framework for multivariate time series representation learning based on the transformer encoder architecture.
- 210, TITLE: Off-Policy Evaluation via Adaptive Weighting with Data from Contextual Bandits
<https://dl.acm.org/doi/abs/10.1145/3447548.3467456>
AUTHORS: Ruohan Zhan, Vitor Hadad, David A. Hirshberg, Susan Athey
HIGHLIGHT: In this paper, we improve the DR estimator by adaptively weighting observations to control its variance.
- 211, TITLE: Efficient Incremental Computation of Aggregations over Sliding Windows
<https://dl.acm.org/doi/abs/10.1145/3447548.3467360>
AUTHORS: Chao Zhang, Reza Akbarinia, Farouk Toumani
HIGHLIGHT: We propose PBA (Parallel Boundary Aggregator), a novel parallel algorithm that groups continuous slices of streaming values into chunks and exploits two buffers, cumulative slice aggregations and left cumulative slice aggregations, to compute sliding window aggregations efficiently.
- 212, TITLE: Domain-oriented Language Modeling with Adaptive Hybrid Masking and Optimal Transport Alignment
<https://dl.acm.org/doi/abs/10.1145/3447548.3467215>
AUTHORS: Denghui Zhang, Zixuan Yuan, Yanchi Liu, Hao Liu, Fuzhen Zhuang, Hui Xiong, Haifeng Chen
HIGHLIGHT: To alleviate the potential noise in this process, we introduce an interpretable Optimal Transport based approach to guide alignment learning.
- 213, TITLE: Data Poisoning Attack against Recommender System Using Incomplete and Perturbed Data
<https://dl.acm.org/doi/abs/10.1145/3447548.3467233>
AUTHORS: Hengtong Zhang, Changxin Tian, Yaliang Li, Lu Su, Nan Yang, Wayne Xin Zhao, Jing Gao
HIGHLIGHT: In this paper, we fill the gap by proposing two novel adversarial attack approaches to handle the incompleteness and perturbations in user-item interaction data.
- 214, TITLE: Data Poisoning Attacks Against Outcome Interpretations of Predictive Models
<https://dl.acm.org/doi/abs/10.1145/3447548.3467405>
AUTHORS: Hengtong Zhang, Jing Gao, Lu Su
HIGHLIGHT: To answer this question, we propose a data poisoning attack framework named IMF (Interpretation Manipulation Framework), which can manipulate the interpretations of target samples produced by representative outcome interpretation methods.
- 215, TITLE: ELITE: Robust Deep Anomaly Detection with Meta Gradient
<https://dl.acm.org/doi/abs/10.1145/3447548.3467320>
AUTHORS: Huayi Zhang, Lei Cao, Peter VanNostrand, Samuel Madden, Elke A. Rundensteiner
HIGHLIGHT: To solve this problem, we propose a novel approach called ELITE that uses a small number of labeled examples to infer the anomalies hidden in the training samples.
- 216, TITLE: Knowledge-Enhanced Domain Adaptation in Few-Shot Relation Classification
<https://dl.acm.org/doi/abs/10.1145/3447548.3467438>
AUTHORS: Jiawen Zhang, Jiaqi Zhu, Yi Yang, Wandong Shi, Congcong Zhang, Hongan Wang
HIGHLIGHT: In this paper, we propose a Knowledge-Enhanced Few-shot RC model for the Domain Adaptation task (KEFDA), which incorporates general and domain-specific knowledge graphs (KGs) to the RC model to improve its domain adaptability.
- 217, TITLE: Attentive Heterogeneous Graph Embedding for Job Mobility Prediction
<https://dl.acm.org/doi/abs/10.1145/3447548.3467388>
AUTHORS: Le Zhang, Ding Zhou, Hengshu Zhu, Tong Xu, Rui Zha, Enhong Chen, Hui Xiong
HIGHLIGHT: To this end, in this paper we propose an enhanced approach to job mobility prediction based on a heterogeneous company-position network constructed from the massive career trajectory data.

- 218, TITLE: Scalable Heterogeneous Graph Neural Networks for Predicting High-potential Early-stage Startups
<https://dl.acm.org/doi/abs/10.1145/3447548.3467383>
AUTHORS: Shengming Zhang, Hao Zhong, Zixuan Yuan, Hui Xiong
HIGHLIGHT: Instead, in this paper, we propose a Scalable Heterogeneous Graph Markov Neural Network (SHGMNN) for identifying the high-potential startups.
- 219, TITLE: Balancing Consistency and Disparity in Network Alignment
<https://dl.acm.org/doi/abs/10.1145/3447548.3467331>
AUTHORS: Si Zhang, Hanghang Tong, Long Jin, Yinglong Xia, Yunsong Guo
HIGHLIGHT: In this paper, we demystify the intrinsic relationships behind various network alignment methods and between these competing design principles of sampling.
- 220, TITLE: Where are we in embedding spaces?
<https://dl.acm.org/doi/abs/10.1145/3447548.3467421>
AUTHORS: Sixiao Zhang, Hongxu Chen, Xiao Ming, Lizhen Cui, Hongzhi Yin, Guandong Xu
HIGHLIGHT: To fill this gap, This paper provides theoretical analysis and empirical results on when and where to use hyperbolic space and hyperbolic embeddings in recommender systems.
- 221, TITLE: ROD: Reception-aware Online Distillation for Sparse Graphs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467221>
AUTHORS: Wentao Zhang, Yuezhian Jiang, Yang Li, Zeang Sheng, Yu Shen, Xupeng Miao, Liang Wang, Zhi Yang, Bin Cui
HIGHLIGHT: In this paper, we propose ROD, a novel reception-aware online knowledge distillation approach for sparse graph learning.
- 222, TITLE: Learning Based Proximity Matrix Factorization for Node Embedding
<https://dl.acm.org/doi/abs/10.1145/3447548.3467296>
AUTHORS: Xingyi Zhang, Kun Xie, Sibow Wang, Zengfeng Huang
HIGHLIGHT: Motivated by this, we propose Lemane, a framework with trainable proximity measures, which can be learned to best suit the datasets and tasks at hand automatically.
- 223, TITLE: Multi-Task Learning via Generalized Tensor Trace Norm
<https://dl.acm.org/doi/abs/10.1145/3447548.3467329>
AUTHORS: Yi Zhang, Yu Zhang, Wei Wang
HIGHLIGHT: To solve those two issues, in this paper, we propose a Generalized Tensor Trace Norm (GTTN).
- 224, TITLE: Initialization Matters: Regularizing Manifold-informed Initialization for Neural Recommendation Systems
<https://dl.acm.org/doi/abs/10.1145/3447548.3467338>
AUTHORS: Yanan Zhang, Boyang Li, Yong Liu, Hao Wang, Chunyan Miao
HIGHLIGHT: In this work, we propose a new initialization scheme for user and item embeddings called Laplacian Eigenmaps with Popularity-based Regularization for Isolated Data (LEPORID).
- 225, TITLE: H2MN: Graph Similarity Learning with Hierarchical Hypergraph Matching Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467328>
AUTHORS: Zhen Zhang, Jiajun Bu, Martin Ester, Zhao Li, Chengwei Yao, Zhi Yu, Can Wang
HIGHLIGHT: In this paper, we devise a novel graph neural network based framework to address this challenging problem, motivated by its great success in graph representation learning.
- 226, TITLE: DHS: Adaptive Memory Layout Organization of Sketch Slots for Fast and Accurate Data Stream Processing
<https://dl.acm.org/doi/abs/10.1145/3447548.3467353>
AUTHORS: Bohan Zhao, Xiang Li, Boyu Tian, Zhiyu Mei, Wenfei Wu
HIGHLIGHT: We propose Dynamic Hierarchical Sketch (DHS), a sketch-based hybrid solution targeting these properties.
- 227, TITLE: Fairness-Aware Online Meta-learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467389>
AUTHORS: Chen Zhao, Feng Chen, Bhavani Thuraisingham
HIGHLIGHT: To overcome such issues and bridge the gap, in this paper for the first time we proposed a novel online meta-learning algorithm, namely FFML, which is under the setting of unfairness prevention.

- 228, TITLE: Temporal Biased Streaming Submodular Optimization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467288>
AUTHORS: Junzhou Zhao, Pinghui Wang, Chao Deng, Jing Tao
HIGHLIGHT: In this work, we propose a new SSO problem, i.e., temporal biased streaming submodular optimization (TBSSO), which embraces the special settings of all previous studies.
- 229, TITLE: Cluster-Reduce: Compressing Sketches for Distributed Data Streams
<https://dl.acm.org/doi/abs/10.1145/3447548.3467217>
AUTHORS: Yikai Zhao, Zheng Zhong, Yuanpeng Li, Yi Zhou, Yifan Zhu, Li Chen, Yi Wang, Tong Yang
HIGHLIGHT: In this paper, we propose Cluster-Reduce, a framework for compressing sketches, which can meet all three requirements.
- 230, TITLE: Multi-graph Multi-label Learning with Dual-granularity Labeling
<https://dl.acm.org/doi/abs/10.1145/3447548.3467339>
AUTHORS: Yuhai Zhao, Yejiang Wang, Zhengkui Wang, Chengqi Zhang
HIGHLIGHT: To bridge this gap, in this paper, we present a novel coarse and fine-grained Multi-graph Multi-label (cfMGML) learning framework which directly builds the learning model over the graphs and empowers the label prediction at both the coarse (aka.
- 231, TITLE: Multi-view Denoising Graph Auto-Encoders on Heterogeneous Information Networks for Cold-start Recommendation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467427>
AUTHORS: Jiawei Zheng, Qianli Ma, Hao Gu, Zhenjing Zheng
HIGHLIGHT: In this paper, we regard cold-start recommendation as a missing data problem where some user-item interaction data are missing.
- 232, TITLE: Accelerating Set Intersections over Graphs by Reducing-Merging
<https://dl.acm.org/doi/abs/10.1145/3447548.3467219>
AUTHORS: Weiguo Zheng, Yifan Yang, Chengzhi Piao
HIGHLIGHT: In the paper, we propose a novel reducing-merging framework for set intersections over graphs rather than intersecting the two sets directly.
- 233, TITLE: Knowledge is Power: Hierarchical-Knowledge Embedded Meta-Learning for Visual Reasoning in Artistic Domains
<https://dl.acm.org/doi/abs/10.1145/3447548.3467285>
AUTHORS: Wenbo Zheng, Lan Yan, Chao Gou, Fei-Yue Wang
HIGHLIGHT: We propose a novel framework termed as Hierarchical-Knowledge Embedded Meta-Learning to address the critical issues of visual reasoning in artistic domains.
- 234, TITLE: Quantifying Assimilate-Contrast Effects in Online Rating Systems: Modeling, Analysis and Application
<https://dl.acm.org/doi/abs/10.1145/3447548.3467244>
AUTHORS: Mingze Zhong, Hong Xie, Qingsheng Zhu
HIGHLIGHT: We propose a mathematical model to quantify the aforementioned important factors on assimilate-contrast effects.
- 235, TITLE: Triplet Attention: Rethinking the Similarity in Transformers
<https://dl.acm.org/doi/abs/10.1145/3447548.3467241>
AUTHORS: Haoyi Zhou, Jianxin Li, Jieqi Peng, Shuai Zhang, Shanghang Zhang
HIGHLIGHT: To the extent of our knowledge, this is the first work to define the Triplet Attention (A3) for Transformer, which introduces triplet connections as the complementary dependency.
- 236, TITLE: Table2Charts: Recommending Charts by Learning Shared Table Representations
<https://dl.acm.org/doi/abs/10.1145/3447548.3467279>
AUTHORS: Mengyu Zhou, Qingtao Li, Xinyi He, Yuejiang Li, Yibo Liu, Wei Ji, Shi Han, Yining Chen, Daxin Jiang, Dongmei Zhang
HIGHLIGHT: In this paper, we propose Table2Charts framework which learns common patterns from a large corpus of (table, charts) pairs.
- 237, TITLE: Maximizing Influence of Leaders in Social Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467229>

AUTHORS: Xiaotian Zhou, Zhongzhi Zhang
HIGHLIGHT: In this paper, we consider the edge addition problem for the DeGroot model of opinion dynamics in a social network with n nodes and m edges, in the presence of a small number s of competing leaders with binary opposing opinions 0 or 1.

238, TITLE: PURE: Positive-Unlabeled Recommendation with Generative Adversarial Network
<https://dl.acm.org/doi/abs/10.1145/3447548.3467234>
AUTHORS: Yao Zhou, Jianpeng Xu, Jun Wu, Zeinab Taghavi, Evren Korpeoglu, Kannan Achan, Jingrui He
HIGHLIGHT: In this paper, we address these issues by developing a novel framework named PURE, which trains an unbiased positive-unlabeled discriminator to distinguish the true relevant user-item pairs against the ones that are non-relevant, and a generator that learns the underlying user-item continuous distribution.

239, TITLE: Modeling Context-aware Features for Cognitive Diagnosis in Student Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467264>
AUTHORS: Yuqiang Zhou, Qi Liu, Jinze Wu, Fei Wang, Zhenya Huang, Wei Tong, Hui Xiong, Enhong Chen, Jianhui Ma
HIGHLIGHT: Motivated by the success of context-aware modeling in various fields, such as recommender systems, in this paper, we propose to study how to model context-aware features and adapt them for more precisely diagnosing student's knowledge proficiency.

240, TITLE: S-LIME: Stabilized-LIME for Model Explanation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467274>
AUTHORS: Zhengze Zhou, Giles Hooker, Fei Wang
HIGHLIGHT: In this paper, we propose S-LIME, which utilizes a hypothesis testing framework based on central limit theorem for determining the number of perturbation points needed to guarantee stability of the resulting explanation.

241, TITLE: Popularity Bias in Dynamic Recommendation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467376>
AUTHORS: Ziwei Zhu, Yun He, Xing Zhao, James Caverlee
HIGHLIGHT: In this work, we investigate the popularity bias in dynamic recommendation and aim to tackle these research gaps.

242, TITLE: Controllable Generation from Pre-trained Language Models via Inverse Prompting
<https://dl.acm.org/doi/abs/10.1145/3447548.3467418>
AUTHORS: Xu Zou, Da Yin, Qingyang Zhong, Hongxia Yang, Zhilin Yang, Jie Tang
HIGHLIGHT: The core idea of inverse prompting is to use generated text to inversely predict the prompt during beam search, which enhances the relevance between the prompt and the generated text and thus improves controllability.

243, TITLE: TDGIA: Effective Injection Attacks on Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467314>
AUTHORS: Xu Zou, Qinkai Zheng, Yuxiao Dong, Xinyu Guan, Evgeny Kharlamov, Jialiang Lu, Jie Tang
HIGHLIGHT: In this paper, we study a recently-introduced realistic attack scenario on graphs---graph injection attack (GIA).

244, TITLE: Practical Approach to Asynchronous Multivariate Time Series Anomaly Detection and Localization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467174>
AUTHORS: Ahmed Abdulaal, Zhuanghua Liu, Tomer Lancewicki
HIGHLIGHT: We propose a practical approach for inferring anomalies from large multivariate sets.

245, TITLE: Counterfactual Graphs for Explainable Classification of Brain Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467154>
AUTHORS: Carlo Abrate, Francesco Bonchi
HIGHLIGHT: In this paper we propose counterfactual graphs as a way to produce local post-hoc explanations of any black-box graph classifier.

246, TITLE: All Models Are Useful: Bayesian Ensembling for Robust High Resolution COVID-19 Forecasting
<https://dl.acm.org/doi/abs/10.1145/3447548.3467197>
AUTHORS: Aniruddha Adiga, Lijing Wang, Benjamin Hurt, Akhil Peddireddy, Przemyslaw Porebski, Srinivasan Venkatramanan, Bryan Leroy Lewis, Madhav Marathe
HIGHLIGHT: In this paper, we consider the task of forecasting COVID-19 confirmed cases at the county level for the United States.

- 247, TITLE: Dynamic Language Models for Continuously Evolving Content
<https://dl.acm.org/doi/abs/10.1145/3447548.3467162>
AUTHORS: Spurthi Amba Hombaiah, Tao Chen, Mingyang Zhang, Michael Bendersky, Marc Najork
HIGHLIGHT: To this end, we both explore two different vocabulary composition methods, as well as propose three sampling methods which help in efficient incremental training for BERT-like models.
- 248, TITLE: Quantifying and Addressing Ranking Disparity in Human-Powered Data Acquisition
<https://dl.acm.org/doi/abs/10.1145/3447548.3467063>
AUTHORS: Sihem Amer-Yahia, Shady Elbassouni, Ahmad Ghizzawi, Anas Hosami
HIGHLIGHT: In this paper, we study how to unveil and address disparity in data acquisition.
- 249, TITLE: On Training Sample Memorization: Lessons from Benchmarking Generative Modeling with a Large-scale Competition
<https://dl.acm.org/doi/abs/10.1145/3447548.3467198>
AUTHORS: Ching-Yuan Bai, Hsuan-Tien Lin, Colin Raffel, Wendy Chi-wen Kan
HIGHLIGHT: In this work, we critically evaluate the gameability of these metrics by designing and deploying a generative modeling competition.
- 250, TITLE: Auto-Split: A General Framework of Collaborative Edge-Cloud AI
<https://dl.acm.org/doi/abs/10.1145/3447548.3467078>
AUTHORS: Amin Banitalebi-Dehkordi, Naveen Vedula, Jian Pei, Fei Xia, Lanjun Wang, Yong Zhang
HIGHLIGHT: This paper describes the techniques and engineering practice behind Auto-Split, an edge-cloud collaborative prototype of Huawei Cloud.
- 251, TITLE: Unpaired Generative Molecule-to-Molecule Translation for Lead Optimization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467120>
AUTHORS: Guy Barshatski, Kira Radinsky
HIGHLIGHT: In this work, we present an unsupervised generative approach with a molecule-embedding component that maps a discrete representation of a molecule to a continuous space.
- 252, TITLE: TimeSHAP: Explaining Recurrent Models through Sequence Perturbations
<https://dl.acm.org/doi/abs/10.1145/3447548.3467166>
AUTHORS: Joãõ Bento, Pedro Saleiro, Andr e F. Cruz, M rio A.T. Figueiredo, Pedro Bizarro
HIGHLIGHT: In this work, we present TimeSHAP, a model-agnostic recurrent explainer that builds upon KernelSHAP and extends it to the sequential domain.
- 253, TITLE: A Framework for Modeling Cyber Attack Techniques from Security Vulnerability Descriptions
<https://dl.acm.org/doi/abs/10.1145/3447548.3467159>
AUTHORS: Hodaya Binyamini, Ron Bitton, Masaki Inokuchi, Tomohiko Yagyu, Yuval Elovici, Asaf Shabtai
HIGHLIGHT: We present a novel, end-to-end, automated framework for modeling new attack techniques from the textual description of security vulnerabilities.
- 254, TITLE: VisRel: Media Search at Scale
<https://dl.acm.org/doi/abs/10.1145/3447548.3467081>
AUTHORS: Fedor Borisjuk, Siddarth Malreddy, Jun Mei, Yiqun Liu, Xiaoyi Liu, Piyush Maheshwari, Anthony Bell, Kaushik Rangadurai
HIGHLIGHT: In this paper, we present VisRel, a deployed large-scale media search system that leverages text understanding, media understanding, and multimodal technologies to deliver a modern multimedia search experience.
- 255, TITLE: GEM: Translation-Free Zero-Shot Global Entity Matcher for Global Catalogs
<https://dl.acm.org/doi/abs/10.1145/3447548.3467209>
AUTHORS: Karim Bouyarmane
HIGHLIGHT: We propose a modular BiLSTM / CNN / Transformer deep-learning encoder architecture, together with a data synthesis and training approach, to solve the problem of matching catalog products across different languages, different local catalogs, and different catalog data contributors.
- 256, TITLE: A Semi-Personalized System for User Cold Start Recommendation on Music Streaming Apps
<https://dl.acm.org/doi/abs/10.1145/3447548.3467110>
AUTHORS: L aurent Briand, Guillaume Salha-Galvan, Walid Bendada, Mathieu Morlon, Viet-Anh Tran
HIGHLIGHT: In this applied paper, we present the system recently deployed on the music streaming service Deezer to address this problem.

- 257, TITLE: Generating Mobility Trajectories with Retained Data Utility
<https://dl.acm.org/doi/abs/10.1145/3447548.3467158>
AUTHORS: Chu Cao, Mo Li
HIGHLIGHT: This paper presents TrajGen, an approach to generate artificial datasets of mobility trajectories based on an original trajectory dataset while retaining the utility of the original data in supporting various mobility applications.
- 258, TITLE: Interactive Audience Expansion On Large Scale Online Visitor Data
<https://dl.acm.org/doi/abs/10.1145/3447548.3467179>
AUTHORS: Gromit Yeuk-Yin Chan, Tung Mai, Anup B. Rao, Ryan A. Rossi, Fan Du, Cláudio T. Silva, Juliana Freire
HIGHLIGHT: In this paper, we propose a method to achieve interactive Audience Expansion from millions of visitor data efficiently.
- 259, TITLE: Supporting COVID-19 Policy Response with Large-scale Mobility-based Modeling
<https://dl.acm.org/doi/abs/10.1145/3447548.3467182>
AUTHORS: Serina Chang, Mandy L. Wilson, Bryan Lewis, Zakaria Mehrab, Komal K. Dudakiya, Emma Pierson, Pang Wei Koh, Jaline Gerardin, Beth Redbird, David Grusky, Madhav Marathe, Jure Leskovec
HIGHLIGHT: In this paper, we present our work motivated by our interactions with the Virginia Department of Health on a decision-support tool that utilizes large-scale data and epidemiological modeling to quantify the impact of changes in mobility on infection rates.
- 260, TITLE: Extreme Multi-label Learning for Semantic Matching in Product Search
<https://dl.acm.org/doi/abs/10.1145/3447548.3467092>
AUTHORS: Wei-Cheng Chang, Daniel Jiang, Hsiang-Fu Yu, Choon Hui Teo, Jiong Zhang, Kai Zhong, Kedarnath Kolluri, Qie Hu, Nikhil Shandilya, Vyacheslav Iyegorov, Japinder Singh, Inderjit S. Dhillon
HIGHLIGHT: In this paper, we aim to improve semantic product search by using tree-based XMC models where inference time complexity is logarithmic in the number of products.
- 261, TITLE: When Homomorphic Encryption Marries Secret Sharing: Secure Large-Scale Sparse Logistic Regression and Applications in Risk Control
<https://dl.acm.org/doi/abs/10.1145/3447548.3467210>
AUTHORS: Chaochao Chen, Jun Zhou, Li Wang, Xibin Wu, Wenjing Fang, Jin Tan, Lei Wang, Alex X. Liu, Hao Wang, Cheng Hong
HIGHLIGHT: In this paper, we first present CAESAR, which combines HE and SS to build secure large-scale sparse logistic regression model and achieves both efficiency and security. We then present the distributed implementation of CAESAR for scalability requirement.
- 262, TITLE: Task-wise Split Gradient Boosting Trees for Multi-center Diabetes Prediction
<https://dl.acm.org/doi/abs/10.1145/3447548.3467123>
AUTHORS: Mingcheng Chen, Zhenghui Wang, Zhiyun Zhao, Weinan Zhang, Xiawei Guo, Jian Shen, Yanru Qu, Jieli Lu, Min Xu, Yu Xu, Tiange Wang, Mian Li, Weiwei Tu, Yong Yu, Yufang Bi, Weiqing Wang, Guang Ning
HIGHLIGHT: To tackle the above challenges, we employ gradient boosting decision trees (GBDT) to handle data heterogeneity and introduce multi-task learning (MTL) to solve data insufficiency.
- 263, TITLE: Web-Scale Generic Object Detection at Microsoft Bing
<https://dl.acm.org/doi/abs/10.1145/3447548.3467122>
AUTHORS: Stephen Xi Chen, Saurajit Mukherjee, Unmesh Phadke, Tingting Wang, Junwon Park, Ravi Theja Yada
HIGHLIGHT: In this paper, we present Generic Object Detection (GenOD), one of the largest object detection systems deployed to a web-scale general visual search engine that can detect over 900 categories for all Microsoft Bing Visual Search queries in near real-time.
- 264, TITLE: PD-Net: Quantitative Motor Function Evaluation for Parkinson's Disease via Automated Hand Gesture Analysis
<https://dl.acm.org/doi/abs/10.1145/3447548.3467130>
AUTHORS: Yifei Chen, Haoyu Ma, Jiangyuan Wang, Jianbao Wu, Xian Wu, Xiaohui Xie
HIGHLIGHT: This paper proposes an objective and interpretable visual system (PD-Net) to quantitatively evaluate motor function of PD patients using video footage.
- 265, TITLE: Curriculum Meta-Learning for Next POI Recommendation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467132>
AUTHORS: Yudong Chen, Xin Wang, Miao Fan, Jizhou Huang, Shengwen Yang, Wenwu Zhu

HIGHLIGHT: We propose a novel Curriculum Hardness Aware Meta-Learning (CHAML) framework, which incorporates hard sample mining and curriculum learning into a meta-learning paradigm.

266, **TITLE:** Robust Object Detection Fusion Against Deception
<https://dl.acm.org/doi/abs/10.1145/3447548.3467121>
AUTHORS: Ka-Ho Chow, Ling Liu
HIGHLIGHT: This paper presents FUSE, a deception-resilient detection fusion approach with three novel contributions.

267, **TITLE:** FASER: Seismic Phase Identifier for Automated Monitoring
<https://dl.acm.org/doi/abs/10.1145/3447548.3467064>
AUTHORS: Farhan Asif Chowdhury, M Ashraf Siddiquee, Glenn Eli Baker, Abdullah Mueen
HIGHLIGHT: In this paper, we revisit the seismic phase classification as an integrated part of a seismic processing pipeline.

268, **TITLE:** Theory meets Practice at the Median: A Worst Case Comparison of Relative Error Quantile Algorithms
<https://dl.acm.org/doi/abs/10.1145/3447548.3467152>
AUTHORS: Graham Cormode, Abhinav Mishra, Joseph Ross, Pavel Veselý
HIGHLIGHT: In this work, we provide insight into which conditions make one preferable to the other.

269, **TITLE:** Would Your Tweet Invoke Hate on the Fly? Forecasting Hate Intensity of Reply Threads on Twitter
<https://dl.acm.org/doi/abs/10.1145/3447548.3467150>
AUTHORS: Snehil Dahiya, Shalini Sharma, Dhruv Sahnan, Vasu Goel, Emilie Chouzenoux, Víctor Elvira, Angshul Majumdar, Anil Bandhakavi, Tanmoy Chakraborty
HIGHLIGHT: In this paper, we define a novel problem -- given a source tweet and a few of its initial replies, the task is to forecast the hate intensity of upcoming replies.

270, **TITLE:** On Post-selection Inference in A/B Testing
<https://dl.acm.org/doi/abs/10.1145/3447548.3467129>
AUTHORS: Alex Deng, Yicheng Li, Jiannan Lu, Vivek Ramamurthy
HIGHLIGHT: To address this issue, in this paper we explore two seemingly unrelated paths, one based on supervised machine learning and the other on empirical Bayes, and propose post-selection inferential approaches that combine the strengths of both.

271, **TITLE:** Globally Optimized Matchmaking in Online Games
<https://dl.acm.org/doi/abs/10.1145/3447548.3467074>
AUTHORS: Qilin Deng, Hao Li, Kai Wang, Zhipeng Hu, Runze Wu, Linxia Gong, Jianrong Tao, Changjie Fan, Peng Cui
HIGHLIGHT: In this paper, we focus on the globally optimized matchmaking problem, in which the objective is to decide an optimal matching sequence for the queuing players.

272, **TITLE:** Causal and Interpretable Rules for Time Series Analysis
<https://dl.acm.org/doi/abs/10.1145/3447548.3467161>
AUTHORS: Amin Dhaou, Antoine Bertonecello, Bastien Gourvèc, Josselin Garnier, Erwan Le Pennec
HIGHLIGHT: In this paper, we introduce a novel approach combining the case-crossover design which is used to investigate acute triggers of diseases in epidemiology, and the Apriori algorithm which is a data mining technique allowing to find relevant rules in a dataset.

273, **TITLE:** Deep Learning based Crop Row Detection with Online Domain Adaptation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467155>
AUTHORS: Rashed Doha, Mohammad Al Hasan, Sohail Anwar, Veera Rajendran
HIGHLIGHT: In this work, we discuss the development of a practical real-life crop row detection system in collaboration with an agricultural sprayer company.

274, **TITLE:** Improving Protein Function Annotation via Unsupervised Pre-training: Robustness, Efficiency, and Insights
<https://dl.acm.org/doi/abs/10.1145/3447548.3467163>
AUTHORS: David Dohan, Andreea Gane, Maxwell L. Bileschi, David Belanger, Lucy Colwell
HIGHLIGHT: In this work, we fine-tune a transformer model that is pre-trained on millions of unlabeled natural protein sequences in order to reduce the system's compute burden at prediction time and improve accuracy.

275, **TITLE:** Exploration in Online Advertising Systems with Deep Uncertainty-Aware Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467089>
AUTHORS: Chao Du, Zhifeng Gao, Shuo Yuan, Lining Gao, Ziyang Li, Yifan Zeng, Xiaoqiang Zhu, Jian Xu, Kun Gai, Kuang-Chih Lee

HIGHLIGHT: In this paper, we propose a novel Deep Uncertainty-Aware Learning (DUAL) method to learn CTR models based on Gaussian processes, which can provide predictive uncertainty estimations while maintaining the flexibility of deep neural networks.

276, **TITLE:** Clustering for Private Interest-based Advertising

<https://dl.acm.org/doi/abs/10.1145/3447548.3467180>

AUTHORS: Alessandro Epasto, Andr e; Mu oz Medina, Steven Avery, Yijian Bai, Robert Busa-Fekete, CJ Carey, Ya Gao, David Guthrie, Subham Ghosh, James Ioannidis, Junyi Jiao, Jakub Lacki, Jason Lee, Arne Mauser, Brian Milch, Vahab Mirrokni, Deepak Ravichandran, Wei Shi, Max Spero, Yunting Sun, Umar Syed, Sergei Vassilvtskii, Shuo Wang

HIGHLIGHT: In this work we ask whether such fine grained personalization is required, and present mechanisms that achieve competitive performance while giving privacy guarantees to the end users.

277, **TITLE:** Automated Testing of Graphics Units by Deep-Learning Detection of Visual Anomalies

<https://dl.acm.org/doi/abs/10.1145/3447548.3467116>

AUTHORS: Lev Faivishevsky, Adi Szeskin, Ashwin K. Muppalla, Ravid Shwartz-Ziv, Itamar Ben Ari, Ronen Laperdon, Benjamin Melloul, Tahi Hollander, Tom Hope, Amitai Armon

HIGHLIGHT: We present a novel system for performing real-time detection of diverse visual corruptions in videos, for validating the quality of graphics units in our company.

278, **TITLE:** Meta-Learned Spatial-Temporal POI Auto-Completion for the Search Engine at Baidu Maps

<https://dl.acm.org/doi/abs/10.1145/3447548.3467058>

AUTHORS: Miao Fan, Yibo Sun, Jizhou Huang, Haifeng Wang, Ying Li

HIGHLIGHT: In this paper, we find that 17.9% of users tend to look for diverse POIs at different times or locations using the same prefix.

279, **TITLE:** Heterogeneous Temporal Graph Transformer: An Intelligent System for Evolving Android Malware Detection

<https://dl.acm.org/doi/abs/10.1145/3447548.3467168>

AUTHORS: Yujie Fan, Mingxuan Ju, Shifu Hou, Yanfang Ye, Wenqiang Wan, Kui Wang, Yinming Mei, Qi Xiong

HIGHLIGHT: To address this challenge, in this paper, we propose and develop an intelligent system named Dr.Droid to jointly model malware propagation and evolution for their detection at the first attempt.

280, **TITLE:** SSML: Self-Supervised Meta-Learner for En Route Travel Time Estimation at Baidu Maps

<https://dl.acm.org/doi/abs/10.1145/3447548.3467060>

AUTHORS: Xiaomin Fang, Jizhou Huang, Fan Wang, Lihang Liu, Yibo Sun, Haifeng Wang

HIGHLIGHT: In this work, we believe that the traveled route conveys valuable evidence that could facilitate the modeling of driving preference and take that into consideration for the task of en route travel time estimation (ER-TTE).

281, **TITLE:** MoCha: Large-Scale Driving Pattern Characterization for Usage-based Insurance

<https://dl.acm.org/doi/abs/10.1145/3447548.3467114>

AUTHORS: Zhihan Fang, Guang Yang, Dian Zhang, Xiaoyang Xie, Guang Wang, Yu Yang, Fan Zhang, Desheng Zhang

HIGHLIGHT: The key question we aim to explore with MoCha is whether we can fully explore long-term driving patterns of new users with only limited historical data of themselves by leveraging abundant data of other users and contextual information.

282, **TITLE:** Time Series Anomaly Detection for Cyber-physical Systems via Neural System Identification and Bayesian Filtering

<https://dl.acm.org/doi/abs/10.1145/3447548.3467137>

AUTHORS: Cheng Feng, Pengwei Tian

HIGHLIGHT: In this work, we propose a novel time series anomaly detection method called Neural System Identification and Bayesian Filtering (NSIBF) in which a specially crafted neural network architecture is posed for system identification, i.e., capturing the dynamics of CPS in a dynamical state-space model; then a Bayesian filtering algorithm is naturally applied on top of the "identified" state-space model for robust anomaly detection by tracking the uncertainty of the hidden state of the system recursively over time.

283, **TITLE:** Adversarial Attacks on Deep Models for Financial Transaction Records

<https://dl.acm.org/doi/abs/10.1145/3447548.3467145>

AUTHORS: Ivan Fursov, Matvey Morozov, Nina Kaplounkhaya, Elizaveta Kovtun, Rodrigo Rodrigo Rivera-Castro, Gleb Gusev, Dmitry Babaev, Ivan Kireev, Alexey Zaytsev, Evgeny Burnaev

HIGHLIGHT: In this work, we examine adversarial attacks on transaction records data and defenses from these attacks.

284, **TITLE:** A Deep Learning Method for Route and Time Prediction in Food Delivery Service

<https://dl.acm.org/doi/abs/10.1145/3447548.3467068>

AUTHORS: Chengliang Gao, Fan Zhang, Guanqun Wu, Qiwan Hu, Qiang Ru, Jinghua Hao, Renqing He, Zhizhao Sun
HIGHLIGHT: In the paper, we apply deep learning to the FD-RTP task for the first time, and propose a deep network named FDNET.

285, TITLE: Real Negatives Matter: Continuous Training with Real Negatives for Delayed Feedback Modeling
<https://dl.acm.org/doi/abs/10.1145/3447548.3467086>
AUTHORS: Siyu Gu, Xiang-Rong Sheng, Ying Fan, Guorui Zhou, Xiaoqiang Zhu
HIGHLIGHT: In this paper, we propose DELayed FEedback modeling with Real negatives (DEFER) method to address these issues.

286, TITLE: Multi-Agent Cooperative Bidding Games for Multi-Objective Optimization in e-Commercial Sponsored Search
<https://dl.acm.org/doi/abs/10.1145/3447548.3467204>
AUTHORS: Ziyu Guan, Hongchang Wu, Qingyu Cao, Hao Liu, Wei Zhao, Sheng Li, Cai Xu, Guang Qiu, Jian Xu, Bo Zheng
HIGHLIGHT: In this paper, we propose a novel multi-objective cooperative bid optimization formulation called Multi-Agent Cooperative bidding Games (MACG).

287, TITLE: An Embedding Learning Framework for Numerical Features in CTR Prediction
<https://dl.acm.org/doi/abs/10.1145/3447548.3467077>
AUTHORS: Huifeng Guo, Bo Chen, Ruiming Tang, Weinan Zhang, Zhenguo Li, Xiuqiang He
HIGHLIGHT: In this paper, we propose a novel embedding learning framework for numerical features in CTR prediction (AutoDis) with high model capacity, end-to-end training and unique representation properties preserved.

288, TITLE: We Know What You Want: An Advertising Strategy Recommender System for Online Advertising
<https://dl.acm.org/doi/abs/10.1145/3447548.3467175>
AUTHORS: Liyi Guo, Junqi Jin, Haoqi Zhang, Zhenzhe Zheng, Zhiye Yang, Zhizhuang Xing, Fei Pan, Lvyin Niu, Fan Wu, Haiyang Xu, Chuan Yu, Yuning Jiang, Xiaoqiang Zhu
HIGHLIGHT: In this work, we first deploy a prototype of strategy recommender system on Taobao display advertising platform, which indeed increases the advertisers' performance and the platform's revenue, indicating the effectiveness of strategy recommendation for online advertising.

289, TITLE: Training Recommender Systems at Scale: Communication-Efficient Model and Data Parallelism
<https://dl.acm.org/doi/abs/10.1145/3447548.3467080>
AUTHORS: Vipul Gupta, Dhruv Choudhary, Peter Tang, Xiaohan Wei, Xing Wang, Yuzhen Huang, Arun Kejariwal, Kannan Ramchandran, Michael W. Mahoney
HIGHLIGHT: In this paper, we consider hybrid parallelism---a paradigm that employs both Data Parallelism (DP) and Model Parallelism (MP)---to scale distributed training of large recommendation models.

290, TITLE: Budget Allocation as a Multi-Agent System of Contextual & Continuous Bandits
<https://dl.acm.org/doi/abs/10.1145/3447548.3467124>
AUTHORS: Benjamin Han, Carl Arndt
HIGHLIGHT: To address these issues, we introduce the Contextual Budgeting System (CBS), a budget allocation framework using a multi-agent system of contextual & continuous Multi-Armed Bandits.

291, TITLE: MEDTO: Medical Data to Ontology Matching Using Hybrid Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467138>
AUTHORS: Junheng Hao, Chuan Lei, Vasilis Efthymiou, Abdul Quamar, Fatma Özcan, Yizhou Sun, Wei Wang
HIGHLIGHT: In this paper, we propose MEDTO, a novel end-to-end framework that consists of three innovative techniques: (1) a lightweight yet effective method that bootstrap a semantically rich ontology from a given medical database, (2) a hyperbolic graph convolution layer that encodes hierarchical concepts in the hyperbolic space, and (3) a heterogeneous graph layer that encodes both local and global context information of a concept.

292, TITLE: Hierarchical Reinforcement Learning for Scarce Medical Resource Allocation with Imperfect Information
<https://dl.acm.org/doi/abs/10.1145/3447548.3467181>
AUTHORS: Qianyue Hao, Fengli Xu, Lin Chen, Pan Hui, Yong Li
HIGHLIGHT: In this paper, we propose a hierarchical reinforcement learning method with a corresponding training algorithm.

293, TITLE: Adversarial Feature Translation for Multi-domain Recommendation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467176>
AUTHORS: Xiaobo Hao, Yudan Liu, Ruobing Xie, Kaikai Ge, Linyao Tang, Xu Zhang, Leyu Lin

HIGHLIGHT: To address this problem, we propose a novel Adversarial feature translation (AFT) model for MDR, which learns the feature translations between different domains under a generative adversarial network framework.

294, **TITLE:** Amazon SageMaker Clarify: Machine Learning Bias Detection and Explainability in the Cloud
<https://dl.acm.org/doi/abs/10.1145/3447548.3467177>
AUTHORS: Michaela Hardt, Xiaoguang Chen, Xiaoyi Cheng, Michele Donini, Jason Gelman, Satish Gollaprolu, John He, Pedro Larroy, Xinyu Liu, Nick McCarthy, Ashish Rathi, Scott Rees, Ankit Siva, ErhYuan Tsai, Keerthan Vasist, Pinar Yilmaz, Muhammad Bial Zafar, Sanjiv Das, Kevin Haas, Tyler Hill, Krishnamurthy Venkatesh
HIGHLIGHT: We present Amazon SageMaker Clarify, an explainability feature for Amazon SageMaker that launched in December 2020, providing insights into data and ML models by identifying biases and explaining predictions.

295, **TITLE:** Neural Instant Search for Music and Podcast
<https://dl.acm.org/doi/abs/10.1145/3447548.3467188>
AUTHORS: Helia Hashemi, Aasish Pappu, Mi Tian, Praveen Chandar, Mounia Lalmas, Benjamin Carterette
HIGHLIGHT: In this work, we conduct a large-scale log analysis to study and compare podcast and music search behavior on Spotify, a major audio streaming platform.

296, **TITLE:** A Unified Solution to Constrained Bidding in Online Display Advertising
<https://dl.acm.org/doi/abs/10.1145/3447548.3467199>
AUTHORS: Yue He, Xiujun Chen, Di Wu, Junwei Pan, Qing Tan, Chuan Yu, Jian Xu, Xiaoqiang Zhu
HIGHLIGHT: In this paper, we formulate the demand as a constrained bidding problem, and deduce a unified optimal bidding function on behalf of an advertiser.

297, **TITLE:** Purify and Generate: Learning Faithful Item-to-Item Graph from Noisy User-Item Interaction Behaviors
<https://dl.acm.org/doi/abs/10.1145/3447548.3467205>
AUTHORS: Yue He, Yancheng Dong, Peng Cui, Yuhang Jiao, Xiaowei Wang, Ji Liu, Philip S. Yu
HIGHLIGHT: In this paper, we propose a novel framework called Purified Graph Generation (PGG) dedicated to learn faithful I2I graph from sparse and noisy behavior data.

298, **TITLE:** Analysis of Faces in a Decade of US Cable TV News
<https://dl.acm.org/doi/abs/10.1145/3447548.3467134>
AUTHORS: James Hong, Will Crichton, Haotian Zhang, Daniel Y. Fu, Jacob Ritchie, Jeremy Barenholtz, Ben Hannel, Xinwei Yao, Michaela Murray, Geraldine Moriba, Maneesh Agrawala, Kayvon Fatahalian
HIGHLIGHT: We conduct a large-scale, quantitative analysis of the faces in a decade of cable news video from the top three US cable news networks (CNN, FOX, and MSNBC), totaling 244,038 hours between January 2010 and July 2019.

299, **TITLE:** Markdowns in E-Commerce Fresh Retail: A Counterfactual Prediction and Multi-Period Optimization Approach
<https://dl.acm.org/doi/abs/10.1145/3447548.3467083>
AUTHORS: Junhao Hua, Ling Yan, Huan Xu, Cheng Yang
HIGHLIGHT: In this paper, by leveraging abundant observational transaction data, we propose a novel data-driven and interpretable pricing approach for markdowns, consisting of counterfactual prediction and multi-period price optimization.

300, **TITLE:** HGAMN: Heterogeneous Graph Attention Matching Network for Multilingual POI Retrieval at Baidu Maps
<https://dl.acm.org/doi/abs/10.1145/3447548.3467059>
AUTHORS: Jizhou Huang, Haifeng Wang, Yibo Sun, Miao Fan, Zhengjie Huang, Chunyuan Yuan, Yawen Li
HIGHLIGHT: To this end, we propose a Heterogeneous Graph Attention Matching Network (HGAMN) to concurrently address both challenges.

301, **TITLE:** Sliding Spectrum Decomposition for Diversified Recommendation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467108>
AUTHORS: Yanhua Huang, Weikun Wang, Lei Zhang, Ruiwen Xu
HIGHLIGHT: In this paper, we propose to study the diversity problem in such a scenario from an item sequence perspective using time series analysis techniques.

302, **TITLE:** Hierarchical Training: Scaling Deep Recommendation Models on Large CPU Clusters
<https://dl.acm.org/doi/abs/10.1145/3447548.3467084>
AUTHORS: Yuzhen Huang, Xiaohan Wei, Xing Wang, Jiyang Yang, Bor-Yiing Su, Shivam Bharuka, Dhruv Choudhary, Zewei Jiang, Hai Zheng, Jack Langman
HIGHLIGHT: In this paper, we conduct an in-depth analysis of the scalability bottleneck in existing training architecture on large scale CPU clusters.

- 303, TITLE: Deep Inclusion Relation-aware Network for User Response Prediction at Fliggy
<https://dl.acm.org/doi/abs/10.1145/3447548.3467111>
AUTHORS: Zai Huang, Mingyuan Tao, Bufeng Zhang
HIGHLIGHT: To this end, in this paper, we propose a novel Deep Inclusion Relation-aware Network (DIRN) for user response prediction by synthetically exploiting inclusion relations among travel items.
- 304, TITLE: MPCSL - A Modular Pipeline for Causal Structure Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467082>
AUTHORS: Johannes Huegle, Christopher Hagedorn, Michael Perscheid, Hasso Plattner
HIGHLIGHT: In this work, we propose an architectural blueprint of a pipeline for causal structure learning and outline our reference implementation MPCSL that addresses the requirements towards platform independence and modularity while ensuring the comparability and reproducibility of experiments.
- 305, TITLE: Knowledge-Guided Efficient Representation Learning for Biomedical Domain
<https://dl.acm.org/doi/abs/10.1145/3447548.3467118>
AUTHORS: Kishlay Jha, Guangxu Xun, Nan Du, Aidong Zhang
HIGHLIGHT: To address this issue, we propose a new representation learning approach that efficiently adapts the concept representations to the newly available data.
- 306, TITLE: Bootstrapping for Batch Active Sampling
<https://dl.acm.org/doi/abs/10.1145/3447548.3467076>
AUTHORS: Heinrich Jiang, Maya R. Gupta
HIGHLIGHT: We present a simple variant of margin sampling for the batch setting that scores candidate samples by their minimum margin to a set of bootstrapped margins, and explain how this proposal increases diversity in a supervised and efficient way, and why it differs from the usual ensemble methods for active sampling.
- 307, TITLE: FleetRec: Large-Scale Recommendation Inference on Hybrid GPU-FPGA Clusters
<https://dl.acm.org/doi/abs/10.1145/3447548.3467139>
AUTHORS: Wenqi Jiang, Zhenhao He, Shuai Zhang, Kai Zeng, Liang Feng, Jiansong Zhang, Tongxuan Liu, Yong Li, Jingren Zhou, Ce Zhang, Gustavo Alonso
HIGHLIGHT: We present FleetRec, a high-performance and scalable recommendation inference system within tight latency constraints.
- 308, TITLE: Network Experimentation at Scale
<https://dl.acm.org/doi/abs/10.1145/3447548.3467091>
AUTHORS: Brian Karrer, Liang Shi, Monica Bhole, Matt Goldman, Tyrone Palmer, Charlie Gelman, Mikael Konutgan, Feng Sun
HIGHLIGHT: We describe our network experimentation framework, deployed at Facebook, which accounts for interference between experimental units.
- 309, TITLE: Addressing Non-Representative Surveys using Multiple Instance Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467109>
AUTHORS: Yaniv Katz, Oded Vainas
HIGHLIGHT: In this paper, we look at this well known problem from a fresh perspective, and formulate it as a learning problem.
- 310, TITLE: Micro-climate Prediction - Multi Scale Encoder-decoder based Deep Learning Framework
<https://dl.acm.org/doi/abs/10.1145/3447548.3467173>
AUTHORS: Peeyush Kumar, Ranveer Chandra, Chetan Bansal, Shivkumar Kalyanaraman, Tanuja Ganu, Michael Grant
HIGHLIGHT: This paper presents a deep learning approach for a versatile Micro-climate prediction framework (DeepMC).
- 311, TITLE: Architecture and Operation Adaptive Network for Online Recommendations
<https://dl.acm.org/doi/abs/10.1145/3447548.3467133>
AUTHORS: Lang Lang, Zhenlong Zhu, Xuanye Liu, Jianxin Zhao, Jixing Xu, Minghui Shan
HIGHLIGHT: In this paper, we propose a generalized interaction paradigm to lift the limitation, where operations adopted by existing models can be regarded as its special form.
- 312, TITLE: Diet Planning with Machine Learning: Teacher-forced REINFORCE for Composition Compliance with Nutrition Enhancement

<https://dl.acm.org/doi/abs/10.1145/3447548.3467201>

AUTHORS: Changhun Lee, Soohyeok Kim, Chiehyeon Lim, Jayun Kim, Yeji Kim, Minyoung Jung
HIGHLIGHT: This work is original research that defines diet planning as a machine learning problem; we describe diets as sequence data and solve a controllable sequence generation problem.

313, TITLE: SEMI: A Sequential Multi-Modal Information Transfer Network for E-Commerce Micro-Video Recommendations

<https://dl.acm.org/doi/abs/10.1145/3447548.3467189>

AUTHORS: Chenyi Lei, Yong Liu, Lingzi Zhang, Guoxin Wang, Haihong Tang, Houqiang Li, Chunyan Miao
HIGHLIGHT: To address this problem, we design a sequential multi-modal information transfer network (SEMI), which utilizes product-domain user behaviors to assist micro-video recommendations.

314, TITLE: Dual Attentive Sequential Learning for Cross-Domain Click-Through Rate Prediction

<https://dl.acm.org/doi/abs/10.1145/3447548.3467140>

AUTHORS: Pan Li, Zhichao Jiang, Maofei Que, Yao Hu, Alexander Tuzhilin
HIGHLIGHT: In this paper, we propose a novel approach to cross-domain sequential recommendations based on the dual learning mechanism that simultaneously transfers information between two related domains in an iterative manner until the learning process stabilizes.

315, TITLE: Embedding-based Product Retrieval in Taobao Search

<https://dl.acm.org/doi/abs/10.1145/3447548.3467101>

AUTHORS: Sen Li, Fuyu Lv, Taiwei Jin, Guli Lin, Keping Yang, Xiaoyi Zeng, Xiao-Ming Wu, Qianli Ma
HIGHLIGHT: Therefore, we propose a novel and practical embedding-based product retrieval model, named Multi-Grained Deep Semantic Product Retrieval (MGDSPR).

316, TITLE: Debiasing Learning based Cross-domain Recommendation

<https://dl.acm.org/doi/abs/10.1145/3447548.3467067>

AUTHORS: Siqing Li, Liuyi Yao, Shanlei Mu, Wayne Xin Zhao, Yaliang Li, Tonglei Guo, Bolin Ding, Ji-Rong Wen
HIGHLIGHT: To be specific, this paper presents a novel debiasing learning based cross-domain recommendation framework with causal embedding.

317, TITLE: An Experimental Study of Quantitative Evaluations on Saliency Methods

<https://dl.acm.org/doi/abs/10.1145/3447548.3467148>

AUTHORS: Xiao-Hui Li, Yuhan Shi, Haoyang Li, Wei Bai, Caleb Chen Cao, Lei Chen
HIGHLIGHT: With an exhaustive experimental study based on them, we conclude that among all the typical methods we compare, no single explanation method dominates others in all metrics.

318, TITLE: OpenBox: A Generalized Black-box Optimization Service

<https://dl.acm.org/doi/abs/10.1145/3447548.3467061>

AUTHORS: Yang Li, Yu Shen, Wentao Zhang, Yuanwei Chen, Huaijun Jiang, Mingchao Liu, Jiawei Jiang, Jinyang Gao, Wentao Wu, Zhi Yang, Ce Zhang, Bin Cui
HIGHLIGHT: In this paper, we build OpenBox, an open-source and general-purpose BBO service with improved usability.

319, TITLE: Multivariate Time Series Anomaly Detection and Interpretation using Hierarchical Inter-Metric and Temporal Embedding

<https://dl.acm.org/doi/abs/10.1145/3447548.3467075>

AUTHORS: Zhihan Li, Youjian Zhao, Jiaqi Han, Ya Su, Rui Jiao, Xidao Wen, Dan Pei
HIGHLIGHT: In this paper, we propose InterFusion, an unsupervised method that simultaneously models the inter-metric and temporal dependency for MTS.

320, TITLE: Reinforced Iterative Knowledge Distillation for Cross-Lingual Named Entity Recognition

<https://dl.acm.org/doi/abs/10.1145/3447548.3467196>

AUTHORS: Shining Liang, Ming Gong, Jian Pei, Linjun Shou, Wanli Zuo, Xianglin Zuo, Daxin Jiang
HIGHLIGHT: To address the opportunities and challenges, in this paper we describe our novel practice in Microsoft to leverage such large amounts of unlabeled data in target languages in real production settings.

321, TITLE: Unveiling Fake Accounts at the Time of Registration: An Unsupervised Approach

<https://dl.acm.org/doi/abs/10.1145/3447548.3467094>

AUTHORS: Xiao Liang, Zheng Yang, Binghui Wang, Shaofeng Hu, Zijie Yang, Dong Yuan, Neil Zhenqiang Gong, Qi Li, Fang He

HIGHLIGHT: In this work, we propose UFA (Unveiling Fake Accounts) to detect fake accounts immediately after they are registered in an unsupervised fashion.

322, **TITLE:** M6: Multi-Modality-to-Multi-Modality Multitask Mega-transformer for Unified Pretraining
<https://dl.acm.org/doi/abs/10.1145/3447548.3467206>
AUTHORS: Junyang Lin, Rui Men, An Yang, Chang Zhou, Yichang Zhang, Peng Wang, Jingren Zhou, Jie Tang, Hongxia Yang
HIGHLIGHT: In this work, we propose the largest dataset for pretraining in Chinese, which consists of over 1.9TB images and 292GB texts.

323, **TITLE:** PAM: Understanding Product Images in Cross Product Category Attribute Extraction
<https://dl.acm.org/doi/abs/10.1145/3447548.3467164>
AUTHORS: Rongmei Lin, Xiang He, Jie Feng, Nasser Zalmout, Yan Liang, Li Xiong, Xin Luna Dong
HIGHLIGHT: This work proposes a more inclusive framework that fully utilizes these different modalities for attribute extraction. Inspired by recent works in visual question answering, we use a transformer based sequence model to fuse representations of product text, Optical Character Recognition (OCR) tokens and visual objects detected in the product image.

324, **TITLE:** Large-Scale Network Embedding in Apache Spark
<https://dl.acm.org/doi/abs/10.1145/3447548.3467136>
AUTHORS: Wenqing Lin
HIGHLIGHT: In this paper, we propose an efficient and effective distributed algorithm for network embedding on large graphs using Apache Spark, which recursively partitions a graph into several small-sized subgraphs to capture the internal and external structural information of nodes, and then computes the network embedding for each subgraph in parallel.

325, **TITLE:** Intention-aware Heterogeneous Graph Attention Networks for Fraud Transactions Detection
<https://dl.acm.org/doi/abs/10.1145/3447548.3467142>
AUTHORS: Can Liu, Li Sun, Xiang Ao, Jinghua Feng, Qing He, Hao Yang
HIGHLIGHT: In this paper, a novel heterogeneous transaction-intention network is devised to leverage the cross-interaction information over transactions and intentions, which consists of two types of nodes, namely transaction and intention nodes, and two types of edges, i.e., transaction-intention and transaction-transaction edges.

326, **TITLE:** JIZHI: A Fast and Cost-Effective Model-As-A-Service System for Web-Scale Online Inference at Baidu
<https://dl.acm.org/doi/abs/10.1145/3447548.3467146>
AUTHORS: Hao Liu, Qian Gao, Jiang Li, Xiaochao Liao, Hao Xiong, Guangxing Chen, Wenlin Wang, Guobao Yang, Zhiwei Zha, Daxiang Dong, Dejing Dou, Haoyi Xiong
HIGHLIGHT: In this work, we present JIZHI - a Model-as-a-Service system - that per second handles hundreds of millions of online inference requests to huge deep models with more than trillions of sparse parameters, for over twenty real-time recommendation services at Baidu, Inc.

327, **TITLE:** Categorization of Financial Transactions in QuickBooks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467100>
AUTHORS: Juan Liu, Lei Pei, Ying Sun, Heather Simpson, Jocelyn Lu, Nhung Ho
HIGHLIGHT: This paper shares our work on building a machine learning system to categorize transactions for Intuit's QuickBooks product.

328, **TITLE:** KompaRe: A Knowledge Graph Comparative Reasoning System
<https://dl.acm.org/doi/abs/10.1145/3447548.3467128>
AUTHORS: Lihui Liu, Boxin Du, Yi Ren Fung, Heng Ji, Jiejun Xu, Hanghang Tong
HIGHLIGHT: We present both the system architecture and its core algorithms, including knowledge segment extraction, pairwise reasoning and collective reasoning.

329, **TITLE:** Trustworthy and Powerful Online Marketplace Experimentation with Budget-split Design
<https://dl.acm.org/doi/abs/10.1145/3447548.3467193>
AUTHORS: Min Liu, Jialiang Mao, Kang Kang
HIGHLIGHT: In this paper we address this shortcoming by proposing the budget-split design, which is unbiased in any marketplace where buyers have a finite or infinite budget.

330, **TITLE:** Lane Change Scheduling for Autonomous Vehicle: A Prediction-and-Search Framework
<https://dl.acm.org/doi/abs/10.1145/3447548.3467072>
AUTHORS: Shuncheng Liu, Han Su, Yan Zhao, Kai Zeng, Kai Zheng

HIGHLIGHT: In this paper, we conduct an algorithmic study on when and how an autonomous vehicle should change its lane, which is a fundamental problem in vehicle automation field and root cause of most 'phantom' traffic jams.

331, **TITLE:** Neural Auction: End-to-End Learning of Auction Mechanisms for E-Commerce Advertising
<https://dl.acm.org/doi/abs/10.1145/3447548.3467103>
AUTHORS: Xiangyu Liu, Chuan Yu, Zhilin Zhang, Zhenzhe Zheng, Yu Rong, Hongtao Lv, Da Huo, Yiqing Wang, Dagui Chen, Jian Xu, Fan Wu, Guihai Chen, Xiaoqiang Zhu
HIGHLIGHT: In this paper, we design Deep Neural Auctions (DNAs) to enable end-to-end auction learning by proposing a differentiable model to relax the discrete sorting operation, a key component in auctions.

332, **TITLE:** Pre-trained Language Model for Web-scale Retrieval in Baidu Search
<https://dl.acm.org/doi/abs/10.1145/3447548.3467149>
AUTHORS: Yiding Liu, Weixue Lu, Suqi Cheng, Daiting Shi, Shuaiqiang Wang, Zhicong Cheng, Dawei Yin
HIGHLIGHT: In this paper, we describe the retrieval system that we developed and deployed in Baidu Search.

333, **TITLE:** Que2Search: Fast and Accurate Query and Document Understanding for Search at Facebook
<https://dl.acm.org/doi/abs/10.1145/3447548.3467127>
AUTHORS: Yiqun Liu, Kaushik Rangadurai, Yunzhong He, Siddarth Malreddy, Xunlong Gui, Xiaoyi Liu, Fedor Borisjuk
HIGHLIGHT: In this paper, we present Que2Search, a deployed query and product understanding system for search.

334, **TITLE:** AliCoCo2: Commonsense Knowledge Extraction, Representation and Application in E-commerce
<https://dl.acm.org/doi/abs/10.1145/3447548.3467203>
AUTHORS: Xusheng Luo, Le Bo, Jinhang Wu, Lin Li, Zhiy Luo, Yonghua Yang, Keping Yang
HIGHLIGHT: We propose a multi-task encoder-decoder framework to provide effective representations for nodes and edges from AliCoCo2.

335, **TITLE:** What Happened Next? Using Deep Learning to Value Defensive Actions in Football Event-Data
<https://dl.acm.org/doi/abs/10.1145/3447548.3467090>
AUTHORS: Charbel Merhej, Ryan J. Beal, Tim Matthews, Sarvapali Ramchurn
HIGHLIGHT: Therefore in this paper, we use deep learning techniques to define a novel metric that values such defensive actions by studying the threat of passages of play that preceded them.

336, **TITLE:** VisualTextRank: Unsupervised Graph-based Content Extraction for Automating Ad Text to Image Search
<https://dl.acm.org/doi/abs/10.1145/3447548.3467126>
AUTHORS: Shaunak Mishra, Mikhail Kuznetsov, Gaurav Srivastava, Maxim Sviridenko
HIGHLIGHT: In this context, we propose VisualTextRank: an unsupervised method to (i) augment input ad text using semantically similar ads, and (ii) extract the image query from the augmented ad text.

337, **TITLE:** Zero-shot Multi-lingual Interrogative Question Generation for "People Also Ask" at Bing
<https://dl.acm.org/doi/abs/10.1145/3447548.3469403>
AUTHORS: Rajarshree Mitra, Rhea Jain, Aditya Srikanth Veerubhotla, Manish Gupta
HIGHLIGHT: In this paper, we design a system for supporting multi-lingual QG in the "People Also Ask" (PAA) module for Bing.

338, **TITLE:** Diversity driven Query Rewriting in Search Advertising
<https://dl.acm.org/doi/abs/10.1145/3447548.3467202>
AUTHORS: Akash Kumar Mohankumar, Nikit Begwani, Amit Singh
HIGHLIGHT: In this work, we introduce CLOVER, a framework to generate both high-quality and diverse rewrites by optimizing for human assessment of rewrite quality using our diversity-driven reinforcement learning algorithm.

339, **TITLE:** SizeFlags: Reducing Size and Fit Related Returns in Fashion E-Commerce
<https://dl.acm.org/doi/abs/10.1145/3447548.3467160>
AUTHORS: Andrea Nestler, Nour Karessli, Karl Hajjar, Rodrigo Weffer, Reza Shirvany
HIGHLIGHT: To tackle this issue we introduce SizeFlags, a probabilistic Bayesian model based on weakly annotated large-scale data from customers.

340, **TITLE:** A Multi-Graph Attributed Reinforcement Learning based Optimization Algorithm for Large-scale Hybrid Flow Shop Scheduling Problem
<https://dl.acm.org/doi/abs/10.1145/3447548.3467135>
AUTHORS: Fei Ni, Jianye Hao, Jiawen Lu, Xialiang Tong, Mingxuan Yuan, Jiahui Duan, Yi Ma, Kun He

- HIGHLIGHT:** To address this challenge, we propose a novel Multi-Graph Attributed Reinforcement Learning based Optimization (MGRO) algorithm to better tackle the practical large-scale HFSP and improve the existing algorithm.
- 341, **TITLE:** AttDMM: An Attentive Deep Markov Model for Risk Scoring in Intensive Care Units
<https://dl.acm.org/doi/abs/10.1145/3447548.3467143>
AUTHORS: Yilmazcan Ozyurt, Mathias Kraus, Tobias Hatt, Stefan Feuerriegel
HIGHLIGHT: In this work, we propose a novel generative deep probabilistic model for real-time risk scoring in ICUs.
- 342, **TITLE:** Amazon SageMaker Automatic Model Tuning: Scalable Gradient-Free Optimization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467098>
AUTHORS: Valerio Perrone, Huibin Shen, Aida Zolic, Jaroslav Shcherbatyi, Amr Ahmed, Tanya Bansal, Michele Donini, Fela Winkelmolten, Rodolphe Jenatton, Jean Baptiste Faddoul, Barbara Pogorzelska, Miroslav Miladinovic, Krishnam Kenthapadi, Matthias Seeger, Cédric Archambeau
HIGHLIGHT: This paper presents Amazon SageMaker Automatic Model Tuning (AMT), a fully managed system for gradient-free optimization at scale.
- 343, **TITLE:** User Consumption Intention Prediction in Meituan
<https://dl.acm.org/doi/abs/10.1145/3447548.3467178>
AUTHORS: Yukun Ping, Chen Gao, Taichi Liu, Xiaoyi Du, Hengliang Luo, Depeng Jin, Yong Li
HIGHLIGHT: To overcome these challenges, in Meituan, we design a real-world system consisting of two stages, intention detection and prediction.
- 344, **TITLE:** Bootstrapping Recommendations at Chrome Web Store
<https://dl.acm.org/doi/abs/10.1145/3447548.3467099>
AUTHORS: Zhen Qin, Honglei Zhuang, Rolf Jagerman, Xinyu Qian, Po Hu, Dan Chary Chen, Xuanhui Wang, Michael Bendersky, Marc Najork
HIGHLIGHT: In this paper, we describe how we developed and deployed three recommender systems for discovering relevant extensions in CWS, namely non-personalized recommendations, related extension recommendations, and personalized recommendations.
- 345, **TITLE:** Lambda Learner: Fast Incremental Learning on Data Streams
<https://dl.acm.org/doi/abs/10.1145/3447548.3467172>
AUTHORS: Rohan Ramanath, Konstantin Salomatin, Jeffrey D. Gee, Kirill Talanine, Onkar Dalal, Gungor Polatkan, Sara Smoot, Deepak Kumar
HIGHLIGHT: In this paper, we propose Lambda Learner, a new framework for training models by incremental updates in response to mini-batches from data streams.
- 346, **TITLE:** RAPT: Pre-training of Time-Aware Transformer for Learning Robust Healthcare Representation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467069>
AUTHORS: Houxing Ren, Jingyuan Wang, Wayne Xin Zhao, Ning Wu
HIGHLIGHT: In this paper, we study how to effectively learn representations applied to various downstream tasks for EHR data.
- 347, **TITLE:** A Bayesian Approach to In-Game Win Probability in Soccer
<https://dl.acm.org/doi/abs/10.1145/3447548.3467194>
AUTHORS: Pieter Robberechts, Jan Van Haaren, Jesse Davis
HIGHLIGHT: In this paper, we introduce an in-game win probability model for soccer that addresses the shortcomings of existing models.
- 348, **TITLE:** Contextual Bandit Applications in a Customer Support Bot
<https://dl.acm.org/doi/abs/10.1145/3447548.3467165>
AUTHORS: Sandra Sajeev, Jade Huang, Nikos Karampatziakis, Matthew Hall, Sebastian Kochman, Weizhu Chen
HIGHLIGHT: In this paper, we discuss real-world implementations of contextual bandits (CB) for the Microsoft virtual agent.
- 349, **TITLE:** Predicting COVID-19 Spread from Large-Scale Mobility Data
<https://dl.acm.org/doi/abs/10.1145/3447548.3467157>
AUTHORS: Amray Schwabe, Joel Persson, Stefan Feuerriegel
HIGHLIGHT: To fill this gap, we introduce a novel model for epidemic forecasting based on mobility data, called mobility marked Hawkes model.

- 350, TITLE: Does Air Quality Really Impact COVID-19 Clinical Severity: Coupling NASA Satellite Datasets with Geometric Deep Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467207>
AUTHORS: Ignacio Segovia Dominguez, Huikyo Lee, Yuzhou Chen, Michael Garay, Krzysztof M. Gorski, Yulia R. Gel
HIGHLIGHT: The goal of this project is to glean a deeper insight into sophisticated spatio-temporal dependencies among air quality, atmospheric conditions, and COVID-19 clinical severity using the machinery of Geometric Deep Learning (GDL), while providing quantitative uncertainty estimates.
- 351, TITLE: Learning to Assign: Towards Fair Task Assignment in Large-Scale Ride Hailing
<https://dl.acm.org/doi/abs/10.1145/3447548.3467085>
AUTHORS: Dingyuan Shi, Yongxin Tong, Zimu Zhou, Bingchen Song, Weifeng Lv, Qiang Yang
HIGHLIGHT: In this work, we propose LAF, an effective and efficient task assignment scheme that optimizes both utility and fairness.
- 352, TITLE: Interpretable Drug Response Prediction using a Knowledge-based Neural Network
<https://dl.acm.org/doi/abs/10.1145/3447548.3467212>
AUTHORS: Oliver Snow, Hossein Sharifi-Noghabi, Jialin Lu, Olga Zolotareva, Mark Lee, Martin Ester
HIGHLIGHT: In this paper, we propose BDKANN, a novel knowledge-based method that employs the hierarchical information on how proteins form complexes and act together in pathways to form the architecture of a deep neural network.
- 353, TITLE: Mondegreen: A Post-Processing Solution to Speech Recognition Error Correction for Voice Search Queries
<https://dl.acm.org/doi/abs/10.1145/3447548.3467156>
AUTHORS: Sukhdeep S. Sodhi, Ellie Ka-In Chio, Ambarish Jash, Santiago Ontañón, Ajit Apte, Ankit Kumar, Ayooluwakunmi Jeje, Dima Kuzmin, Harry Fung, Heng-Tze Cheng, Jon Effrat, Tarush Bali, Nitin Jindal, Pei Cao, Sarvjeet Singh, Senqiang Zhou, Tameen Khan, Amol Wankhede, Moustafa Alzantot, Allen Wu, Tushar Chandra
HIGHLIGHT: In this paper, we introduce an approach, "Mondegreen", to correct voice queries in text space without depending on audio signals, which may not always be available due to system constraints or privacy or bandwidth (for example, some ASR systems run on-device) considerations.
- 354, TITLE: Dynamic Social Media Monitoring for Fast-Evolving Online Discussions
<https://dl.acm.org/doi/abs/10.1145/3447548.3467171>
AUTHORS: Maya Srikanth, Anqi Liu, Nicholas Adams-Cohen, Jian Cao, R. Michael Alvarez, Anima Anandkumar
HIGHLIGHT: We propose a dynamic keyword search method to maximize the coverage of relevant information in fast-evolving online discussions.
- 355, TITLE: MoCL: Data-driven Molecular Fingerprint via Knowledge-aware Contrastive Learning from Molecular Graph
<https://dl.acm.org/doi/abs/10.1145/3447548.3467186>
AUTHORS: Mengying Sun, Jing Xing, Huijun Wang, Bin Chen, Jiayu Zhou
HIGHLIGHT: In this paper, we study graph contrastive learning designed specifically for the biomedical domain, where molecular graphs are present.
- 356, TITLE: A PLAN for Tackling the Locust Crisis in East Africa: Harnessing Spatiotemporal Deep Models for Locust Movement Forecasting
<https://dl.acm.org/doi/abs/10.1145/3447548.3467184>
AUTHORS: Maryam Tabar, Jared Gluck, Anchit Goyal, Fei Jiang, Derek Morr, Annalyse Kehs, Dongwon Lee, David P. Hughes, Amulya Yadav
HIGHLIGHT: In order to augment and assist human experts at the UN-FAO in this task, we utilize crowdsourced reports of locust observations collected by PlantVillage (the world's leading knowledge delivery system for East African farmers) and develop PLAN, a Machine Learning (ML) algorithm for forecasting future migration patterns of locusts at high spatial and temporal resolution across East Africa.
- 357, TITLE: Value Function is All You Need: A Unified Learning Framework for Ride Hailing Platforms
<https://dl.acm.org/doi/abs/10.1145/3447548.3467096>
AUTHORS: Xiaocheng Tang, Fan Zhang, Zhiwei Qin, Yansheng Wang, Dingyuan Shi, Bingchen Song, Yongxin Tong, Hongtu Zhu, Jieping Ye
HIGHLIGHT: In this paper we propose a unified value-based dynamic learning framework (V1D3) for tackling both tasks.
- 358, TITLE: Recommending the Most Effective Intervention to Improve Employment for Job Seekers with Disability
<https://dl.acm.org/doi/abs/10.1145/3447548.3467095>
AUTHORS: Ha Xuan Tran, Thuc Duy Le, Jiuyong Li, Lin Liu, Jixue Liu, Yanchang Zhao, Tony Waters
HIGHLIGHT: In this paper, we present a causality-based method to tackle the problem.

- 359, TITLE: Clockwork: A Delay-Based Global Scheduling Framework for More Consistent Landing Times in the Data Warehouse
<https://dl.acm.org/doi/abs/10.1145/3447548.3467119>
AUTHORS: Martin Valdez-Vivas, Varun Sharma, Nick Stanisha, Shan Li, Luo Mi, Wei Jiang, Alex Kalinin, Josh Metzler
HIGHLIGHT: We present Clockwork, a delay-based global scheduling framework for data pipelines which improves landing time stability by spreading out tasks throughout the day.
- 360, TITLE: Bipartite Dynamic Representations for Abuse Detection
<https://dl.acm.org/doi/abs/10.1145/3447548.3467141>
AUTHORS: Andrew Z. Wang, Rex Ying, Pan Li, Nikhil Rao, Karthik Subbian, Jure Leskovec
HIGHLIGHT: Here we present BiDyn, a general method to detect abusive behavior in dynamic bipartite networks at scale, while generalizing from limited training labels.
- 361, TITLE: MeLL: Large-scale Extensible User Intent Classification for Dialogue Systems with Meta Lifelong Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467107>
AUTHORS: Chengyu Wang, Haojie Pan, Yuan Liu, Kehan Chen, Minghui Qiu, Wei Zhou, Jun Huang, Haiqing Chen, Wei Lin, Deng Cai
HIGHLIGHT: In this paper, we introduce the Meta Lifelong Learning (MeLL) framework to address this task.
- 362, TITLE: Record: Joint Real-Time Repositioning and Charging for Electric Carsharing with Dynamic Deadlines
<https://dl.acm.org/doi/abs/10.1145/3447548.3467112>
AUTHORS: Guang Wang, Zhou Qin, Shuai Wang, Huijun Sun, Zheng Dong, Desheng Zhang
HIGHLIGHT: To remedy these problems, in this paper, we design Record, an effective fleet management system with joint Repositioning and Charging for electric carsharing based on dynamic deadlines to improve its operating profits and also satisfy users' real-time pickup and return demand.
- 363, TITLE: Live-Streaming Fraud Detection: A Heterogeneous Graph Neural Network Approach
<https://dl.acm.org/doi/abs/10.1145/3447548.3467065>
AUTHORS: Haishuai Wang, Zhao Li, Peng Zhang, Jiaming Huang, Pengrui Hui, Jian Liao, Ji Zhang, Jiajun Bu
HIGHLIGHT: In this paper, we propose a new approach based on a heterogeneous graph neural network for Live-streaming Fraud Detection (called LIFE).
- 364, TITLE: Energy-Efficient 3D Vehicular Crowdsourcing for Disaster Response by Distributed Deep Reinforcement Learning
<https://dl.acm.org/doi/abs/10.1145/3447548.3467070>
AUTHORS: Hao Wang, Chi Harold Liu, Zipeng Dai, Jian Tang, Guoren Wang
HIGHLIGHT: In this paper, we explicitly consider to navigate a group of UVs in a 3-dimensional (3D) disaster workzone to maximize the amount of collected data, geographical fairness, energy efficiency, while minimizing data dropout due to limited transmission rate.
- 365, TITLE: Tac-Valuer: Knowledge-based Stroke Evaluation in Table Tennis
<https://dl.acm.org/doi/abs/10.1145/3447548.3467104>
AUTHORS: Jiachen Wang, Dazhen Deng, Xiao Xie, Xinhuan Shu, Yu-Xuan Huang, Le-Wen Cai, Hui Zhang, Min-Ling Zhang, Zhi-Hua Zhou, Yingcai Wu
HIGHLIGHT: We collaborate with the Chinese national table tennis team and propose Tac-Valuer, an automatic stroke evaluation framework for analysts in table tennis teams.
- 366, TITLE: Reinforcing Pretrained Models for Generating Attractive Text Advertisements
<https://dl.acm.org/doi/abs/10.1145/3447548.3467105>
AUTHORS: Xiting Wang, Xinwei Gu, Jie Cao, Zihua Zhao, Yulan Yan, Bhuvan Middha, Xing Xie
HIGHLIGHT: To improve ad attractiveness without hampering user experience, we propose a model-based reinforcement learning framework for text ad generation, which constructs a model for the environment dynamics and avoids large sample complexity.
- 367, TITLE: Multimodal Emergent Fake News Detection via Meta Neural Process Networks
<https://dl.acm.org/doi/abs/10.1145/3447548.3467153>
AUTHORS: Yaqing Wang, Fenglong Ma, Haoyu Wang, Kishlay Jha, Jing Gao
HIGHLIGHT: In order to address those challenges, we propose an end-to-end fake news detection framework named MetaFEND, which is able to learn quickly to detect fake news on emergent events with a few verified posts.

- 368, TITLE: Domain-Specific Pretraining for Vertical Search: Case Study on Biomedical Literature
<https://dl.acm.org/doi/abs/10.1145/3447548.3469053>
AUTHORS: Yu Wang, Jinchao Li, Tristan Naumann, Chenyan Xiong, Hao Cheng, Robert Tinn, Cliff Wong, Naoto Usuyama, Richard Rogahn, Zhihong Shen, Yang Qin, Eric Horvitz, Paul N. Bennett, Jianfeng Gao, Hoifung Poon
HIGHLIGHT: We propose a general approach for vertical search based on domain-specific pretraining and present a case study for the biomedical domain.
- 369, TITLE: Multi-Scale One-Class Recurrent Neural Networks for Discrete Event Sequence Anomaly Detection
<https://dl.acm.org/doi/abs/10.1145/3447548.3467125>
AUTHORS: Zhiwei Wang, Zhengzhang Chen, Jingchao Ni, Hui Liu, Haifeng Chen, Jiliang Tang
HIGHLIGHT: To address these challenges, in this paper, we propose OC4Seq, a multi-scale one-class recurrent neural network for detecting anomalies in discrete event sequences.
- 370, TITLE: Representation Learning for Predicting Customer Orders
<https://dl.acm.org/doi/abs/10.1145/3447548.3467170>
AUTHORS: Tongwen Wu, Yu Yang, Yanzhi Li, Huiqiang Mao, Liming Li, Xiaoqing Wang, Yuming Deng
HIGHLIGHT: Different from next basket prediction or temporal set prediction, which focuses on predicting a subset of items for a single user, this paper aims for the distributional information of future orders, i.e., the possible subsets of items and their frequencies (probabilities), which is required for decisions such as assortment selection for front-end warehouses and capacity evaluation for fulfillment centers.
- 371, TITLE: Modeling the Sequential Dependence among Audience Multi-step Conversions with Multi-task Learning in Targeted Display Advertising
<https://dl.acm.org/doi/abs/10.1145/3447548.3467071>
AUTHORS: Dongbo Xi, Zhen Chen, Peng Yan, Yinger Zhang, Yongchun Zhu, Fuzhen Zhuang, Yu Chen
HIGHLIGHT: In this paper, we propose an Adaptive Information Transfer Multi-task (AITM) framework, which models the sequential dependence among audience multi-step conversions via the Adaptive Information Transfer (AIT) module.
- 372, TITLE: Tolerating Data Missing in Breast Cancer Diagnosis from Clinical Ultrasound Reports via Knowledge Graph Inference
<https://dl.acm.org/doi/abs/10.1145/3447548.3467106>
AUTHORS: Jianing Xi, Liping Ye, Qinghua Huang, Xuelong Li
HIGHLIGHT: Inspired by the advantage of open world assumption, we regard the missing data in clinical ultrasound reports as non-observed terms of facts, and propose a Knowledge Graph embedding based model KGSeD with the capability of tolerating data missing, which can successfully circumvent the pollution caused by data filling.
- 373, TITLE: Medical Entity Relation Verification with Large-scale Machine Reading Comprehension
<https://dl.acm.org/doi/abs/10.1145/3447548.3467144>
AUTHORS: Yuan Xia, Chunyu Wang, Zhenhui Shi, Jingbo Zhou, Chao Lu, Haifeng Huang, Hui Xiong
HIGHLIGHT: To deal with the problem of variants of medical terms, we introduce a synonym-aware retrieve model to retrieve the potential evidence implicitly verifying the given claim.
- 374, TITLE: EXACTA: Explainable Column Annotation
<https://dl.acm.org/doi/abs/10.1145/3447548.3467211>
AUTHORS: Yikun Xian, Handong Zhao, Tak Yeon Lee, Sungchul Kim, Ryan Rossi, Zuohui Fu, Gerard de Melo, S. Muthukrishnan
HIGHLIGHT: To achieve this, we propose a new approach called EXACTA, which conducts multi-hop knowledge graph reasoning using inverse reinforcement learning to find a path from a column to a potential target label while ensuring both annotation performance and explainability.
- 375, TITLE: DMBGN: Deep Multi-Behavior Graph Networks for Voucher Redemption Rate Prediction
<https://dl.acm.org/doi/abs/10.1145/3447548.3467191>
AUTHORS: Fengtong Xiao, Lin Li, Weinan Xu, Jingyu Zhao, Xiaofeng Yang, Jun Lang, Hao Wang
HIGHLIGHT: In this paper, we propose a Deep Multi-behavior Graph Networks (DMBGN) to shed light on this field for the voucher redemption rate prediction.
- 376, TITLE: FIVES: Feature Interaction Via Edge Search for Large-Scale Tabular Data
<https://dl.acm.org/doi/abs/10.1145/3447548.3467066>
AUTHORS: Yuexiang Xie, Zhen Wang, Yaliang Li, Bolin Ding, Nezihe Merve Gürel, Ce Zhang, Minlie Huang, Wei Lin, Jingren Zhou
HIGHLIGHT: To possess both of their merits, we propose a novel method named Feature Interaction Via Edge Search (FIVES), which formulates the task of interactive feature generation as searching for edges on the defined feature graph.

377, TITLE: Learning Reliable User Representations from Volatile and Sparse Data to Accurately Predict Customer Lifetime Value

<https://dl.acm.org/doi/abs/10.1145/3447548.3467079>

AUTHORS: Mingzhe Xing, Shuqing Bian, Wayne Xin Zhao, Zhen Xiao, Xinji Luo, Cunxiang Yin, Jing Cai, Yancheng He

HIGHLIGHT: To address these issues, this paper presents a novel Temporal-Structural User Representation (named TSUR) network to predict LTV.

378, TITLE: Towards the D-Optimal Online Experiment Design for Recommender Selection

<https://dl.acm.org/doi/abs/10.1145/3447548.3467192>

AUTHORS: Da Xu, Chuanwei Ruan, Evren Korpeoglu, Sushant Kumar, Kannan Achan

HIGHLIGHT: To fill in the gap, we leverage the D-optimal design from the classical statistics literature to achieve the maximum information gain during exploration, and reveal how it fits seamlessly with the modern infrastructure of online inference.

379, TITLE: PAMI: A Computational Module for Joint Estimation and Progression Prediction of Glaucoma

<https://dl.acm.org/doi/abs/10.1145/3447548.3467195>

AUTHORS: Linchuan Xu, Ryo Asaoka, Taichi Kiwaki, Hiroshi Murata, Yuri Fujino, Kenji Yamanishi

HIGHLIGHT: In this paper, we study a novel problem which is the integration of the two data mining tasks.

380, TITLE: Session-Aware Query Auto-completion using Extreme Multi-Label Ranking

<https://dl.acm.org/doi/abs/10.1145/3447548.3467087>

AUTHORS: Nishant Yadav, Rajat Sen, Daniel N. Hill, Arya Mazumdar, Inderjit S. Dhillon

HIGHLIGHT: In this paper, we provide a solution to this problem: we take the novel approach of modeling session-aware QAC as an eXtreme Multi-Label Ranking (XMR) problem where the input is the previous query in the session and the user's current prefix, while the output space is the set of tens of millions of queries entered by users in the recent past.

381, TITLE: FLOP: Federated Learning on Medical Datasets using Partial Networks

<https://dl.acm.org/doi/abs/10.1145/3447548.3467185>

AUTHORS: Qian Yang, Jianyi Zhang, Weituo Hao, Gregory P. Spell, Lawrence Carin

HIGHLIGHT: We investigate this challenging problem by proposing a simple yet effective algorithm, named Federated Learning on Medical Datasets using Partial Networks (FLOP), that shares only a partial model between the server and clients.

382, TITLE: Improving the Information Disclosure in Mobility-on-Demand Systems

<https://dl.acm.org/doi/abs/10.1145/3447548.3467062>

AUTHORS: Yue Yang, Yuan Shi, Dejian Wang, Qisheng Chen, Lei Xu, Hanqian Li, Zhouyu Fu, Xin Li, Hao Zhang

HIGHLIGHT: In this work, we propose a novel framework to tackle this issue, known as the Information Disclosure problem in MoD systems.

383, TITLE: Device-Cloud Collaborative Learning for Recommendation

<https://dl.acm.org/doi/abs/10.1145/3447548.3467097>

AUTHORS: Jiangchao Yao, Feng Wang, Kunyang Jia, Bo Han, Jingren Zhou, Hongxia Yang

HIGHLIGHT: Specifically, we propose a novel MetaPatch learning approach on the device side to efficiently achieve "thousands of people with thousands of models" given a centralized cloud model.

384, TITLE: Semi-supervised Bearing Fault Diagnosis with Adversarially-Trained Phase-Consistent Network

<https://dl.acm.org/doi/abs/10.1145/3447548.3467200>

AUTHORS: Jaehyuk Yi, Jinkyoo Park

HIGHLIGHT: In this study, we propose an adversarially-trained phase-consistent network (APCNet), which is a semi-supervised signal classification approach.

385, TITLE: Leveraging Tripartite Interaction Information from Live Stream E-Commerce for Improving Product Recommendation

<https://dl.acm.org/doi/abs/10.1145/3447548.3467151>

AUTHORS: Sanshi Yu, Zhuoxuan Jiang, Dong-Dong Chen, Shanshan Feng, Dongsheng Li, Qi Liu, Jinfeng Yi

HIGHLIGHT: We propose a novel Live Stream E-Commerce Graph Neural Network framework (LSEC-GNN) to learn the node representations of each bipartite graph, and further design a multi-task learning approach to improve product recommendation.

386, TITLE: AliCG: Fine-grained and Evolvable Conceptual Graph Construction for Semantic Search at Alibaba

<https://dl.acm.org/doi/abs/10.1145/3447548.3467057>

AUTHORS: Ningyu Zhang, QiangHuai Jia, Shumin Deng, Xiang Chen, Hongbin Ye, Hui Chen, Huaixiao Tou, Gang Huang, Zhao Wang, Nengwei Hua, Huajun Chen
HIGHLIGHT: In this paper, we introduce an approach to implementing and deploying the conceptual graph at Alibaba.

387, TITLE: Talent Demand Forecasting with Attentive Neural Sequential Model
<https://dl.acm.org/doi/abs/10.1145/3447548.3467131>
AUTHORS: Qi Zhang, Hengshu Zhu, Ying Sun, Hao Liu, Fuzhen Zhuang, Hui Xiong
HIGHLIGHT: To this end, in this paper, we propose a data-driven neural sequential approach, namely Talent Demand Attention Network (TDAN), for forecasting fine-grained talent demand in the recruitment market.

388, TITLE: AsySQN: Faster Vertical Federated Learning Algorithms with Better Computation Resource Utilization
<https://dl.acm.org/doi/abs/10.1145/3447548.3467169>
AUTHORS: Qingsong Zhang, Bin Gu, Cheng Deng, Songxiang Gu, Liefeng Bo, Jian Pei, Heng Huang
HIGHLIGHT: To address the challenges of communication and computation resource utilization, we propose an asynchronous stochastic quasi-Newton (AsySQN) framework for VFL, under which three algorithms, i.e. AsySQN-SGD, -SVRG and -SAGA, are proposed.

389, TITLE: MEOw: A Space-Efficient Nonparametric Bid Shading Algorithm
<https://dl.acm.org/doi/abs/10.1145/3447548.3467113>
AUTHORS: Wei Zhang, Brendan Kitts, Yanjun Han, Zhengyuan Zhou, Tingyu Mao, Hao He, Shengjun Pan, Aaron Flores, San Gultekin, Tsachy Weissman
HIGHLIGHT: In this paper, we show evidence that online auctions generally diverge in interesting ways from classic distributions.

390, TITLE: MugRep: A Multi-Task Hierarchical Graph Representation Learning Framework for Real Estate Appraisal
<https://dl.acm.org/doi/abs/10.1145/3447548.3467187>
AUTHORS: Weijia Zhang, Hao Liu, Lijun Zha, Hengshu Zhu, Ji Liu, Dejing Dou, Hui Xiong
HIGHLIGHT: To this end, we propose a Multi-Task Hierarchical Graph Representation Learning (MugRep) framework for accurate real estate appraisal.

391, TITLE: HALO: Hierarchy-aware Fault Localization for Cloud Systems
<https://dl.acm.org/doi/abs/10.1145/3447548.3467190>
AUTHORS: Xu Zhang, Chao Du, Yifan Li, Yong Xu, Hongyu Zhang, Si Qin, Ze Li, Qingwei Lin, Yingnong Dang, Andrew Zhou, Saravanakumar Rajmohan, Dongmei Zhang
HIGHLIGHT: In this paper, we propose HALO, a hierarchy-aware fault localization approach for locating the fault-indicating combinations from telemetry data.

392, TITLE: AutoLoss: Automated Loss Function Search in Recommendations
<https://dl.acm.org/doi/abs/10.1145/3447548.3467208>
AUTHORS: Xiangyu Zhao, Haochen Liu, Wenqi Fan, Hui Liu, Jiliang Tang, Chong Wang
HIGHLIGHT: In this work, we propose an AutoLoss framework that can automatically and adaptively search for the appropriate loss function from a set of candidates.

393, TITLE: Incorporating Prior Financial Domain Knowledge into Neural Networks for Implied Volatility Surface Prediction
<https://dl.acm.org/doi/abs/10.1145/3447548.3467115>
AUTHORS: Yu Zheng, Yongxin Yang, Bowei Chen
HIGHLIGHT: In this paper we develop a novel neural network model for predicting implied volatility surface.

394, TITLE: AutoSmart: An Efficient and Automatic Machine Learning Framework for Temporal Relational Data
<https://dl.acm.org/doi/abs/10.1145/3447548.3467088>
AUTHORS: Zhipeng Luo, Zhixing He, Jin Wang, Manqing Dong, Jianqiang Huang, Mingjian Chen, Bohang Zheng
HIGHLIGHT: In this work, we propose our solution that successfully addresses the above issues in an end-to-end automatic way.

395, TITLE: Contrastive Learning for Debiased Candidate Generation in Large-Scale Recommender Systems
<https://dl.acm.org/doi/abs/10.1145/3447548.3467102>
AUTHORS: Chang Zhou, Jianxin Ma, Jianwei Zhang, Jingren Zhou, Hongxia Yang
HIGHLIGHT: In this paper, we theoretically prove that a popular choice of contrastive loss is equivalent to reducing the exposure bias via inverse propensity weighting, which provides a new perspective for understanding the effectiveness of contrastive learning.

396, TITLE: An Efficient Deep Distribution Network for Bid Shading in First-Price Auctions
<https://dl.acm.org/doi/abs/10.1145/3447548.3467167>
AUTHORS: Tian Zhou, Hao He, Shengjun Pan, Niklas Karlsson, Bharatbhusan Shetty, Brendan Kitts, Djordje Gligorijevic, San Gultekin, Tingyu Mao, Junwei Pan, Jianlong Zhang, Aaron Flores
HIGHLIGHT: In this study, we introduce a novel deep distribution network for optimal bidding in both open (non-censored) and closed (censored) online first-price auctions.

397, TITLE: Learning to Expand Audience via Meta Hybrid Experts and Critics for Recommendation and Advertising
<https://dl.acm.org/doi/abs/10.1145/3447548.3467093>
AUTHORS: Yongchun Zhu, Yudan Liu, Ruobing Xie, Fuzhen Zhuang, Xiaobo Hao, Kaikai Ge, Xu Zhang, Leyu Lin, Juan Cao
HIGHLIGHT: In this paper, to address these challenges, we propose a novel two-stage framework named Meta Hybrid Experts and Critics (MetaHeac) which has been deployed in WeChat Look-alike System.

398, TITLE: Pre-trained Language Model based Ranking in Baidu Search
<https://dl.acm.org/doi/abs/10.1145/3447548.3467147>
AUTHORS: Lixin Zou, Shengqiang Zhang, Hengyi Cai, Dehong Ma, Suqi Cheng, Shuaiqiang Wang, Daiting Shi, Zhicong Cheng, Dawei Yin
HIGHLIGHT: In this work, we contribute a series of successfully applied techniques in tackling these exposed issues when deploying the state-of-the-art Chinese pre-trained language model, i.e., ERNIE, in the online search engine system.