

- 1, TITLE: Learning Effective Road Network Representation with Hierarchical Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403043>
AUTHORS: Ning Wu, Xin Wayne Zhao, Jingyuan Wang, Dayan Pan
HIGHLIGHT: In this paper, we propose a novel Hierarchical Road Network Representation model, named HRNR, by constructing a three-level neural architecture, corresponding to "functional zone", "structural regions" and "road segments", respectively.
- 2, TITLE: Interpretability is a Kind of Safety: An Interpreter-based Ensemble for Adversary Defense
<https://dl.acm.org/doi/abs/10.1145/3394486.3403044>
AUTHORS: Jingyuan Wang, Yufan Wu, Mingxuan Li, Xin Lin, Junjie Wu, Chao Li
HIGHLIGHT: In light of this, in this paper, we first reveal a gradient-based correlation between sensitivity analysis-based DNN interpreters and the generation process of adversarial examples, which indicates the Achilles's heel of adversarial attacks and sheds light on linking together the two long-standing challenges of DNN: fragility and unexplainability. We then propose an interpreter-based ensemble framework called X-Ensemble for robust adversary defense. X-Ensemble adopts a novel detection-rectification process and features in building multiple sub-detectors and a rectifier upon various types of interpretation information toward target classifiers.
- 3, TITLE: Higher-order Clustering in Complex Heterogeneous Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403045>
AUTHORS: Aldo G. Carranza, Ryan A. Rossi, Anup Rao, Eunye Koh
HIGHLIGHT: In this work, we propose a framework for higher-order spectral clustering in heterogeneous networks through the notions of typed graphlets and typed-graphlet conductance.
- 4, TITLE: Preserving Dynamic Attention for Long-Term Spatial-Temporal Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403046>
AUTHORS: Haoxing Lin, Rufan Bai, Weijia Jia, Xinyu Yang, Yongjian You
HIGHLIGHT: To address these issues, we propose a Dynamic Switch-Attention Network (DSAN) with a novel Multi-Space Attention (MSA) mechanism that measures the correlations between inputs and outputs explicitly.
- 5, TITLE: Learning to Extract Attribute Value from Product via Question Answering: A Multi-task Approach
<https://dl.acm.org/doi/abs/10.1145/3394486.3403047>
AUTHORS: Qifan Wang, Li Yang, Bhargav Kanagal, Sumit Sanghai, D. Sivakumar, Bin Shu, Zac Yu, Jon Elsas
HIGHLIGHT: In this work, we propose a novel approach for Attribute Value Extraction via Question Answering (AVEQA) using a multi-task framework.
- 6, TITLE: Kernel Assisted Learning for Personalized Dose Finding
<https://dl.acm.org/doi/abs/10.1145/3394486.3403048>
AUTHORS: Liangyu Zhu, Wenbin Lu, Michael R. Kosorok, Rui Song
HIGHLIGHT: In this article, we propose a kernel assisted learning method for estimating the optimal individualized dose rule.
- 7, TITLE: Graph Structure Learning for Robust Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403049>
AUTHORS: Wei Jin, Yao Ma, Xiaorui Liu, Xianfeng Tang, Suhang Wang, Jiliang Tang
HIGHLIGHT: Therefore, in this paper, we explore these properties to defend adversarial attacks on graphs.
- 8, TITLE: An Efficient Neighborhood-based Interaction Model for Recommendation on Heterogeneous Graph
<https://dl.acm.org/doi/abs/10.1145/3394486.3403050>
AUTHORS: Jiarui Jin, Jiarui Qin, Yuchen Fang, Kounianhua Du, Weinan Zhang, Yong Yu, Zheng Zhang, Alexander J. Smola
HIGHLIGHT: In this paper, we propose an end-to-end Neighborhood-based Interaction Model for Recommendation (NIRec) to address above problems.
- 9, TITLE: Directional Multivariate Ranking
<https://dl.acm.org/doi/abs/10.1145/3394486.3403051>
AUTHORS: Nan Wang, Hongning Wang
HIGHLIGHT: In this work, we propose a directional multi-aspect ranking criterion to enable a holistic ranking of items with respect to multiple aspects.
- 10, TITLE: Truth Discovery against Strategic Sybil Attack in Crowdsourcing
<https://dl.acm.org/doi/abs/10.1145/3394486.3403052>
AUTHORS: Yue Wang, Ke Wang, Chunyan Miao

HIGHLIGHT: In this paper, we propose a novel approach, called TDSSA (Truth Discovery against Strategic Sybil Attack), to defend against strategic Sybil attack.

11, **TITLE:** Partial Multi-Label Learning via Probabilistic Graph Matching Mechanism

<https://dl.acm.org/doi/abs/10.1145/3394486.3403053>

AUTHORS: Gengyu Lyu, Songhe Feng, Yidong Li

HIGHLIGHT: In this paper, we interpret such assignments as instance-to-label matchings, and formulate the task of PML as a matching selection problem.

12, **TITLE:** Spectrum-Guided Adversarial Disparity Learning

<https://dl.acm.org/doi/abs/10.1145/3394486.3403054>

AUTHORS: Zhe Liu, Lina Yao, Lei Bai, Xianzhi Wang, Can Wang

HIGHLIGHT: In this work, we propose a novel end-to-end knowledge directed adversarial learning framework, which portrays the class-conditioned intraclass disparity using two competitive encoding distributions and learns the purified latent codes by denoising learned disparity.

13, **TITLE:** Attention and Memory-Augmented Networks for Dual-View Sequential Learning

<https://dl.acm.org/doi/abs/10.1145/3394486.3403055>

AUTHORS: Yong He, Cheng Wang, Nan Li, Zhenyu Zeng

HIGHLIGHT: We develop an AMANet (Attention and Memory-Augmented Networks) architecture by integrating both attention and memory to solve asynchronous multi-view learning problem in general, and we focus on experiments in dual-view sequences in this paper.

14, **TITLE:** Semantic Search in Millions of Equations

<https://dl.acm.org/doi/abs/10.1145/3394486.3403056>

AUTHORS: Lukas Pfahler, Katharina Morik

HIGHLIGHT: Hence, we propose a new approach for retrieval of mathematical expressions based on machine learning. To train our models, we collect a huge dataset with over 29 million mathematical expressions from over 900,000 publications published on arXiv.org.

15, **TITLE:** SSumM: Sparse Summarization of Massive Graphs

<https://dl.acm.org/doi/abs/10.1145/3394486.3403057>

AUTHORS: Kyuhan Lee, Hyeonsoo Jo, Jihoon Ko, Sungsu Lim, Kijung Shin

HIGHLIGHT: In this work, we propose SSumM, a scalable and effective graph-summarization algorithm that yields a sparse summary graph.

16, **TITLE:** Rethinking Pruning for Accelerating Deep Inference At the Edge

<https://dl.acm.org/doi/abs/10.1145/3394486.3403058>

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

HIGHLIGHT: To rectify such drawbacks, we propose entropy-based pruning, a new regularizer that can be seamlessly integrated into existing network pruning algorithms.

17, **TITLE:** Compositional Embeddings Using Complementary Partitions for Memory-Efficient Recommendation Systems

<https://dl.acm.org/doi/abs/10.1145/3394486.3403059>

AUTHORS: Hao-Jun Michael Shi, Dheevatsa Mudigere, Maxim Naumov, Jiyan Yang

HIGHLIGHT: We propose a novel approach for reducing the embedding size in an end-to-end fashion by exploiting complementary partitions of the category set to produce a unique embedding vector for each category without explicit definition.

18, **TITLE:** Structural Patterns and Generative Models of Real-world Hypergraphs

<https://dl.acm.org/doi/abs/10.1145/3394486.3403060>

AUTHORS: Manh Tuan Do, Se-eun Yoon, Bryan Hooi, Kijung Shin

HIGHLIGHT: In this work, we empirically study a number of real-world hypergraph datasets across various domains.

19, **TITLE:** Efficient Algorithm for the b-Matching Graph

<https://dl.acm.org/doi/abs/10.1145/3394486.3403061>

AUTHORS: Yasuhiro Fujiwara, Atsutoshi Kumagai, Sekitoshi Kanai, Yasutoshi Ida, Naonori Ueda

HIGHLIGHT: Our proposal, b-dash, can efficiently construct a b-matching graph because of its two key techniques: (1) it prunes unnecessary update messages in determining edges and (2) it incrementally computes edge weights by exploiting the Sherman-Morrison formula.

20, TITLE: Isolation Distributional Kernel: A New Tool for Kernel based Anomaly Detection
<https://dl.acm.org/doi/abs/10.1145/3394486.3403062>
AUTHORS: Kai Ming Ting, Bi-Cun Xu, Takashi Washio, Zhi-Hua Zhou
HIGHLIGHT: We introduce Isolation Distributional Kernel as a new way to measure the similarity between two distributions.

21, TITLE: NodeAug: Semi-Supervised Node Classification with Data Augmentation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403063>
AUTHORS: Yiwei Wang, Wei Wang, Yuxuan Liang, Yujun Cai, Juncheng Liu, Bryan Hooi
HIGHLIGHT: By using Data Augmentation (DA), we present a new method to enhance Graph Convolutional Networks (GCNs), that are the state-of-the-art models for semi-supervised node classification.

22, TITLE: An Embarrassingly Simple Approach for Trojan Attack in Deep Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403064>
AUTHORS: Ruixiang Tang, Mengnan Du, Ninghao Liu, Fan Yang, Xia Hu
HIGHLIGHT: In this paper, we investigate a specific security problem called trojan attack, which aims to attack deployed DNN systems relying on the hidden trigger patterns inserted by malicious hackers.

23, TITLE: Kronecker Attention Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403065>
AUTHORS: Hongyang Gao, Zhengyang Wang, Shuiwang Ji
HIGHLIGHT: In this work, we propose to avoid flattening by assuming the data follow matrix-variate normal distributions.

24, TITLE: GRACE: Generating Concise and Informative Contrastive Sample to Explain Neural Network Model's Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403066>
AUTHORS: Thai Le, Suhang Wang, Dongwon Lee
HIGHLIGHT: To mitigate this limitation, therefore, we borrow two notable ideas (i.e., "explanation by intervention" from causality and "explanation are contrastive" from philosophy) and propose a novel solution, named as GRACE, that better explains neural network models' predictions for tabular datasets.

25, TITLE: Hierarchical Attention Propagation for Healthcare Representation Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403067>
AUTHORS: Muhan Zhang, Christopher R. King, Michael Avidan, Yixin Chen
HIGHLIGHT: In this paper, we propose Hierarchical Attention Propagation (HAP), a novel medical ontology embedding model that hierarchically propagate attention across the entire ontology structure, where a medical concept adaptively learns its embedding from all other concepts in the hierarchy instead of only its ancestors.

26, TITLE: SCE: Scalable Network Embedding from Sparsest Cut
<https://dl.acm.org/doi/abs/10.1145/3394486.3403068>
AUTHORS: Shengzhong Zhang, Zengfeng Huang, Haicang Zhou, Ziang Zhou
HIGHLIGHT: In this paper, we propose SCE for unsupervised network embedding only using negative samples for training.

27, TITLE: Local Community Detection in Multiple Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403069>
AUTHORS: Dongsheng Luo, Yuchen Bian, Yaowei Yan, Xiao Liu, Jun Huan, Xiang Zhang
HIGHLIGHT: In this paper, we propose a novel RWM (Random Walk in Multiple networks) model to find relevant local communities in all networks for a given query node set from one network.

28, TITLE: A Block Decomposition Algorithm for Sparse Optimization
<https://dl.acm.org/doi/abs/10.1145/3394486.3403070>
AUTHORS: Ganzhao Yuan, Li Shen, Wei-Shi Zheng
HIGHLIGHT: This paper considers a new block decomposition algorithm that combines the effectiveness of combinatorial search methods and the efficiency of coordinate descent methods.

29, TITLE: Adversarial Infidelity Learning for Model Interpretation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403071>
AUTHORS: Jian Liang, Bing Bai, Yuren Cao, Kun Bai, Fei Wang
HIGHLIGHT: In this paper, we propose a Model-agnostic Effective Efficient Direct (MEED) IFS framework for model interpretation, mitigating concerns about sanity, combinatorial shortcuts, model identifiability, and information transmission.

30, TITLE: Grounding Visual Concepts for Zero-Shot Event Detection and Event Captioning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403072>
AUTHORS: Zhihui Li, Xiaojun Chang, Lina Yao, Shirui Pan, Ge Zongyuan, Huaxiang Zhang
HIGHLIGHT: Accordingly, in this paper, we propose a method of grounding visual concepts for large-scale Multimedia Event Detection (MED) and Multimedia Event Captioning (MEC) in zero-shot setting.

31, TITLE: How to Count Triangles, without Seeing the Whole Graph
<https://dl.acm.org/doi/abs/10.1145/3394486.3403073>
AUTHORS: Suman K. Bera, C. Seshadhri
HIGHLIGHT: Despite these challenges, we design a provable and practical algorithm, TETRIS, for triangle counting in this model.

32, TITLE: Incremental Lossless Graph Summarization
<https://dl.acm.org/doi/abs/10.1145/3394486.3403074>
AUTHORS: Jihoon Ko, Yunbum Kook, Kijung Shin
HIGHLIGHT: In this work, we propose MoSSo, the first incremental algorithm for lossless summarization of fully dynamic graphs.

33, TITLE: From Online to Non-i.i.d. Batch Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403075>
AUTHORS: Yufei Tao, Shangqi Lu
HIGHLIGHT: We present a set of techniques to utilize an online algorithm as a black box to perform batch learning in the absence of the i.i.d. assumption.

34, TITLE: Towards Deeper Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403076>
AUTHORS: Meng Liu, Hongyang Gao, Shuiwang Ji
HIGHLIGHT: In this work, we study this observation systematically and develop new insights towards deeper graph neural networks.

35, TITLE: Laplacian Change Point Detection for Dynamic Graphs
<https://dl.acm.org/doi/abs/10.1145/3394486.3403077>
AUTHORS: Shenyang Huang, Yasmeen Hitti, Guillaume Rabusseau, Reihaneh Rabbany
HIGHLIGHT: In this paper, we focus on change point detection in dynamic graphs and address two main challenges associated with this problem: I) how to compare graph snapshots across time, II) how to capture temporal dependencies.

36, TITLE: Learning Transferrable Parameters for Long-tailed Sequential User Behavior Modeling
<https://dl.acm.org/doi/abs/10.1145/3394486.3403078>
AUTHORS: Jianwen Yin, Chenghao Liu, Weiqing Wang, Jianling Sun, Steven C.H. Hoi
HIGHLIGHT: In this work, we argue that focusing on tail users could bring more benefits and address the long tails issue by learning transferrable parameters from both optimization and feature perspectives.

37, TITLE: TranSlider: Transfer Ensemble Learning from Exploitation to Exploration
<https://dl.acm.org/doi/abs/10.1145/3394486.3403079>
AUTHORS: Kuo Zhong, Ying Wei, Chun Yuan, Haoli Bai, Junzhou Huang
HIGHLIGHT: In this paper, we introduce the concept of transfer ensemble learning, a new direction to tackle the over-fitting of transfer strategies.

38, TITLE: InFoRM: Individual Fairness on Graph Mining
<https://dl.acm.org/doi/abs/10.1145/3394486.3403080>
AUTHORS: Jian Kang, Jingrui He, Ross Maciejewski, Hanghang Tong
HIGHLIGHT: This paper presents the first principled study of Individual Fairness on gRaph Mining (InFoRM).

39, TITLE: Local Motif Clustering on Time-Evolving Graphs
<https://dl.acm.org/doi/abs/10.1145/3394486.3403081>
AUTHORS: Dongqi Fu, Dawei Zhou, Jingrui He
HIGHLIGHT: To bridge this gap, in this paper, we propose a novel framework, Local Motif Clustering on Time-Evolving Graphs (L-MEGA), which provides the evolution pattern of the local motif cluster in an effective and efficient way.

40, TITLE: A Data-Driven Graph Generative Model for Temporal Interaction Networks

<https://dl.acm.org/doi/abs/10.1145/3394486.3403082>

AUTHORS: Dawei Zhou, Lecheng Zheng, Jiawei Han, Jingrui He
HIGHLIGHT: To address these challenges, we propose an end-to-end deep generative framework named TagGen.

41, TITLE: Recurrent Networks for Guided Multi-Attention Classification

<https://dl.acm.org/doi/abs/10.1145/3394486.3403083>

AUTHORS: Xin Dai, Xiangnan Kong, Tian Guo, John Boaz Lee, Xinyue Liu, Constance Moore
HIGHLIGHT: In this paper, we study the problem of guided multi-attention classification, the goal of which is to achieve high accuracy under the dual constraints of (1) small sample size, and (2) multiple ROIs for each image.

42, TITLE: Vulnerability vs. Reliability: Disentangled Adversarial Examples for Cross-Modal Learning

<https://dl.acm.org/doi/abs/10.1145/3394486.3403084>

AUTHORS: Chao Li, Haoteng Tang, Cheng Deng, Liang Zhan, Wei Liu
HIGHLIGHT: In this paper, we propose novel Disentangled Adversarial examples for Cross-Modal learning, dubbed DACM.

43, TITLE: XGNN: Towards Model-Level Explanations of Graph Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3394486.3403085>

AUTHORS: Hao Yuan, Jiliang Tang, Xia Hu, Shuiwang Ji
HIGHLIGHT: In this work, we propose a novel approach, known as XGNN, to interpret GNNs at the model-level.

44, TITLE: CAST: A Correlation-based Adaptive Spectral Clustering Algorithm on Multi-scale Data

<https://dl.acm.org/doi/abs/10.1145/3394486.3403086>

AUTHORS: Xiang Li, Ben Kao, Caihua Shan, Dawei Yin, Martin Ester
HIGHLIGHT: We propose the algorithm CAST that applies trace Lasso to regularize the coefficient matrix.

45, TITLE: INPREM: An Interpretable and Trustworthy Predictive Model for Healthcare

<https://dl.acm.org/doi/abs/10.1145/3394486.3403087>

AUTHORS: Xianli Zhang, Buyue Qian, Shilei Cao, Yang Li, Hang Chen, Yefeng Zheng, Ian Davidson
HIGHLIGHT: To address this, in this paper, we propose an interpretable and trustworthy predictive model—(INPREM) for healthcare.

46, TITLE: Policy-GNN: Aggregation Optimization for Graph Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3394486.3403088>

AUTHORS: Kwei-Herng Lai, Daochen Zha, Kaixiong Zhou, Xia Hu
HIGHLIGHT: To address the above challenges, we propose Policy-GNN, a meta-policy framework that models the sampling procedure and message passing of GNNs into a combined learning process.

47, TITLE: Malicious Attacks against Deep Reinforcement Learning Interpretations

<https://dl.acm.org/doi/abs/10.1145/3394486.3403089>

AUTHORS: Mengdi Huai, Jianhui Sun, Renqin Cai, Liuyi Yao, Aidong Zhang
HIGHLIGHT: Specifically, we introduce the first study of the adversarial attacks against DRL interpretations, and propose an optimization framework based on which the optimal adversarial attack strategy can be derived.

48, TITLE: Disentangled Self-Supervision in Sequential Recommenders

<https://dl.acm.org/doi/abs/10.1145/3394486.3403091>

AUTHORS: Jianxin Ma, Chang Zhou, Hongxia Yang, Peng Cui, Xin Wang, Wenwu Zhu
HIGHLIGHT: In this paper, we study the problem of mining extra signals for supervision by looking at the longer-term future.

49, TITLE: DETERRENT: Knowledge Guided Graph Attention Network for Detecting Healthcare Misinformation

<https://dl.acm.org/doi/abs/10.1145/3394486.3403092>

AUTHORS: Limeng Cui, Haeseung Seo, Maryam Tabar, Fenglong Ma, Suhang Wang, Dongwon Lee
HIGHLIGHT: In this work, to address these shortcomings, we propose a novel knowledge guided graph attention network for detecting health misinformation better.

50, TITLE: MultiImport: Inferring Node Importance in a Knowledge Graph from Multiple Input Signals

<https://dl.acm.org/doi/abs/10.1145/3394486.3403093>

AUTHORS: Namyong Park, Andrey Kan, Xin Luna Dong, Tong Zhao, Christos Faloutsos
HIGHLIGHT: In this paper, we develop an end-to-end model MultiImport, which infers latent node importance from multiple, potentially overlapping, input signals.

- 51, TITLE: Geodesic Forests
<https://dl.acm.org/doi/abs/10.1145/3394486.3403094>
AUTHORS: Meghana Madhyastha, Gongkai Li, Veronika Strnadov´-Neeley, James Browne, Joshua T. Vogelstein, Randal Burns, Carey E. Priebe
HIGHLIGHT: We propose an unsupervised random forest approach called geodesic forests (GF) to geodesic distance estimation in linear and nonlinear manifolds with noise.
- 52, TITLE: Z-Miner: An Efficient Method for Mining Frequent Arrangements of Event Intervals
<https://dl.acm.org/doi/abs/10.1145/3394486.3403095>
AUTHORS: Zed Lee, Tony Lindgren, Panagiotis Papapetrou
HIGHLIGHT: In this paper, we propose Z-Miner, a novel algorithm for solving this problem that addresses the deficiencies of existing competitors by employing two novel data structures: Z-Table, a hierarchical hash-based data structure for time-efficient candidate generation and support count, and Z-Arrangement, a data structure for efficient memory consumption.
- 53, TITLE: Imputing Various Incomplete Attributes via Distance Likelihood Maximization
<https://dl.acm.org/doi/abs/10.1145/3394486.3403096>
AUTHORS: Shaoxu Song, Yu Sun
HIGHLIGHT: In this paper, we propose to study the distance models that predict distances between tuples for missing data imputation.
- 54, TITLE: WeightGrad: Geo-Distributed Data Analysis Using Quantization for Faster Convergence and Better Accuracy
<https://dl.acm.org/doi/abs/10.1145/3394486.3403097>
AUTHORS: Syeda Nahida Akter, Muhammad Abdullah Adnan
HIGHLIGHT: Our goal in this work is to design a geo-distributed Deep-Learning system that (1) ensures efficient and faster communication over LAN and WAN and (2) maintain accuracy and convergence for complex DNNs with billions of parameters.
- 55, TITLE: Feature-Induced Manifold Disambiguation for Multi-View Partial Multi-label Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403098>
AUTHORS: Jing-Han Wu, Xuan Wu, Qing-Guo Chen, Yao Hu, Min-Ling Zhang
HIGHLIGHT: Accordingly, the problem of multi-view partial multi-label learning (MVPML) is studied in this paper, where each example is assumed to be presented by multiple feature vectors while associated with multiple candidate labels which are only partially valid.
- 56, TITLE: MinSearch: An Efficient Algorithm for Similarity Search under Edit Distance
<https://dl.acm.org/doi/abs/10.1145/3394486.3403099>
AUTHORS: Haoyu Zhang, Qin Zhang
HIGHLIGHT: In this paper we propose a novel algorithm for edit similarity search named MinSearch.
- 57, TITLE: Mining Large Quasi-cliques with Quality Guarantees from Vertex Neighborhoods
<https://dl.acm.org/doi/abs/10.1145/3394486.3403100>
AUTHORS: Aritra Konar, Nicholas D. Sidiropoulos
HIGHLIGHT: In this work, we formally establish that two recurring characteristics of real-world graphs, namely heavy-tailed degree distributions and large clustering coefficients, imply the existence of substantially large vertex neighborhoods with high edge-density.
- 58, TITLE: Residual Correlation in Graph Neural Network Regression
<https://dl.acm.org/doi/abs/10.1145/3394486.3403101>
AUTHORS: Junteng Jia, Austion R. Benson
HIGHLIGHT: Here, we address this problem with an interpretable and efficient framework that can improve any graph neural network architecture simply by exploiting correlation structure in the regression residuals.
- 59, TITLE: Towards Fair Truth Discovery from Biased Crowdsourced Answers
<https://dl.acm.org/doi/abs/10.1145/3394486.3403102>
AUTHORS: Yanying Li, Haipei Sun, Wendy Hui Wang
HIGHLIGHT: To address this challenge, in this paper, first, we define a new fairness notion named $\hat{I}_?$ -disparity for truth discovery. Intuitively, $\hat{I}_?$ -disparity bounds the difference in the probabilities that the truth of both protected and unprotected groups being predicted to be positive. Second, we design three fairness enhancing methods, namely Pre-TD, FairTD, and Post-TD, for truth discovery.

- 60, TITLE: AutoShuffleNet: Learning Permutation Matrices via an Exact Lipschitz Continuous Penalty in Deep Convolutional Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403103>
AUTHORS: Jiancheng Lyu, Shuai Zhang, Yingyong Qi, Jack Xin
HIGHLIGHT: In this paper, we propose to automate channel shuffling by learning permutation matrices in network training.
- 61, TITLE: MoFlow: An Invertible Flow Model for Generating Molecular Graphs
<https://dl.acm.org/doi/abs/10.1145/3394486.3403104>
AUTHORS: Chengxi Zang, Fei Wang
HIGHLIGHT: In this paper, we propose MoFlow, a flow-based graph generative model to learn invertible mappings between molecular graphs and their latent representations.
- 62, TITLE: Parallel DNN Inference Framework Leveraging a Compact RISC-V ISA-based Multi-core System
<https://dl.acm.org/doi/abs/10.1145/3394486.3403105>
AUTHORS: Yipeng Zhang, Bo Du, Lefei Zhang, Jia Wu
HIGHLIGHT: Accordingly, this paper proposes a collaborative RISC-V multi-core system for Deep Neural Network (DNN) accelerators.
- 63, TITLE: Missing Value Imputation for Mixed Data via Gaussian Copula
<https://dl.acm.org/doi/abs/10.1145/3394486.3403106>
AUTHORS: Yuxuan Zhao, Madeleine Udell
HIGHLIGHT: This paper proposes a new semiparametric algorithm to impute missing values, with no tuning parameters.
- 64, TITLE: HiTANet: Hierarchical Time-Aware Attention Networks for Risk Prediction on Electronic Health Records
<https://dl.acm.org/doi/abs/10.1145/3394486.3403107>
AUTHORS: Junyu Luo, Muchao Ye, Cao Xiao, Fenglong Ma
HIGHLIGHT: To leverage time information for risk prediction in a more reasonable way, we propose a new hierarchical time-aware attention network, named HiTANet, which imitates the decision making process of doctors in risk prediction.
- 65, TITLE: Personalized PageRank to a Target Node, Revisited
<https://dl.acm.org/doi/abs/10.1145/3394486.3403108>
AUTHORS: Hanzhi Wang, Zhewei Wei, Junhao Gan, Sibao Wang, Zengfeng Huang
HIGHLIGHT: In this paper, we consider the single-target PPR query, which measures the opposite direction of importance for PPR.
- 66, TITLE: Edge-consensus Learning: Deep Learning on P2P Networks with Nonhomogeneous Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3403109>
AUTHORS: Kenta Niwa, Noboru Harada, Guoqiang Zhang, W. Bastiaan Kleijn
HIGHLIGHT: An effective Deep Neural Network (DNN) optimization algorithm that can use decentralized data sets over a peer-to-peer (P2P) network is proposed.
- 67, TITLE: Deep Learning of High-Order Interactions for Protein Interface Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403110>
AUTHORS: Yi Liu, Hao Yuan, Lei Cai, Shuiwang Ji
HIGHLIGHT: In this work, we propose to formulate the protein interface prediction as a 2D dense prediction problem.
- 68, TITLE: MAMO: Memory-Augmented Meta-Optimization for Cold-start Recommendation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403113>
AUTHORS: Manqing Dong, Feng Yuan, Lina Yao, Xiwei Xu, Liming Zhu
HIGHLIGHT: In this paper, we design two memory matrices that can store task-specific memories and feature-specific memories.
- 69, TITLE: Finding Effective Geo-social Group for Impromptu Activities with Diverse Demands
<https://dl.acm.org/doi/abs/10.1145/3394486.3403114>
AUTHORS: Lu Chen, Chengfei Liu, Rui Zhou, Jiajie Xu, Jeffrey Xu Yu, Jianxin Li
HIGHLIGHT: In this paper, we propose a novel geo-social group model, equipped with elegant keyword constraints, to fill this gap.
- 70, TITLE: Representing Temporal Attributes for Schema Matching
<https://dl.acm.org/doi/abs/10.1145/3394486.3403115>

AUTHORS: Yinan Mei, Shaoxu Song, Yunsu Lee, Jungho Park, Soo-Hyung Kim, Sungmin Yi
HIGHLIGHT: In this paper, we argue to order the values in an attribute A by some time attribute T as a time series.

71, TITLE: Estimating Properties of Social Networks via Random Walk considering Private Nodes
<https://dl.acm.org/doi/abs/10.1145/3394486.3403116>
AUTHORS: Kazuki Nakajima, Kazuyuki Shudo
HIGHLIGHT: Here we design random walk-based algorithms to accurately estimate properties without any problems caused by private nodes.

72, TITLE: ASGN: An Active Semi-supervised Graph Neural Network for Molecular Property Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403117>
AUTHORS: Zhongkai Hao, Chengqiang Lu, Zhenya Huang, Hao Wang, Zheyuan Hu, Qi Liu, Enhong Chen, Cheekong Lee
HIGHLIGHT: Here we propose a novel framework called Active Semi-supervised Graph Neural Network (ASGN) by incorporating both labeled and unlabeled molecules.

73, TITLE: Connecting the Dots: Multivariate Time Series Forecasting with Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403118>
AUTHORS: Zonghan Wu, Shirui Pan, Guodong Long, Jing Jiang, Xiaojun Chang, Chengqi Zhang
HIGHLIGHT: In this paper, we propose a general graph neural network framework designed specifically for multivariate time series data.

74, TITLE: Learning Opinion Dynamics From Social Traces
<https://dl.acm.org/doi/abs/10.1145/3394486.3403119>
AUTHORS: Corrado Monti, Gianmarco De Francisci Morales, Francesco Bonchi
HIGHLIGHT: In this work we propose an inference mechanism for fitting a generative, agent-like model of opinion dynamics to real-world social traces.

75, TITLE: Enterprise Cooperation and Competition Analysis with a Sign-Oriented Preference Network
<https://dl.acm.org/doi/abs/10.1145/3394486.3403120>
AUTHORS: Le Dai, Yu Yin, Chuan Qin, Tong Xu, Xiangnan He, Enhong Chen, Hui Xiong
HIGHLIGHT: To this end, in this paper, we provide a large-scale data driven analysis on the cooperative and competitive relationships among companies in a Sign-oriented Preference Network (SOPN).

76, TITLE: BLOB: A Probabilistic Model for Recommendation that Combines Organic and Bandit Signals
<https://dl.acm.org/doi/abs/10.1145/3394486.3403121>
AUTHORS: Otmane Sakhi, Stephen Bonner, David Rohde, Flavian Vasile
HIGHLIGHT: In this paper, we propose Bayesian Latent Organic Bandit model (BLOB), a probabilistic approach to combine the 'organic' and 'bandit' signals in order to improve the estimation of recommendation quality.

77, TITLE: AutoST: Efficient Neural Architecture Search for Spatio-Temporal Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403122>
AUTHORS: Ting Li, Junbo Zhang, Kainan Bao, Yuxuan Liang, Yexin Li, Yu Zheng
HIGHLIGHT: In this paper, we study Neural Architecture Search (NAS) for spatio-temporal prediction and propose an efficient spatio-temporal neural architecture search method, entitled AutoST.

78, TITLE: COMPOSE: Cross-Modal Pseudo-Siamese Network for Patient Trial Matching
<https://dl.acm.org/doi/abs/10.1145/3394486.3403123>
AUTHORS: Junyi Gao, Cao Xiao, Lucas M. Glass, Jimeng Sun
HIGHLIGHT: In this paper, we proposed CrOss-Modal PseudO-SiamEse network (COMPOSE) to address these challenges for patient-trial matching.

79, TITLE: Discovering Succinct Pattern Sets Expressing Co-Occurrence and Mutual Exclusivity
<https://dl.acm.org/doi/abs/10.1145/3394486.3403124>
AUTHORS: Jonas Fischer, Jilles Vreeken
HIGHLIGHT: As the search space for the optimal model is enormous and unstructured, we propose Mexican, a heuristic algorithm to efficiently discover high quality sets of patterns of co-occurrences and mutual exclusivity.

80, TITLE: TIPRDC: Task-Independent Privacy-Respecting Data Crowdsourcing Framework for Deep Learning with Anonymized Intermediate Representations
<https://dl.acm.org/doi/abs/10.1145/3394486.3403125>

- AUTHORS: Ang Li, Yixiao Duan, Huanrui Yang, Yiran Chen, Jianlei Yang
HIGHLIGHT: To tackle the case where the learning task may be unknown or changing, we present TIPRDC, a task-independent privacy-respecting data crowdsourcing framework with anonymized intermediate representation.
- 81, TITLE: AutoGrow: Automatic Layer Growing in Deep Convolutional Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403126>
AUTHORS: Wei Wen, Feng Yan, Yiran Chen, Hai Li
HIGHLIGHT: We propose robust growing and stopping policies to generalize to different network architectures and datasets.
- 82, TITLE: Curb-GAN: Conditional Urban Traffic Estimation through Spatio-Temporal Generative Adversarial Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403127>
AUTHORS: Yingxue Zhang, Yanhua Li, Xun Zhou, Xiangnan Kong, Jun Luo
HIGHLIGHT: To tackle these challenges, we propose a novel Conditional Urban Traffic Generative Adversarial Network (Curb-GAN), which provides traffic estimations in consecutive time slots based on different (unprecedented) travel demands, thus enables urban planners to accurately evaluate urban plans before deploying them.
- 83, TITLE: Incremental Mobile User Profiling: Reinforcement Learning with Spatial Knowledge Graph for Modeling Event Streams
<https://dl.acm.org/doi/abs/10.1145/3394486.3403128>
AUTHORS: Pengyang Wang, Kunpeng Liu, Lu Jiang, Xiaolin Li, Yanjie Fu
HIGHLIGHT: We propose to formulate the problem into a reinforcement learning task, where an agent is a next-visit planner, an action is a POI that a user will visit next, and the state of environment is a fused representation of a user and spatial entities (e.g., POIs, activity types, functional zones).
- 84, TITLE: Identifying Sepsis Subphenotypes via Time-Aware Multi-Modal Auto-Encoder
<https://dl.acm.org/doi/abs/10.1145/3394486.3403129>
AUTHORS: Changchang Yin, Ruoqi Liu, Dongdong Zhang, Ping Zhang
HIGHLIGHT: However, most sepsis subtyping studies ignore the temporality of EHR data and suffer from missing values. In this paper, we propose a new sepsis subtyping framework to address the two issues.
- 85, TITLE: A Causal Look at Statistical Definitions of Discrimination
<https://dl.acm.org/doi/abs/10.1145/3394486.3403130>
AUTHORS: Elias Chaibub Neto
HIGHLIGHT: Here, we investigate these fairness criteria from a causality perspective.
- 86, TITLE: Targeted Data-driven Regularization for Out-of-Distribution Generalization
<https://dl.acm.org/doi/abs/10.1145/3394486.3403131>
AUTHORS: Mohammad Mahdi Kamani, Sadegh Farhang, Mehrdad Mahdavi, James Z. Wang
HIGHLIGHT: In this paper, we propose a unified data-driven regularization approach to learn a generalizable model from biased data.
- 87, TITLE: Neural Dynamics on Complex Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403132>
AUTHORS: Chengxi Zang, Fei Wang
HIGHLIGHT: To address these challenges, we propose to combine Ordinary Differential Equation Systems (ODEs) and Graph Neural Networks (GNNs) to learn continuous-time dynamics on complex networks in a data-driven manner.
- 88, TITLE: Grammatically Recognizing Images with Tree Convolution
<https://dl.acm.org/doi/abs/10.1145/3394486.3403133>
AUTHORS: Guangrun Wang, Guangcong Wang, Keze Wang, Xiaodan Liang, Liang Lin
HIGHLIGHT: Attempting to tackle this problem, this paper proposes a simple yet effective tree convolution (TreeConv) operation for deep neural networks.
- 89, TITLE: Generic Outlier Detection in Multi-Armed Bandit
<https://dl.acm.org/doi/abs/10.1145/3394486.3403134>
AUTHORS: Yikun Ban, Jingrui He
HIGHLIGHT: In this paper, we study the problem of outlier arm detection in multi-armed bandit settings, which finds plenty of applications in many high-impact domains such as finance, healthcare, and online advertising.
- 90, TITLE: Robust Spammer Detection by Nash Reinforcement Learning

<https://dl.acm.org/doi/abs/10.1145/3394486.3403135>

AUTHORS: Yingtong Dou, Guixiang Ma, Philip S. Yu, Sihong Xie

HIGHLIGHT: To address the challenges, we formulate a minimax game where the spammers and spam detectors compete with each other on their practical goals that are not solely based on detection accuracy.

91, TITLE: Mining Persistent Activity in Continually Evolving Networks

<https://dl.acm.org/doi/abs/10.1145/3394486.3403136>

AUTHORS: Caleb Belth, Xinyi Zheng, Danai Koutra

HIGHLIGHT: In this work, we propose the problem of mining activity that persists through time in continually evolving networks-i.e., activity that repeatedly and consistently occurs.

92, TITLE: Towards Automated Neural Interaction Discovery for Click-Through Rate Prediction

<https://dl.acm.org/doi/abs/10.1145/3394486.3403137>

AUTHORS: Qingquan Song, Dehua Cheng, Hanning Zhou, Jiyang Yang, Yuandong Tian, Xia Hu

HIGHLIGHT: To address these challenges, we propose an automated interaction architecture discovering framework for CTR prediction named AutoCTR.

93, TITLE: High-Dimensional Similarity Search with Quantum-Assisted Variational Autoencoder

<https://dl.acm.org/doi/abs/10.1145/3394486.3403138>

AUTHORS: Nicholas Gao, Max Wilson, Thomas Vandal, Walter Vinci, Ramakrishna Nemani, Eleanor Rieffel

HIGHLIGHT: We show how to construct a space-efficient search index based on the latent space representation of a QVAE.

94, TITLE: Off-policy Bandits with Deficient Support

<https://dl.acm.org/doi/abs/10.1145/3394486.3403139>

AUTHORS: Naveen Sachdeva, Yi Su, Thorsten Joachims

HIGHLIGHT: To overcome this gap between theory and applications, we identify three approaches that provide various guarantees for IPS-based learning despite the inherent limitations of support-deficient data: restricting the action space, reward extrapolation, and restricting the policy space.

95, TITLE: Adaptive Graph Encoder for Attributed Graph Embedding

<https://dl.acm.org/doi/abs/10.1145/3394486.3403140>

AUTHORS: Ganqu Cui, Jie Zhou, Cheng Yang, Zhiyuan Liu

HIGHLIGHT: To address these issues, we propose Adaptive Graph Encoder (AGE), a novel attributed graph embedding framework.

96, TITLE: NetTrans: Neural Cross-Network Transformation

<https://dl.acm.org/doi/abs/10.1145/3394486.3403141>

AUTHORS: Si Zhang, Hanghang Tong, Yinglong Xia, Liang Xiong, Jiejun Xu

HIGHLIGHT: In this paper, we address these limitations and tackle cross-network node associations from a new angle, i.e., cross-network transformation.

97, TITLE: Redundancy-Free Computation for Graph Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3394486.3403142>

AUTHORS: Zhihao Jia, Sina Lin, Rex Ying, Jiaxuan You, Jure Leskovec, Alex Aiken

HIGHLIGHT: Here we propose Hierarchically Aggregated computation Graphs(HAGs), a new GNN representation technique that explicitly avoids redundancy by managing intermediate aggregation results hierarchically and eliminates repeated computations and unnecessary data transfers in GNN training and inference.

98, TITLE: Improving Conversational Recommender Systems via Knowledge Graph based Semantic Fusion

<https://dl.acm.org/doi/abs/10.1145/3394486.3403143>

AUTHORS: Kun Zhou, Wayne Xin Zhao, Shuqing Bian, Yuanhang Zhou, Ji-Rong Wen, Jingsong Yu

HIGHLIGHT: To address these issues, we incorporate both word-oriented and entity-oriented knowledge graphs~(KG) to enhance the data representations in CRSs, and adopt Mutual Information Maximization to align the word-level and entity-level semantic spaces.

99, TITLE: Sliding Sketches: A Framework using Time Zones for Data Stream Processing in Sliding Windows

<https://dl.acm.org/doi/abs/10.1145/3394486.3403144>

AUTHORS: Xiangyang Gou, Long He, Yinda Zhang, Ke Wang, Xilai Liu, Tong Yang, Yi Wang, Bin Cui

HIGHLIGHT: In this paper, we propose a generic framework, namely Sliding sketches, which can be applied to many existing solutions for the above three queries, and enable them to support queries in sliding windows.

- 100, TITLE: STEAM: Self-Supervised Taxonomy Expansion with Mini-Paths
<https://dl.acm.org/doi/abs/10.1145/3394486.3403145>
AUTHORS: Yue Yu, Yinghao Li, Jiaming Shen, Hao Feng, Jimeng Sun, Chao Zhang
HIGHLIGHT: We propose a self-supervised taxonomy expansion model named STEAM, which leverages natural supervision in the existing taxonomy for expansion.
- 101, TITLE: Probabilistic Metric Learning with Adaptive Margin for Top-K Recommendation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403147>
AUTHORS: Chen Ma, Liheng Ma, Yingxue Zhang, Ruiming Tang, Xue Liu, Mark Coates
HIGHLIGHT: To tackle this, we develop a distance-based recommendation model with several novel aspects: (i) each user and item are parameterized by Gaussian distributions to capture the learning uncertainties; (ii) an adaptive margin generation scheme is proposed to generate the margins regarding different training triplets; (iii) explicit user-user/item-item similarity modeling is incorporated in the objective function.
- 102, TITLE: Re-identification Attack to Privacy-Preserving Data Analysis with Noisy Sample-Mean
<https://dl.acm.org/doi/abs/10.1145/3394486.3403148>
AUTHORS: Du Su, Hieu Tri Huynh, Ziao Chen, Yi Lu, Wenmiao Lu
HIGHLIGHT: This paper studies the hazard of re-identification of entire class caused by revealing a noisy sample mean of the class.
- 103, TITLE: BOND: BERT-Assisted Open-Domain Named Entity Recognition with Distant Supervision
<https://dl.acm.org/doi/abs/10.1145/3394486.3403149>
AUTHORS: Chen Liang, Yue Yu, Haoming Jiang, Siawpeng Er, Ruijia Wang, Tuo Zhao, Chao Zhang
HIGHLIGHT: To address this challenge, we propose a new computational framework -- BOND, which leverages the power of pre-trained language models (e.g., BERT and RoBERTa) to improve the prediction performance of NER models.
- 104, TITLE: Graph Structural-topic Neural Network
<https://dl.acm.org/doi/abs/10.1145/3394486.3403150>
AUTHORS: Qingqing Long, Yilun Jin, Guojie Song, Yi Li, Wei Lin
HIGHLIGHT: Correspondingly, in this paper, we propose Graph Structural topic Neural Network, abbreviated GraphSTONE 1, a GCN model that utilizes topic models of graphs, such that the structural topics capture indicative graph structures broadly from a probabilistic aspect rather than merely a few structures.
- 105, TITLE: Correlation Networks for Extreme Multi-label Text Classification
<https://dl.acm.org/doi/abs/10.1145/3394486.3403151>
AUTHORS: Guangxu Xun, Kishlay Jha, Jianhui Sun, Aidong Zhang
HIGHLIGHT: This paper develops the Correlation Networks (CorNet) architecture for the extreme multi-label text classification (XMTC) task, where the objective is to tag an input text sequence with the most relevant subset of labels from an extremely large label set.
- 106, TITLE: Predicting Temporal Sets with Deep Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403152>
AUTHORS: Le Yu, Leilei Sun, Bowen Du, Chuanren Liu, Hui Xiong, Weifeng Lv
HIGHLIGHT: In this paper, we propose an integrated solution based on the deep neural networks for temporal sets prediction.
- 107, TITLE: FreeDOM: A Transferable Neural Architecture for Structured Information Extraction on Web Documents
<https://dl.acm.org/doi/abs/10.1145/3394486.3403153>
AUTHORS: Bill Yuchen Lin, Ying Sheng, Nguyen Vo, Sandeep Tata
HIGHLIGHT: In this paper, we present a novel two-stage neural approach, named FreeDOM, which overcomes both these limitations.
- 108, TITLE: SEAL: Learning Heuristics for Community Detection with Generative Adversarial Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403154>
AUTHORS: Yao Zhang, Yun Xiong, Yun Ye, Tengfei Liu, Weiqiang Wang, Yangyong Zhu, Philip S. Yu
HIGHLIGHT: In this paper, we instead study the semi-supervised community detection problem where we are given several communities in a network as training data and aim to discover more communities.
- 109, TITLE: Matrix Profile XXI: A Geometric Approach to Time Series Chains Improves Robustness
<https://dl.acm.org/doi/abs/10.1145/3394486.3403164>
AUTHORS: Makoto Imamura, Takaaki Nakamura, Eamonn Keogh

HIGHLIGHT: Inspired by observations from dynamical systems theory, this paper introduces two novel quality metrics for time series chains, directionality and graduality, to improve robustness and to enable top-K search.

110, **TITLE:** Retrospective Loss: Looking Back to Improve Training of Deep Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3394486.3403165>

AUTHORS: Surgan Jandial, Ayush Chopra, Mausoom Sarkar, Piyush Gupta, Balaji Krishnamurthy, Vineeth Balasubramanian

HIGHLIGHT: In this work, we introduce a new retrospective loss to improve the training of deep neural network models by utilizing the prior experience available in past model states during training.

111, **TITLE:** Average Sensitivity of Spectral Clustering

<https://dl.acm.org/doi/abs/10.1145/3394486.3403166>

AUTHORS: Pan Peng, Yuichi Yoshida

HIGHLIGHT: To make reliable and efficient decisions based on spectral clustering, we assess the stability of spectral clustering against edge perturbations in the input graph using the notion of average sensitivity, which is the expected size of the symmetric difference of the output clusters before and after we randomly remove edges.

112, **TITLE:** Semi-Supervised Multi-Label Learning from Crowds via Deep Sequential Generative Model

<https://dl.acm.org/doi/abs/10.1145/3394486.3403167>

AUTHORS: Wanli Shi, Victor S. Sheng, Xiang Li, Bin Gu

HIGHLIGHT: In this paper, we propose a deep generative model to describe the label generation process for this semi-supervised multi-label learning problem.

113, **TITLE:** GCC: Graph Contrastive Coding for Graph Neural Network Pre-Training

<https://dl.acm.org/doi/abs/10.1145/3394486.3403168>

AUTHORS: Jiezhong Qiu, Qibin Chen, Yuxiao Dong, Jing Zhang, Hongxia Yang, Ming Ding, Kuansan Wang, Jie Tang

HIGHLIGHT: We design GCC's pre-training task as subgraph instance discrimination in and across networks and leverage contrastive learning to empower graph neural networks to learn the intrinsic and transferable structural representations.

114, **TITLE:** HGCN: A Heterogeneous Graph Convolutional Network-Based Deep Learning Model Toward Collective Classification

<https://dl.acm.org/doi/abs/10.1145/3394486.3403169>

AUTHORS: Zhihua Zhu, Xinxin Fan, Xiaokai Chu, Jingping Bi

HIGHLIGHT: To address the challenges, in this paper, we propose a novel heterogeneous graph convolutional network-based deep learning model, called HGCN, to collectively categorize the entities in HINs.

115, **TITLE:** Handling Information Loss of Graph Neural Networks for Session-based Recommendation

<https://dl.acm.org/doi/abs/10.1145/3394486.3403170>

AUTHORS: Tianwen Chen, Raymond Chi-Wing Wong

HIGHLIGHT: To solve the first problem, we propose a lossless encoding scheme and an edge-order preserving aggregation layer based on GRU that is dedicatedly designed to process the losslessly encoded graphs.

116, **TITLE:** Ultrafast Local Outlier Detection from a Data Stream with Stationary Region Skipping

<https://dl.acm.org/doi/abs/10.1145/3394486.3403171>

AUTHORS: Susik Yoon, Jae-Gil Lee, Byung Suk Lee

HIGHLIGHT: We propose a new algorithm, abbr. STARE, which identifies local regions in which data distributions hardly change and then skips updating the densities in those regions—a notion called stationary region skipping.

117, **TITLE:** LayoutLM: Pre-training of Text and Layout for Document Image Understanding

<https://dl.acm.org/doi/abs/10.1145/3394486.3403172>

AUTHORS: Yiheng Xu, Minghao Li, Lei Cui, Shaohan Huang, Furu Wei, Ming Zhou

HIGHLIGHT: In this paper, we propose the LayoutLM to jointly model interactions between text and layout information across scanned document images, which is beneficial for a great number of real-world document image understanding tasks such as information extraction from scanned documents.

118, **TITLE:** Block Model Guided Unsupervised Feature Selection

<https://dl.acm.org/doi/abs/10.1145/3394486.3403173>

AUTHORS: Zilong Bai, Hoa Nguyen, Ian Davidson

HIGHLIGHT: Here we take the novel approach of first building a block model on the graph and then using the block model for feature selection.

- 119, TITLE: Data Compression as a Comprehensive Framework for Graph Drawing and Representation Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403174>
AUTHORS: Claudia Plant, Sonja Biedermann, Christian Bölhm
HIGHLIGHT: Our fundamental idea is to compress the adjacency matrix by predicting the existence of an edge from the Euclidean distance between the corresponding vertices in the embedding, and to use the achieved compression as a quality measure for the embedding.
- 120, TITLE: Joint Policy-Value Learning for Recommendation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403175>
AUTHORS: Olivier Jeunen, David Rohde, Flavian Vasile, Martin Bompaire
HIGHLIGHT: In this work, we conduct the first broad empirical study of counterfactual learning methods for recommendation, in a simulated environment.
- 121, TITLE: FedFast: Going Beyond Average for Faster Training of Federated Recommender Systems
<https://dl.acm.org/doi/abs/10.1145/3394486.3403176>
AUTHORS: Khalil Muhammad, Qinqin Wang, Diarmuid O'Reilly-Morgan, Elias Tragos, Barry Smyth, Neil Hurley, James Geraci, Aonghus Lawlor
HIGHLIGHT: We present a novel technique, FedFast, to accelerate distributed learning which achieves good accuracy for all users very early in the training process.
- 122, TITLE: AM-GCN: Adaptive Multi-channel Graph Convolutional Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403177>
AUTHORS: Xiao Wang, Meiqi Zhu, Deyu Bo, Peng Cui, Chuan Shi, Jian Pei
HIGHLIGHT: We tackle the challenge and propose an adaptive multi-channel graph convolutional networks for semi-supervised classification (AM-GCN).
- 123, TITLE: Discovering Approximate Functional Dependencies using Smoothed Mutual Information
<https://dl.acm.org/doi/abs/10.1145/3394486.3403178>
AUTHORS: Frédéric Pennerath, Panagiotis Mandros, Jilles Vreeken
HIGHLIGHT: In this paper, we consider a different correction strategy and counter data sparsity using uniform priors and smoothing techniques, that leads to an efficient and robust estimating process.
- 124, TITLE: Competitive Analysis for Points of Interest
<https://dl.acm.org/doi/abs/10.1145/3394486.3403179>
AUTHORS: Shuangli Li, Jingbo Zhou, Tong Xu, Hao Liu, Xinjiang Lu, Hui Xiong
HIGHLIGHT: To this end, in this paper, we study how to predict the POI competitive relationship.
- 125, TITLE: HOPS: Probabilistic Subtree Mining for Small and Large Graphs
<https://dl.acm.org/doi/abs/10.1145/3394486.3403180>
AUTHORS: Pascal Welke, Florian Seiffarth, Michael Kamp, Stefan Wrobel
HIGHLIGHT: In this paper, we adapt sampling techniques from mathematical combinatorics to the problem of probabilistic subtree mining in arbitrary databases of many small to medium-size graphs or a single large graph.
- 126, TITLE: The NodeHopper: Enabling Low Latency Ranking with Constraints via a Fast Dual Solver
<https://dl.acm.org/doi/abs/10.1145/3394486.3403181>
AUTHORS: Anton Zhernov, Krishnamurthy Dj Dvijotham, Ivan Lobov, Dan A. Calian, Michelle Gong, Natarajan Chandrashekar, Timothy A. Mann
HIGHLIGHT: To address this challenge, we exploit the structure of the dual optimization problem to develop a fast solver.
- 127, TITLE: HGFMF: Heterogeneous Graph-based Fusion for Multimodal Data with Incompleteness
<https://dl.acm.org/doi/abs/10.1145/3394486.3403182>
AUTHORS: Jiayi Chen, Aidong Zhang
HIGHLIGHT: We propose a Heterogeneous Graph-based Multimodal Fusion (HGFMF) approach to enable multimodal fusion of incomplete data within a heterogeneous graph structure.
- 128, TITLE: ST-SiameseNet: Spatio-Temporal Siamese Networks for Human Mobility Signature Identification
<https://dl.acm.org/doi/abs/10.1145/3394486.3403183>
AUTHORS: Huimin Ren, Menghai Pan, Yanhua Li, Xun Zhou, Jun Luo

HIGHLIGHT: To deal with this challenge, in this work, we make the first attempt to match identities of human agents only from the observed location trajectory data by proposing a novel and efficient framework named Spatio-temporal Siamese Networks (ST-SiameseNet).

129, **TITLE:** A Novel Deep Learning Model by Stacking Conditional Restricted Boltzmann Machine and Deep Neural Network

<https://dl.acm.org/doi/abs/10.1145/3394486.3403184>

AUTHORS: Tianyu Kang, Ping Chen, John Quackenbush, Wei Ding

HIGHLIGHT: Similar to Convolution Neural Network dealing with spatially correlated features and Recurrent Neural Network with temporally correlated features, in this paper we present a novel deep learning model to tackle functionally interactive features by stacking a Conditional Restricted Boltzmann Machine and a Deep Neural Network (CRBM-DNN).

130, **TITLE:** InfiniteWalk: Deep Network Embeddings as Laplacian Embeddings with a Nonlinearity

<https://dl.acm.org/doi/abs/10.1145/3394486.3403185>

AUTHORS: Sudhanshu Chanpuriya, Cameron Musco

HIGHLIGHT: We study the objective in the limit as T goes to infinity, which allows us to simplify the expression of Qiu et al.

131, **TITLE:** xGAIL: Explainable Generative Adversarial Imitation Learning for Explainable Human Decision Analysis

<https://dl.acm.org/doi/abs/10.1145/3394486.3403186>

AUTHORS: Menghai Pan, Weixiao Huang, Yanhua Li, Xun Zhou, Jun Luo

HIGHLIGHT: This paper addresses this research gap by proposing xGAIL, the first explainable generative adversarial imitation learning framework.

132, **TITLE:** Catalysis Clustering with GAN by Incorporating Domain Knowledge

<https://dl.acm.org/doi/abs/10.1145/3394486.3403187>

AUTHORS: Olga Andreeva, Wei Li, Wei Ding, Marieke Kuijjer, John Quackenbush, Ping Chen

HIGHLIGHT: In this work we propose a GAN-based approach called Catalysis Clustering to incorporate domain knowledge into the clustering process.

133, **TITLE:** Prediction and Profiling of Audience Competition for Online Television Series

<https://dl.acm.org/doi/abs/10.1145/3394486.3403188>

AUTHORS: Peng Zhang, Chuanren Liu, Kefeng Ning, Wenxiang Zhu, Yu Zhang

HIGHLIGHT: In this paper, we develop a data-driven framework to model and predict audience competition patterns for popular online television series.

134, **TITLE:** Multi-Class Data Description for Out-of-distribution Detection

<https://dl.acm.org/doi/abs/10.1145/3394486.3403189>

AUTHORS: Dongha Lee, Sehun Yu, Hwanjo Yu

HIGHLIGHT: In this work, we present a deep multi-class data description, termed as Deep-MCDD, which is effective to detect out-of-distribution (OOD) samples as well as classify in-distribution (ID) samples.

135, **TITLE:** In and Out: Optimizing Overall Interaction in Probabilistic Graphs under Clustering Constraints

<https://dl.acm.org/doi/abs/10.1145/3394486.3403190>

AUTHORS: Domenico Mandaglio, Andrea Tagarelli, Francesco Gullo

HIGHLIGHT: We study two novel clustering problems in which the pairwise interactions between entities are characterized by probability distributions and conditioned by external factors within the environment where the entities interact.

136, **TITLE:** Recurrent Halting Chain for Early Multi-label Classification

<https://dl.acm.org/doi/abs/10.1145/3394486.3403191>

AUTHORS: Thomas Hartvigsen, Cansu Sen, Xiangnan Kong, Elke Rundensteiner

HIGHLIGHT: We design an effective solution to this open problem, the Recurrent Halting Chain (RHC), that for the first time integrates key innovations in both Early and Multi-label Classification into one multi-objective model.

137, **TITLE:** Minimal Variance Sampling with Provable Guarantees for Fast Training of Graph Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3394486.3403192>

AUTHORS: Weilin Cong, Rana Forsati, Mahmut Kandemir, Mehrdad Mahdavi

HIGHLIGHT: In this paper, we theoretically analyze the variance of sampling methods and show that, due to the composite structure of empirical risk, the variance of any sampling method can be decomposed into embedding approximation variance in the forward stage and stochastic gradient variance in the backward stage that necessities mitigating both types of variance to obtain faster convergence rate.

- 138, TITLE: Discovering Functional Dependencies from Mixed-Type Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3403193>
AUTHORS: Panagiotis Mandros, David Kaltenpoth, Mario Boley, Jilles Vreeken
HIGHLIGHT: In this paper, we analyze these fundamental questions and derive formal criteria as to when a discretization process applied to a mixed set of random variables leads to consistent estimates of mutual information.
- 139, TITLE: Attackability Characterization of Adversarial Evasion Attack on Discrete Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3403194>
AUTHORS: Yutong Wang, Yufei Han, Hongyan Bao, Yun Shen, Fenglong Ma, Jin Li, Xiangliang Zhang
HIGHLIGHT: Based on our attackability analysis, we propose a computationally efficient orthogonal matching pursuit-guided attack method for evasion attack on discrete data.
- 140, TITLE: The Spectral Zoo of Networks: Embedding and Visualizing Networks with Spectral Moments
<https://dl.acm.org/doi/abs/10.1145/3394486.3403195>
AUTHORS: Shengmin Jin, Reza Zafarani
HIGHLIGHT: We introduce a spectral embedding method for a network, its Spectral Point, which is basically the first few spectral moments of a network.
- 141, TITLE: Unsupervised Differentiable Multi-aspect Network Embedding
<https://dl.acm.org/doi/abs/10.1145/3394486.3403196>
AUTHORS: Chanyoung Park, Carl Yang, Qi Zhu, Donghyun Kim, Hwanjo Yu, Jiawei Han
HIGHLIGHT: In this paper, we propose a novel end-to-end framework for multi-aspect network embedding, called asp2vec, in which the aspects of each node are dynamically assigned based on its local context.
- 142, TITLE: AutoML Pipeline Selection: Efficiently Navigating the Combinatorial Space
<https://dl.acm.org/doi/abs/10.1145/3394486.3403197>
AUTHORS: Chengrun Yang, Jicong Fan, Ziyang Wu, Madeleine Udell
HIGHLIGHT: In this work, we design a new AutoML system TensorOboe to address this challenge: an automated system to design a supervised learning pipeline.
- 143, TITLE: Towards Physics-informed Deep Learning for Turbulent Flow Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403198>
AUTHORS: Rui Wang, Karthik Kashinath, Mustafa Mustafa, Adrian Albert, Rose Yu
HIGHLIGHT: In this paper, we aim to predict turbulent flow by learning its highly nonlinear dynamics from spatiotemporal velocity fields of large-scale fluid flow simulations of relevance to turbulence modeling and climate modeling.
- 144, TITLE: Evaluating Fairness Using Permutation Tests
<https://dl.acm.org/doi/abs/10.1145/3394486.3403199>
AUTHORS: Cyrus DiCiccio, Sriram Vasudevan, Kinjal Basu, Krishnaram Kenthapadi, Deepak Agarwal
HIGHLIGHT: We propose a permutation testing methodology that performs a hypothesis test that a model is fair across two groups with respect to any given metric.
- 145, TITLE: Leveraging Model Inherent Variable Importance for Stable Online Feature Selection
<https://dl.acm.org/doi/abs/10.1145/3394486.3403200>
AUTHORS: Johannes Haug, Martin Pawelczyk, Klaus Broelemann, Gjergji Kasneci
HIGHLIGHT: In this work, we introduce FIRES, a novel framework for online feature selection.
By treating model parameters as random variables, we can penalize features with high uncertainty and thus generate more stable feature sets.
- 146, TITLE: Multi-level Graph Convolutional Networks for Cross-platform Anchor Link Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403201>
AUTHORS: Hongxu Chen, Hongzhi YIN, Xiangguo Sun, Tong Chen, Bogdan Gabrys, Katarzyna Musial
HIGHLIGHT: In this paper, to address this problem, we propose a novel framework that considers multi-level graph convolutions on both local network structure and hypergraph structure in a unified manner.
- 147, TITLE: Evaluating Conversational Recommender Systems via User Simulation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403202>
AUTHORS: Shuo Zhang, Krisztian Balog
HIGHLIGHT: As an alternative, we propose automated evaluation by means of simulating users.

148, TITLE: Measuring Model Complexity of Neural Networks with Curve Activation Functions
<https://dl.acm.org/doi/abs/10.1145/3394486.3403203>
AUTHORS: Xia Hu, Weiqing Liu, Jiang Bian, Jian Pei
HIGHLIGHT: To tackle the challenge, in this paper, we first propose linear approximation neural network (LANN for short), a piecewise linear framework to approximate a given deep model with curve activation function.

149, TITLE: Diverse Rule Sets
<https://dl.acm.org/doi/abs/10.1145/3394486.3403204>
AUTHORS: Guangyi Zhang, Aristides Gionis
HIGHLIGHT: Here we propose a novel approach of inferring diverse rule sets, by optimizing small overlap among decision rules with a 2-approximation guarantee under the framework of Max-Sum diversification.

150, TITLE: Vamsa: Automated Provenance Tracking in Data Science Scripts
<https://dl.acm.org/doi/abs/10.1145/3394486.3403205>
AUTHORS: Mohammad Hossein Namaki, Avrielia Floratou, Fotis Psallidas, Subru Krishnan, Ashvin Agrawal, Yinghui Wu, Yiwen Zhu, Markus Weimer
HIGHLIGHT: In this work, we introduce the ML provenance tracking problem: the fundamental idea is to automatically track which columns in a dataset have been used to derive the features/labels of an ML model.

151, TITLE: Deep State-Space Generative Model For Correlated Time-to-Event Predictions
<https://dl.acm.org/doi/abs/10.1145/3394486.3403206>
AUTHORS: Yuan Xue, Denny Zhou, Nan Du, Andrew M. Dai, Zhen Xu, Kun Zhang, Claire Cui
HIGHLIGHT: In this work, we propose a deep latent state-space generative model to capture the interactions among different types of correlated clinical events (e.g., kidney failure, mortality) by explicitly modeling the temporal dynamics of patients' latent states.

152, TITLE: Meta-learning on Heterogeneous Information Networks for Cold-start Recommendation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403207>
AUTHORS: Yuanfu Lu, Yuan Fang, Chuan Shi
HIGHLIGHT: In MetaHIN, we propose a novel semantic-enhanced tasks constructor and a co-adaptation meta-learner to address the two questions.

153, TITLE: WavingSketch: An Unbiased and Generic Sketch for Finding Top-k Items in Data Streams
<https://dl.acm.org/doi/abs/10.1145/3394486.3403208>
AUTHORS: Jizhou Li, Zikun Li, Yifei Xu, Shiqi Jiang, Tong Yang, Bin Cui, Yafei Dai, Gong Zhang
HIGHLIGHT: In this paper, we propose a new sketch, WavingSketch, which is much more accurate than existing unbiased algorithms.

154, TITLE: Dynamic Knowledge Graph based Multi-Event Forecasting
<https://dl.acm.org/doi/abs/10.1145/3394486.3403209>
AUTHORS: Songgaojun Deng, Huzefa Rangwala, Yue Ning
HIGHLIGHT: In this paper, we study a temporal graph learning method with heterogeneous data fusion for predicting concurrent events of multiple types and inferring multiple candidate actors simultaneously.

155, TITLE: A Geometric Approach to Predicting Bounds of Downstream Model Performance
<https://dl.acm.org/doi/abs/10.1145/3394486.3403210>
AUTHORS: Brian J. Goode, Debanjan Datta
HIGHLIGHT: This paper presents the motivation and methodology for including model application criteria into baseline analysis.

156, TITLE: Context-to-Session Matching: Utilizing Whole Session for Response Selection in Information-Seeking Dialogue Systems
<https://dl.acm.org/doi/abs/10.1145/3394486.3403211>
AUTHORS: Zhenxin Fu, Shaobo Cui, Mingyue Shang, Feng Ji, Dongyan Zhao, Haiqing Chen, Rui Yan
HIGHLIGHT: In this paper, we consider the response and its context as a whole session and explore the task of matching the query's context with the sessions.

157, TITLE: HOLMES: Health OnLine Model Ensemble Serving for Deep Learning Models in Intensive Care Units
<https://dl.acm.org/doi/abs/10.1145/3394486.3403212>

- AUTHORS: Shenda Hong, Yanbo Xu, Alind Khare, Satria Priambada, Kevin Maher, Alaa Aljiffry, Jimeng Sun, Alexey Tumanov
HIGHLIGHT: To address these challenges, we propose HOLMES---an online model ensemble serving framework for healthcare applications.
- 158, TITLE: LogPar: Logistic PARAFAC2 Factorization for Temporal Binary Data with Missing Values
<https://dl.acm.org/doi/abs/10.1145/3394486.3403213>
AUTHORS: Kejing Yin, Ardavan Afshar, Joyce C. Ho, William K. Cheung, Chao Zhang, Jimeng Sun
HIGHLIGHT: In this paper, we propose Logistic PARAFAC2 (LogPar) by modeling the binary irregular tensor with Bernoulli distribution parameterized by an underlying real-valued tensor.
- 159, TITLE: RECORD: Resource Constrained Semi-Supervised Learning under Distribution Shift
<https://dl.acm.org/doi/abs/10.1145/3394486.3403214>
AUTHORS: Lan-Zhe Guo, Zhi Zhou, Yu-Feng Li
HIGHLIGHT: This paper presents a systemic solution Record consisting of three sub-steps, that is, distribution tracking, sample selection and model updating.
- 160, TITLE: Statistically Significant Pattern Mining with Ordinal Utility
<https://dl.acm.org/doi/abs/10.1145/3394486.3403215>
AUTHORS: Thien Q. Tran, Kazuto Fukuchi, Youhei Akimoto, Jun Sakuma
HIGHLIGHT: Our study aims to introduce a preference relation into patterns and to discover the most preferred patterns under the constraint of statistical significance, which has never been considered in existing SSPM problems.
- 161, TITLE: Certifiable Robustness of Graph Convolutional Networks under Structure Perturbations
<https://dl.acm.org/doi/abs/10.1145/3394486.3403217>
AUTHORS: Daniel Zügner, Stephan Günnemann
HIGHLIGHT: In this work we close this gap and propose the first method to certify robustness of Graph Convolutional Networks (GCNs) under perturbations of the graph structure.
- 162, TITLE: Understanding Negative Sampling in Graph Representation Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403218>
AUTHORS: Zhen Yang, Ming Ding, Chang Zhou, Hongxia Yang, Jingren Zhou, Jie Tang
HIGHLIGHT: To bridge the gap, we systematically analyze the role of negative sampling from the perspectives of both objective and risk, theoretically demonstrating that negative sampling is as important as positive sampling in determining the optimization objective and the resulted variance.
- 163, TITLE: Aligning Superhuman AI with Human Behavior: Chess as a Model System
<https://dl.acm.org/doi/abs/10.1145/3394486.3403219>
AUTHORS: Reid Mellroy-Young, Siddhartha Sen, Jon Kleinberg, Ashton Anderson
HIGHLIGHT: We develop and introduce Maia, a customized version of AlphaZero trained on human chess games, that predicts human moves at a much higher accuracy than existing engines, and can achieve maximum accuracy when predicting decisions made by players at a specific skill level in a tuneable way.
- 164, TITLE: Heidegger: Interpretable Temporal Causal Discovery
<https://dl.acm.org/doi/abs/10.1145/3394486.3403220>
AUTHORS: Mehrdad Mansouri, Ali Arab, Zahra Zohrevand, Martin Ester
HIGHLIGHT: Toward a new horizon, this study introduces the novel problem of Causal Profile Discovery, which is crucial for many applications such as adverse drug reaction and cyber-attack detection.
- 165, TITLE: Interpretable Deep Graph Generation with Node-edge Co-disentanglement
<https://dl.acm.org/doi/abs/10.1145/3394486.3403221>
AUTHORS: Xiaojie Guo, Liang Zhao, Zhao Qin, Lingfei Wu, Amarda Shehu, Yanfang Ye
HIGHLIGHT: To address these challenges, we propose a new disentanglement enhancement framework for deep generative models for attributed graphs.
- 166, TITLE: Minimizing Localized Ratio Cut Objectives in Hypergraphs
<https://dl.acm.org/doi/abs/10.1145/3394486.3403222>
AUTHORS: Nate Veldt, Austin R. Benson, Jon Kleinberg
HIGHLIGHT: Here we present a framework for local hypergraph clustering based on minimizing localized ratio cut objectives.

- 167, TITLE: RECIPTOR: An Effective Pretrained Model for Recipe Representation Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403223>
AUTHORS: Diya Li, Mohammed J. Zaki
HIGHLIGHT: In this paper, we provide a joint approach for learning effective pretrained recipe embeddings using both the ingredients and cooking instructions.
- 168, TITLE: Hyperbolic Distance Matrices
<https://dl.acm.org/doi/abs/10.1145/3394486.3403224>
AUTHORS: Puoya Tabaghi, Ivan Dokmanić
HIGHLIGHT: In this paper, we propose a unified framework to compute hyperbolic embeddings from an arbitrary mix of noisy metric and non-metric data.
- 169, TITLE: RayS: A Ray Searching Method for Hard-label Adversarial Attack
<https://dl.acm.org/doi/abs/10.1145/3394486.3403225>
AUTHORS: Jinghui Chen, Quanquan Gu
HIGHLIGHT: In this paper, we present the Ray Searching attack (RayS), which greatly improves the hard-label attack effectiveness as well as efficiency.
- 170, TITLE: On Sampled Metrics for Item Recommendation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403226>
AUTHORS: Walid Krichene, Steffen Rendle
HIGHLIGHT: We show that it is possible to improve the quality of the sampled metrics by applying a correction, obtained by minimizing different criteria such as bias or mean squared error.
- 171, TITLE: ALO-NMF: Accelerated Locality-Optimized Non-negative Matrix Factorization
<https://dl.acm.org/doi/abs/10.1145/3394486.3403227>
AUTHORS: Gordon E. Moon, J. Austin Ellis, Aravind Sukumaran-Rajam, Srinivasan Parthasarathy, P. Sadayappan
HIGHLIGHT: In this paper, we present a novel optimization method for parallel NMF algorithm based on the HALS (Hierarchical Alternating Least Squares) scheme that incorporates algorithmic transformations to enhance data locality.
- 172, TITLE: Multi-Source Deep Domain Adaptation with Weak Supervision for Time-Series Sensor Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3403228>
AUTHORS: Garrett Wilson, Janardhan Rao Doppa, Diane J. Cook
HIGHLIGHT: However, robust techniques have not yet been considered for time series data with varying amounts of data availability. In this paper, we make three main contributions to fill this gap.
- 173, TITLE: Counterfactual Evaluation of Slate Recommendations with Sequential Reward Interactions
<https://dl.acm.org/doi/abs/10.1145/3394486.3403229>
AUTHORS: James McInerney, Brian Brost, Praveen Chandar, Rishabh Mehrotra, Benjamin Carterette
HIGHLIGHT: We propose a new counterfactual estimator that allows for sequential interactions in the rewards with lower variance in an asymptotically unbiased manner.
- 174, TITLE: TAdaNet: Task-Adaptive Network for Graph-Enriched Meta-Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403230>
AUTHORS: Qiuling Suo, Jingyuan Chou, Weida Zhong, Aidong Zhang
HIGHLIGHT: In this paper, we propose a task-adaptive network (TAdaNet) that makes use of a domain-knowledge graph to enrich data representations and provide task-specific customization.
- 175, TITLE: Unsupervised Paraphrasing via Deep Reinforcement Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403231>
AUTHORS: A. B. Siddique, Samet Oymak, Vagelis Hristidis
HIGHLIGHT: We propose Progressive Unsupervised Paraphrasing (PUP): a novel unsupervised paraphrase generation method based on deep reinforcement learning (DRL).
- 176, TITLE: CICLAD: A Fast and Memory-efficient Closed Itemset Miner for Streams
<https://dl.acm.org/doi/abs/10.1145/3394486.3403232>
AUTHORS: Tomas Martin, Guy Francœur, Petko Valchev
HIGHLIGHT: In a search for a better storage-efficiency trade-off, we designed Ciclad, an intersection-based sliding-window FCI miner.

- 177, TITLE: Graph Attention Networks over Edge Content-Based Channels
<https://dl.acm.org/doi/abs/10.1145/3394486.3403233>
AUTHORS: Lu Lin, Hongning Wang
HIGHLIGHT: In this paper, we propose a channel-aware attention mechanism enabled by edge text content when aggregating information from neighboring nodes; and we realize this mechanism in a graph autoencoder framework.
- 178, TITLE: Multimodal Learning with Incomplete Modalities by Knowledge Distillation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403234>
AUTHORS: Qi Wang, Liang Zhan, Paul Thompson, Jiayu Zhou
HIGHLIGHT: In this paper, we proposed a framework based on knowledge distillation, utilizing the supplementary information from all modalities, and avoiding imputation and noise associated with it.
- 179, TITLE: Estimating the Percolation Centrality of Large Networks through Pseudo-dimension Theory
<https://dl.acm.org/doi/abs/10.1145/3394486.3403235>
AUTHORS: Alane M. de Lima, Murilo V. G. da Silva, Andr e; L. Vignatti
HIGHLIGHT: In this work we investigate the problem of estimating the percolation centrality of every vertex in a graph.
- 180, TITLE: TinyGNN: Learning Efficient Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403236>
AUTHORS: Bencheng Yan, Chaokun Wang, Gaoyang Guo, Yunkai Lou
HIGHLIGHT: In this paper, we try to learn a small GNN (called TinyGNN), which can achieve high performance and infer the node representation in a short time.
- 181, TITLE: GPT-GNN: Generative Pre-Training of Graph Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403237>
AUTHORS: Ziniu Hu, Yuxiao Dong, Kuansan Wang, Kai-Wei Chang, Yizhou Sun
HIGHLIGHT: In this paper, we present the GPT-GNN framework to initialize GNNs by generative pre-training.
- 182, TITLE: Parameterized Correlation Clustering in Hypergraphs and Bipartite Graphs
<https://dl.acm.org/doi/abs/10.1145/3394486.3403238>
AUTHORS: Nate Veldt, Anthony Wirth, David F. Gleich
HIGHLIGHT: Motivated by applications in community detection and dense subgraph discovery, we consider new clustering objectives in hypergraphs and bipartite graphs.
- 183, TITLE: Prioritized Restreaming Algorithms for Balanced Graph Partitioning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403239>
AUTHORS: Amel Awadelkarim, Johan Ugander
HIGHLIGHT: With the help of this modular perspective, we find that a key combination of design decisions leads to a novel family of algorithms with notably better empirical performance than any existing highly-scalable algorithm on a broad range of real-world graphs.
- 184, TITLE: A Non-Iterative Quantile Change Detection Method in Mixture Model with Heavy-Tailed Components
<https://dl.acm.org/doi/abs/10.1145/3394486.3403240>
AUTHORS: Yuantong Li, Qi Ma, Sujit K. Ghosh
HIGHLIGHT: In this paper, we propose a robust and quick approach based on change-point methods to determine the number of mixture components that works for almost any location-scale families even when the components are heavy tailed (e.g., Cauchy).
- 185, TITLE: AdvMind: Inferring Adversary Intent of Black-Box Attacks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403241>
AUTHORS: Ren Pang, Xinyang Zhang, Shouling Ji, Xiapu Luo, Ting Wang
HIGHLIGHT: In this paper, we present AdvMind, a new class of estimation models that infer the adversary intent of black-box adversarial attacks in a robust and prompt manner.
- 186, TITLE: Hierarchical Topic Mining via Joint Spherical Tree and Text Embedding
<https://dl.acm.org/doi/abs/10.1145/3394486.3403242>
AUTHORS: Yu Meng, Yunyi Zhang, Jiabin Huang, Yu Zhang, Chao Zhang, Jiawei Han
HIGHLIGHT: To guide the hierarchical topic discovery process with minimal user supervision, we propose a new task, Hierarchical Topic Mining, which takes a category tree described by category names only, and aims to mine a set of representative terms for each category from a text corpus to help a user comprehend his/her interested topics.

- 187, TITLE: Combinatorial Black-Box Optimization with Expert Advice
<https://dl.acm.org/doi/abs/10.1145/3394486.3403243>
AUTHORS: Hamid Dadkhahi, Karthikeyan Shanmugam, Jesus Rios, Payel Das, Samuel C. Hoffman, Troy David Loeffler, Subramanian Sankaranarayanan
HIGHLIGHT: To address this problem, we propose a computationally efficient model learning algorithm based on multilinear polynomials and exponential weight updates.
- 188, TITLE: CoRel: Seed-Guided Topical Taxonomy Construction by Concept Learning and Relation Transferring
<https://dl.acm.org/doi/abs/10.1145/3394486.3403244>
AUTHORS: Jiaxin Huang, Yiqing Xie, Yu Meng, Yunyi Zhang, Jiawei Han
HIGHLIGHT: In this paper, we propose a method for seed-guided topical taxonomy construction, which takes a corpus and a seed taxonomy described by concept names as input, and constructs a more complete taxonomy based on user's interest, wherein each node is represented by a cluster of coherent terms.
- 189, TITLE: Treatment Policy Learning in Multiobjective Settings with Fully Observed Outcomes
<https://dl.acm.org/doi/abs/10.1145/3394486.3403245>
AUTHORS: Soorajath Boominathan, Michael Oberst, Helen Zhou, Sanjat Kanjilal, David Sontag
HIGHLIGHT: We present, compare, and evaluate three approaches for learning individualized treatment policies in this setting: First, we consider two indirect approaches, which use predictive models of treatment response to construct policies optimal for different trade-offs between objectives. Second, we consider a direct approach that constructs such a set of policies without intermediate models of outcomes.
- 190, TITLE: List-wise Fairness Criterion for Point Processes
<https://dl.acm.org/doi/abs/10.1145/3394486.3403246>
AUTHORS: Jin Shang, Mingxuan Sun, Nina S.N. Lam
HIGHLIGHT: In this paper, we propose a novel list-wise fairness criterion for point processes, which can efficiently evaluate the ranking fairness in event prediction.
- 191, TITLE: Neural Subgraph Isomorphism Counting
<https://dl.acm.org/doi/abs/10.1145/3394486.3403247>
AUTHORS: Xin Liu, Haojie Pan, Mutian He, Yangqiu Song, Xin Jiang, Lifeng Shang
HIGHLIGHT: In this paper, we study a new graph learning problem: learning to count subgraph isomorphisms.
- 192, TITLE: Hypergraph Clustering Based on PageRank
<https://dl.acm.org/doi/abs/10.1145/3394486.3403248>
AUTHORS: Yuuki Takai, Atsushi Miyauchi, Masahiro Ikeda, Yuichi Yoshida
HIGHLIGHT: In this study, we develop two clustering algorithms based on personalized PageRank on hypergraphs.
- 193, TITLE: DeepSinger: Singing Voice Synthesis with Data Mined From the Web
<https://dl.acm.org/doi/abs/10.1145/3394486.3403249>
AUTHORS: Yi Ren, Xu Tan, Tao Qin, Jian Luan, Zhou Zhao, Tie-Yan Liu
HIGHLIGHT: In this paper, we develop DeepSinger, a multi-lingual multi-singer singing voice synthesis (SVS) system, which is built from scratch using singing training data mined from music websites.
- 194, TITLE: Scaling Choice Models of Relational Social Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3403250>
AUTHORS: Jan Overgoor, George Pakapol Supaniratisai, Johan Ugander
HIGHLIGHT: Given the importance of negative sampling, in this work we introduce a model simplification technique for mixed logit models that we call "de-mixing", whereby standard mixture models of network formation---particularly models that mix local and global link formation---are reformulated to operate their modes over disjoint choice sets.
- 195, TITLE: Deep Exogenous and Endogenous Influence Combination for Social Chatter Intensity Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403251>
AUTHORS: Subhabrata Dutta, Sarah Masud, Soumen Chakrabarti, Tanmoy Chakraborty
HIGHLIGHT: To address the three limitations noted above, we propose a novel framework, ChatterNet, which, to our knowledge, is the first that can model and predict user engagement without considering the underlying user network.
- 196, TITLE: Geography-Aware Sequential Location Recommendation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403252>
AUTHORS: Defu Lian, Yongji Wu, Yong Ge, Xing Xie, Enhong Chen

HIGHLIGHT: To this end, we propose a Geography-aware sequential recommender based on the Self-Attention Network (GeoSAN for short) for location recommendation.

197, **TITLE:** Dual Channel Hypergraph Collaborative Filtering

<https://dl.acm.org/doi/abs/10.1145/3394486.3403253>

AUTHORS: Shuyi Ji, Yifan Feng, Rongrong Ji, Xibin Zhao, Wanwan Tang, Yue Gao

HIGHLIGHT: Under such circumstances, we propose a dual channel hypergraph collaborative filtering (DHCF) framework to tackle the above issues.

198, **TITLE:** A Framework for Recommending Accurate and Diverse Items Using Bayesian Graph Convolutional Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3394486.3403254>

AUTHORS: Jianing Sun, Wei Guo, Dengcheng Zhang, Yingxue Zhang, Florence Regol, Yaochen Hu, Huifeng Guo, Ruiming Tang, Han Yuan, Xiuqiang He, Mark Coates

HIGHLIGHT: To alleviate the above issue, in this work, we take a first step to introduce a principled way to model the uncertainty in the user-item interaction graph using the Bayesian Graph Convolutional Neural Network framework.

199, **TITLE:** Learning Based Distributed Tracking

<https://dl.acm.org/doi/abs/10.1145/3394486.3403255>

AUTHORS: Hao WU, Junhao Gan, Rui Zhang

HIGHLIGHT: In this paper, we revisit a fundamental problem called Distributed Tracking (DT) under an assumption that the data follows a certain (known or unknown) distribution, and propose a number Data-dependent algorithms with improved theoretical bounds.

200, **TITLE:** Tight Sensitivity Bounds For Smaller Coresets

<https://dl.acm.org/doi/abs/10.1145/3394486.3403256>

AUTHORS: Alaa Maalouf, Adiel Statman, Dan Feldman

HIGHLIGHT: We provide algorithms that compute provably tight bounds for the sensitivity of each input row. It is based on two ingredients: (i) iterative algorithm that computes the exact sensitivity of each row up to arbitrary small precision for (non-affine) k -subspaces, and (ii) a general reduction for computing a coreset for affine subspaces, given a coreset for (non-affine) subspaces in \mathbb{R}^d .

201, **TITLE:** GHashing: Semantic Graph Hashing for Approximate Similarity Search in Graph Databases

<https://dl.acm.org/doi/abs/10.1145/3394486.3403257>

AUTHORS: Zongyue Qin, Yunsheng Bai, Yizhou Sun

HIGHLIGHT: Inspired by the recent success of deep-learning-based semantic hashing in image and document retrieval, we propose a novel graph neural network (GNN) based semantic hashing, i.e. GHashing, for approximate pruning.

202, **TITLE:** Interactive Path Reasoning on Graph for Conversational Recommendation

<https://dl.acm.org/doi/abs/10.1145/3394486.3403258>

AUTHORS: Wenqiang Lei, Gangyi Zhang, Xiangnan He, Yisong Miao, Xiang Wang, Liang Chen, Tat-Seng Chua

HIGHLIGHT: In this paper, we propose Conversational Path Reasoning (CPR), a generic framework that models conversational recommendation as an interactive path reasoning problem on a graph.

203, **TITLE:** Algorithmic Aspects of Temporal Betweenness

<https://dl.acm.org/doi/abs/10.1145/3394486.3403259>

AUTHORS: Sebastian Buß, Hendrik Molter, Rolf Niedermeier, Maciej Rymar

HIGHLIGHT: We provide a systematic study of temporal betweenness variants based on various concepts of optimal temporal paths both on a theoretical and empirical level.

204, **TITLE:** Non-Linear Mining of Social Activities in Tensor Streams

<https://dl.acm.org/doi/abs/10.1145/3394486.3403260>

AUTHORS: Koki Kawabata, Yasuko Matsubara, Takato Honda, Yasushi Sakurai

HIGHLIGHT: In this paper, we propose a streaming method, namely, CubeCast, that is designed to capture basic trends and seasonality in tensor streams and extract temporal and multi-dimensional relationships between such dynamics.

205, **TITLE:** DeepLine: AutoML Tool for Pipelines Generation using Deep Reinforcement Learning and Hierarchical Actions Filtering

<https://dl.acm.org/doi/abs/10.1145/3394486.3403261>

AUTHORS: Yuval Heffetz, Roman Vainshtein, Gilad Katz, Lior Rokach

HIGHLIGHT: In this study we present DeepLine, a reinforcement learning-based approach for automatic pipeline generation.

- 206, TITLE: On Sampling Top-K Recommendation Evaluation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403262>
AUTHORS: Dong Li, Ruoming Jin, Jing Gao, Zhi Liu
HIGHLIGHT: In this work, we thoroughly investigate the relationship between the sampling and global top-K Hit-Ratio (HR, or Recall), originally proposed by Koren[2] and extensively used by others.
- 207, TITLE: Algorithmic Decision Making with Conditional Fairness
<https://dl.acm.org/doi/abs/10.1145/3394486.3403263>
AUTHORS: Renzhe Xu, Peng Cui, Kun Kuang, Bo Li, Linjun Zhou, Zheyang Shen, Wei Cui
HIGHLIGHT: We thus define conditional fairness as a more sound fairness metric by conditioning on the fairness variables.
- 208, TITLE: Semi-supervised Collaborative Filtering by Text-enhanced Domain Adaptation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403264>
AUTHORS: Wenhui Yu, Xiao Lin, Junfeng Ge, Wenwu Ou, Zheng Qin
HIGHLIGHT: To solve these difficulties, we regard the problem of recommendation on sparse implicit feedbacks as a semi-supervised learning task, and explore domain adaption to solve it.
- 209, TITLE: Rich Information is Affordable: A Systematic Performance Analysis of Second-order Optimization Using K-FAC
<https://dl.acm.org/doi/abs/10.1145/3394486.3403265>
AUTHORS: Yuichiro Ueno, Kazuki Osawa, Yohei Tsuji, Akira Naruse, Rio Yokota
HIGHLIGHT: In this work, we conduct a step-by-step performance analysis when computing the Fisher information matrix during training of ResNet-50 on ImageNet, and show that the overhead can be reduced to the same amount as the cost of performing a single SGD step.
- 210, TITLE: Voronoi Graph Traversal in High Dimensions with Applications to Topological Data Analysis and Piecewise Linear Interpolation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403266>
AUTHORS: Vladislav Polianskii, Florian T. Pokorny
HIGHLIGHT: We propose a randomized approximation approach that mitigates the prohibitive cost of exact computation of Voronoi diagrams in high dimensions for machine learning applications.
- 211, TITLE: MCRapper: Monte-Carlo Rademacher Averages for Poset Families and Approximate Pattern Mining
<https://dl.acm.org/doi/abs/10.1145/3394486.3403267>
AUTHORS: Leonardo Pellegrina, Cyrus Cousins, Fabio Vandin, Matteo Riondato
HIGHLIGHT: We present MCRapper, an algorithm for efficient computation of Monte-Carlo Empirical Rademacher Averages (MCERA) for families of functions exhibiting poset (e.g., lattice) structure, such as those that arise in many pattern mining tasks.
- 212, TITLE: REA: Robust Cross-lingual Entity Alignment Between Knowledge Graphs
<https://dl.acm.org/doi/abs/10.1145/3394486.3403268>
AUTHORS: Shichao Pei, Lu Yu, Guoxian Yu, Xiangliang Zhang
HIGHLIGHT: Our proposed method named REA (Robust Entity Alignment) consists of two components: noise detection and noise-aware entity alignment.
- 213, TITLE: Stable Learning via Differentiated Variable Decorrelation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403269>
AUTHORS: Zheyang Shen, Peng Cui, Jiashuo Liu, Tong Zhang, Bo Li, Zhitang Chen
HIGHLIGHT: In this paper, we incorporate the unlabeled data from multiple environments into the variable decorrelation framework and propose a Differentiated Variable Decorrelation (DVD) algorithm based on the clustering of variables.
- 214, TITLE: Learning Stable Graphs from Multiple Environments with Selection Bias
<https://dl.acm.org/doi/abs/10.1145/3394486.3403270>
AUTHORS: Yue He, Peng Cui, Jianxin Ma, Hao Zou, Xiaowei Wang, Hongxia Yang, Philip S. Yu
HIGHLIGHT: In this paper, we target the problem of learning stable graphs from multiple environments with selection bias.
- 215, TITLE: Fast RobustSTL: Efficient and Robust Seasonal-Trend Decomposition for Time Series with Complex Patterns
<https://dl.acm.org/doi/abs/10.1145/3394486.3403271>
AUTHORS: Qingsong Wen, Zhe Zhang, Yan Li, Liang Sun

- HIGHLIGHT: In this paper, we extend RobustSTL to handle multiple seasonality.
- 216, TITLE: CurvaNet: Geometric Deep Learning based on Directional Curvature for 3D Shape Analysis
<https://dl.acm.org/doi/abs/10.1145/3394486.3403272>
AUTHORS: Wenchong He, Zhe Jiang, Chengming Zhang, Arpan Man Sainju
HIGHLIGHT: In contrast, this paper proposes a novel geometric deep learning model called CurvaNet that integrates differential geometry with graph neural networks.
- 217, TITLE: Attentional Multi-graph Convolutional Network for Regional Economy Prediction with Open Migration Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3403273>
AUTHORS: Fengli Xu, Yong Li, Shusheng Xu
HIGHLIGHT: We study the problem of predicting regional economy of U.S. counties with open migration data collected from U.S. Internal Revenue Service (IRS) records.
- 218, TITLE: Octet: Online Catalog Taxonomy Enrichment with Self-Supervision
<https://dl.acm.org/doi/abs/10.1145/3394486.3403274>
AUTHORS: Yuning Mao, Tong Zhao, Andrey Kan, Chenwei Zhang, Xin Luna Dong, Christos Faloutsos, Jiawei Han
HIGHLIGHT: In this paper, we present a self-supervised end-to-end framework, Octet, for Online Catalog Taxonomy Enrichment.
- 219, TITLE: TIMME: Twitter Ideology-detection via Multi-task Multi-relational Embedding
<https://dl.acm.org/doi/abs/10.1145/3394486.3403275>
AUTHORS: Zhiping Xiao, Weiping Song, Haoyan Xu, Zhicheng Ren, Yizhou Sun
HIGHLIGHT: We aim at solving the problem of predicting people's ideology, or political tendency.
- 220, TITLE: Knowing your FATE: Friendship, Action and Temporal Explanations for User Engagement Prediction on Social Apps
<https://dl.acm.org/doi/abs/10.1145/3394486.3403276>
AUTHORS: Xianfeng Tang, Yozen Liu, Neil Shah, Xiaolin Shi, Prasenjit Mitra, Suhang Wang
HIGHLIGHT: In this paper, we study a novel problem of explainable user engagement prediction for social network Apps.
- 221, TITLE: Sub-Matrix Factorization for Real-Time Vote Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403277>
AUTHORS: Alexander Immer, Victor Kristof, Matthias Grossglauser, Patrick Thiran
HIGHLIGHT: We address the problem of predicting aggregate vote outcomes (e.g., national) from partial outcomes (e.g., regional) that are revealed sequentially.
- 222, TITLE: Temporal-Contextual Recommendation in Real-Time
<https://dl.acm.org/doi/abs/10.1145/3394486.3403278>
AUTHORS: Yifei Ma, Balakrishnan (Murali) Narayanaswamy, Haibin Lin, Hao Ding
HIGHLIGHT: To fill this gap, we present a black-box recommender system that can adapt to a diverse set of scenarios without the need for manual tuning.
- 223, TITLE: OptMatch: Optimized Matchmaking via Modeling the High-Order Interactions on the Arena
<https://dl.acm.org/doi/abs/10.1145/3394486.3403279>
AUTHORS: Linxia Gong, Xiaochuan Feng, Dezhi Ye, Hao Li, Runze Wu, Jianrong Tao, Changjie Fan, Peng Cui
HIGHLIGHT: This paper proposes a two-stage data-driven matchmaking framework (namely OptMatch), which is applicable to most of gaming products and has the minimal product knowledge required.
- 224, TITLE: PinnerSage: Multi-Modal User Embedding Framework for Recommendations at Pinterest
<https://dl.acm.org/doi/abs/10.1145/3394486.3403280>
AUTHORS: Aditya Pal, Chantat Eksombatchai, Yitong Zhou, Bo Zhao, Charles Rosenberg, Jure Leskovec
HIGHLIGHT: In this work, we introduce PinnerSage, an end-to-end recommender system that represents each user via multi-modal embeddings and leverages this rich representation of users to provides high quality personalized recommendations.
- 225, TITLE: Polestar: An Intelligent, Efficient and National-Wide Public Transportation Routing Engine
<https://dl.acm.org/doi/abs/10.1145/3394486.3403281>
AUTHORS: Hao Liu, Ying Li, Yanjie Fu, Huaibo Mei, Jingbo Zhou, Xu Ma, Hui Xiong
HIGHLIGHT: To this end, in this paper, we present Polestar, a data-driven engine for intelligent and efficient public transportation routing.

- 226, TITLE: Context-Aware Attentive Knowledge Tracing
<https://dl.acm.org/doi/abs/10.1145/3394486.3403282>
AUTHORS: Aritra Ghosh, Neil Heffernan, Andrew S. Lan
HIGHLIGHT: In this paper, we propose attentive knowledge tracing (AKT), which couples flexible attention-based neural network models with a series of novel, interpretable model components inspired by cognitive and psychometric models.
- 227, TITLE: Improving Movement Predictions of Traffic Actors in Bird's-Eye View Models using GANs and Differentiable Trajectory Rasterization
<https://dl.acm.org/doi/abs/10.1145/3394486.3403283>
AUTHORS: Eason Wang, Henggang Cui, Sai Yalamanchi, Mohana Moorthy, Nemanja Djuric
HIGHLIGHT: In this paper we build upon these two directions and propose a raster-based conditional GAN architecture, powered by a novel differentiable rasterizer module at the input of the conditional discriminator that maps generated trajectories into the raster space in a differentiable manner.
- 228, TITLE: M2GRL: A Multi-task Multi-view Graph Representation Learning Framework for Web-scale Recommender Systems
<https://dl.acm.org/doi/abs/10.1145/3394486.3403284>
AUTHORS: Menghan Wang, Yujie Lin, Guli Lin, Keping Yang, Xiao-ming Wu
HIGHLIGHT: In this paper, we use a multi-view representation alignment approach to address this issue.
- 229, TITLE: Attribute-based Propensity for Unbiased Learning in Recommender Systems: Algorithm and Case Studies
<https://dl.acm.org/doi/abs/10.1145/3394486.3403285>
AUTHORS: Zhen Qin, Suming J. Chen, Donald Metzler, Yongwoo Noh, Jingzheng Qin, Xuanhui Wang
HIGHLIGHT: In this paper, we generalize the traditional position bias model to an attribute-based propensity framework.
- 230, TITLE: Predicting Individual Treatment Effects of Large-scale Team Competitions in a Ride-sharing Economy
<https://dl.acm.org/doi/abs/10.1145/3394486.3403286>
AUTHORS: Teng Ye, Wei Ai, Lingyu Zhang, Ning Luo, Lulu Zhang, Jieping Ye, Qiaozhu Mei
HIGHLIGHT: In this study, we analyze data collected from more than 500 large-scale team competitions organized by a leading ride-sharing platform, building machine learning models to predict individual treatment effects.
- 231, TITLE: Cellular Network Radio Propagation Modeling with Deep Convolutional Neural Networks
<https://dl.acm.org/doi/abs/10.1145/3394486.3403287>
AUTHORS: Xin Zhang, Xiujun Shu, Bingwen Zhang, Jie Ren, Lizhou Zhou, Xin Chen
HIGHLIGHT: In this article we present a novel method to model radio propagation using deep convolutional neural networks and report significantly improved performance compared to conventional models.
- 232, TITLE: Neural Input Search for Large Scale Recommendation Models
<https://dl.acm.org/doi/abs/10.1145/3394486.3403288>
AUTHORS: Manas R. Joglekar, Cong Li, Mei Chen, Taibai Xu, Xiaoming Wang, Jay K. Adams, Pranav Khaitan, Jiahui Liu, Quoc V. Le
HIGHLIGHT: We present Neural Input Search (NIS), a technique for learning the optimal vocabulary sizes and embedding dimensions for categorical features.
- 233, TITLE: Easy Perturbation EEG Algorithm for Spectral Importance (easyPEASI): A Simple Method to Identify Important Spectral Features of EEG in Deep Learning Models
<https://dl.acm.org/doi/abs/10.1145/3394486.3403289>
AUTHORS: David O. Nahmias, Kimberly L. Kontson
HIGHLIGHT: This work proposes and validates a method to investigate frequency bands important to EEG-driven deep learning models.
- 234, TITLE: Building Continuous Integration Services for Machine Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403290>
AUTHORS: Bojan Karlać, Matteo Interlandi, Cedric Renggli, Wentao Wu, Ce Zhang, Deepak Mukunthu Iyappan Babu, Jordan Edwards, Chris Lauren, Andy Xu, Markus Weimer
HIGHLIGHT: We develop the first CI system for ML, to the best of our knowledge, that integrates seamlessly with existing ML development tools.
- 235, TITLE: Learning to Cluster Documents into Workspaces Using Large Scale Activity Logs

<https://dl.acm.org/doi/abs/10.1145/3394486.3403291>

AUTHORS: Weize Kong, Michael Bendersky, Marc Najork, Brandon Vargo, Mike Colagrosso
HIGHLIGHT: We go beyond the textual similarity-based unsupervised clustering paradigm and instead directly learn from users' activity for document clustering.

236, TITLE: What is that Building?: An End-to-end System for Building Recognition from Streetside Images

<https://dl.acm.org/doi/abs/10.1145/3394486.3403292>

AUTHORS: Chiqun Zhang, Dragomir Yankov, Chun-Ting Wu, Simon Shapiro, Jason Hong, Wei Wu
HIGHLIGHT: The paper describes Streetside Building Search-Retrieve System (SBSRS) - a system for recognizing buildings from streetside images.

To evaluate the system, we generate a dataset of over 23K unique business buildings from four major US cities.

237, TITLE: MultiSage: Empowering GCN with Contextualized Multi-Embeddings on Web-Scale Multipartite Networks

<https://dl.acm.org/doi/abs/10.1145/3394486.3403293>

AUTHORS: Carl Yang, Aditya Pal, Andrew Zhai, Nikil Pancha, Jiawei Han, Charles Rosenberg, Jure Leskovec
HIGHLIGHT: Here, we present a contextualized GCN engine by modeling the multipartite networks of target nodes and their intermediate context nodes that specify the contexts of their interactions.

238, TITLE: HetETA: Heterogeneous Information Network Embedding for Estimating Time of Arrival

<https://dl.acm.org/doi/abs/10.1145/3394486.3403294>

AUTHORS: Huiting Hong, Yucheng Lin, Xiaoqing Yang, Zang Li, Kung Fu, Zheng Wang, Xiaohu Qie, Jieping Ye
HIGHLIGHT: In this paper, we propose HetETA to leverage heterogeneous information graph in ETA task.

239, TITLE: Hubble: An Industrial System for Audience Expansion in Mobile Marketing

<https://dl.acm.org/doi/abs/10.1145/3394486.3403295>

AUTHORS: Chenyi Zhuang, Ziqi Liu, Zhiqiang Zhang, Yize Tan, Zhengwei Wu, Zhining Liu, Jianping Wei, Jinjie Gu, Guannan Zhang, Jun Zhou, Yuan Qi

HIGHLIGHT: Addressing the above challenges, in this paper, we present the Hubble System, an industrial solution for audience expansion in mobile marketing scenario.

240, TITLE: Scaling Graph Neural Networks with Approximate PageRank

<https://dl.acm.org/doi/abs/10.1145/3394486.3403296>

AUTHORS: Aleksandar Bojchevski, Johannes Klicpera, Bryan Perozzi, Amol Kapoor, Martin Blais, Benedek Ruzsaszek, Michal Lukasik, Stephan Günnemann

HIGHLIGHT: We present the PPRGo model which utilizes an efficient approximation of information diffusion in GNNs resulting in significant speed gains while maintaining state-of-the-art prediction performance.

241, TITLE: Combo-Attention Network for Baidu Video Advertising

<https://dl.acm.org/doi/abs/10.1145/3394486.3403297>

AUTHORS: Tan Yu, Yi Yang, Yi Li, Xiaodong Chen, Mingming Sun, Ping Li

HIGHLIGHT: In this paper, we introduce a technique used in Baidu video advertising for feeding relevant video ads according to the user's query.

To testify the effectiveness of the proposed CAN offline, we built a Daily700K dataset collected from HaoKan APP.

242, TITLE: Federated Doubly Stochastic Kernel Learning for Vertically Partitioned Data

<https://dl.acm.org/doi/abs/10.1145/3394486.3403298>

AUTHORS: Bin Gu, Zhiyuan Dang, Xiang Li, Heng Huang

HIGHLIGHT: In this paper, we focus on nonlinear learning with kernels, and propose a federated doubly stochastic kernel learning (FDSKL) algorithm for vertically partitioned data.

243, TITLE: To Tune or Not to Tune?: In Search of Optimal Configurations for Data Analytics

<https://dl.acm.org/doi/abs/10.1145/3394486.3403299>

AUTHORS: Ayat Fekry, Lucian Carata, Thomas Pasquier, Andrew Rice, Andy Hopper

HIGHLIGHT: We adapt different ML techniques in order to obtain efficient incremental tuning in our problem domain, and propose Tuneful, a configuration tuning framework.

244, TITLE: Reconstruction and Decomposition of High-Dimensional Landscapes via Unsupervised Learning

<https://dl.acm.org/doi/abs/10.1145/3394486.3403300>

AUTHORS: Jing Lei, Nasrin Akhter, Wanli Qiao, Amarda Shehu

HIGHLIGHT: In this paper, we present a novel, hybrid method that combines strengths of these methods, allowing both visualization of the landscape and discovery of macrostates.

- 245, TITLE: Map Generation from Large Scale Incomplete and Inaccurate Data Labels
<https://dl.acm.org/doi/abs/10.1145/3394486.3403301>
AUTHORS: Rui Zhang, Conrad Albrecht, Wei Zhang, Xiaodong Cui, Ulrich Finkler, David Kung, Siyuan Lu
HIGHLIGHT: In this paper we present progress in developing an algorithmic pipeline and distributed compute system that automates the process of map creation using high resolution aerial images.
- 246, TITLE: Grale: Designing Networks for Graph Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403302>
AUTHORS: Jonathan Halcrow, Alexandru Mosoi, Sam Ruth, Bryan Perozzi
HIGHLIGHT: In this work, we present Grale, a scalable method we have developed to address the problem of graph design for graphs with billions of nodes.
- 247, TITLE: Automatic Validation of Textual Attribute Values in E-commerce Catalog by Learning with Limited Labeled Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3403303>
AUTHORS: Yaqing Wang, Yifan Ethan Xu, Xian Li, Xin Luna Dong, Jing Gao
HIGHLIGHT: In this paper, we propose to develop an automatic validation approach that verifies the correctness of textual attribute values for products.
- 248, TITLE: CLARA: Confidence of Labels and Raters
<https://dl.acm.org/doi/abs/10.1145/3394486.3403304>
AUTHORS: Viet-An Nguyen, Peibei Shi, Jagdish Ramakrishnan, Udi Weinsberg, Henry C. Lin, Steve Metz, Neil Chandra, Jane Jing, Dimitris Kalimeris
HIGHLIGHT: In this paper, we present CLARA (Confidence of Labels and Raters), a system developed and deployed at Facebook for aggregating reviewer decisions and estimating their uncertainty.
- 249, TITLE: Embedding-based Retrieval in Facebook Search
<https://dl.acm.org/doi/abs/10.1145/3394486.3403305>
AUTHORS: Jui-Ting Huang, Ashish Sharma, Shuying Sun, Li Xia, David Zhang, Philip Pronin, Janani Padmanabhan, Giuseppe Ottaviano, Linjun Yang
HIGHLIGHT: In this paper, we discuss the techniques for applying EBR to a Facebook Search system.
- 250, TITLE: Lumos: A Library for Diagnosing Metric Regressions in Web-Scale Applications
<https://dl.acm.org/doi/abs/10.1145/3394486.3403306>
AUTHORS: Jamie Pool, Ebrahim Beyrami, Vishak Gopal, Ashkan Aazami, Jayant Gupchup, Jeff Rowland, Binlong Li, Pritesh Kanani, Ross Cutler, Johannes Gehrke
HIGHLIGHT: In this work, we open source Lumos and present our results from applying it to two different components within the RTC group over millions of sessions.
- 251, TITLE: Order Fulfillment Cycle Time Estimation for On-Demand Food Delivery
<https://dl.acm.org/doi/abs/10.1145/3394486.3403307>
AUTHORS: Lin Zhu, Wei Yu, Kairong Zhou, Xing Wang, Wenxing Feng, Pengyu Wang, Ning Chen, Pei Lee
HIGHLIGHT: In this paper, we present the OFCT prediction model that is currently deployed at Ele.me, which is one of the world's largest OFD platforms and delivers over 10 million meals in more than 200 Chinese cities every day.
- 252, TITLE: Calendar Graph Neural Networks for Modeling Time Structures in Spatiotemporal User Behaviors
<https://dl.acm.org/doi/abs/10.1145/3394486.3403308>
AUTHORS: Daheng Wang, Meng Jiang, Munira Syed, Oliver Conway, Vishal Juneja, Sriram Subramanian, Nitesh V. Chawla
HIGHLIGHT: In this work, we propose a novel model based on graph neural networks for learning user representations from spatiotemporal behavior data.
- 253, TITLE: Privileged Features Distillation at Taobao Recommendations
<https://dl.acm.org/doi/abs/10.1145/3394486.3403309>
AUTHORS: Chen Xu, Quan Li, Junfeng Ge, Jinyang Gao, Xiaoyong Yang, Changhua Pei, Fei Sun, Jian Wu, Hanxiao Sun, Wenwu Ou
HIGHLIGHT: Inspired by the distillation techniques which bridge the gap between training and inference, in this work, we propose privileged features distillation (PFD).

- 254, TITLE: Cracking Tabular Presentation Diversity for Automatic Cross-Checking over Numerical Facts
<https://dl.acm.org/doi/abs/10.1145/3394486.3403310>
AUTHORS: Hongwei Li, Qingping Yang, Yixuan Cao, Jiaquan Yao, Ping Luo
HIGHLIGHT: This paper introduces the key module of such a system, which aims to identify whether a pair of table cells are semantically equivalent, namely referring to the same fact.
- 255, TITLE: GrokNet: Unified Computer Vision Model Trunk and Embeddings For Commerce
<https://dl.acm.org/doi/abs/10.1145/3394486.3403311>
AUTHORS: Sean Bell, Yiqun Liu, Sami Alsheikh, Yina Tang, Edward Pizzi, M. Henning, Karun Singh, Omkar Parkhi, Fedor Borisyyuk
HIGHLIGHT: In this paper, we present GrokNet, a deployed image recognition system for commerce applications.
- 256, TITLE: Learning Instrument Invariant Characteristics for Generating High-resolution Global Coral Reef Maps
<https://dl.acm.org/doi/abs/10.1145/3394486.3403312>
AUTHORS: Ata Akbari Asanjan, Kamalika Das, Alan Li, Ved Chirayath, Juan Torres-Perez, Soroosh Sorooshian
HIGHLIGHT: In this work, we develop a deep learning model for extracting domain invariant features from multimodal remote sensing imagery and creating high-resolution global maps of coral reefs by combining various sources of imagery and limited hand-labeled data available for certain regions.
- 257, TITLE: Causal Meta-Mediation Analysis: Inferring Dose-Response Function From Summary Statistics of Many Randomized Experiments
<https://dl.acm.org/doi/abs/10.1145/3394486.3403313>
AUTHORS: Zenan Wang, Xuan Yin, Tianbo Li, Liangjie Hong
HIGHLIGHT: We model the online evaluation metric as a mediator and formalize its causality with the business KPI as dose-response function (DRF).
- 258, TITLE: AutoFIS: Automatic Feature Interaction Selection in Factorization Models for Click-Through Rate Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403314>
AUTHORS: Bin Liu, Chenxu Zhu, Guilin Li, Weinan Zhang, Jincai Lai, Ruiming Tang, Xiuqiang He, Zhenguo Li, Yong Yu
HIGHLIGHT: In this work, we propose a two-stage algorithm called Automatic Feature Interaction Selection (AutoFIS).
- 259, TITLE: City Metro Network Expansion with Reinforcement Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403315>
AUTHORS: Yu Wei, Minjia Mao, Xi Zhao, Jianhua Zou, Ping An
HIGHLIGHT: To address these limitations, we propose a reinforcement learning based method for the city metro network expansion problem.
- 260, TITLE: Game Action Modeling for Fine Grained Analyses of Player Behavior in Multi-player Card Games (Rummy as Case Study)
<https://dl.acm.org/doi/abs/10.1145/3394486.3403316>
AUTHORS: Sharanya Eswaran, Mridul Sachdeva, Vikram Vimal, Deepanshi Seth, Suhaas Kalpam, Sanjay Agarwal, Tridib Mukherjee, Samrat Dattagupta
HIGHLIGHT: We present a deep learning framework for game action modeling, which enables fine-grained analyses of player behavior.
- 261, TITLE: Cascade-LSTM: A Tree-Structured Neural Classifier for Detecting Misinformation Cascades
<https://dl.acm.org/doi/abs/10.1145/3394486.3403317>
AUTHORS: Francesco Ducci, Mathias Kraus, Stefan Feuerriegel
HIGHLIGHT: As a remedy, we propose a novel tree-structured neural network named Cascade-LSTM.
- 262, TITLE: Personalized Prefix Embedding for POI Auto-Completion in the Search Engine of Baidu Maps
<https://dl.acm.org/doi/abs/10.1145/3394486.3403318>
AUTHORS: Jizhou Huang, Haifeng Wang, Miao Fan, An Zhuo, Ying Li
HIGHLIGHT: In this paper, we present an end-to-end neural-based framework for POI-AC, which has been recently deployed in the search engine of Baidu Maps, one of the largest Web mapping applications with hundreds of millions monthly active users worldwide.
- 263, TITLE: Category-Specific CNN for Visual-aware CTR Prediction at JD.com
<https://dl.acm.org/doi/abs/10.1145/3394486.3403319>
AUTHORS: Hu Liu, Jing Lu, Hao Yang, Xiwei Zhao, Sulong Xu, Hao Peng, Zehua Zhang, Wenjie Niu, Xiaokun Zhu, Yongjun Bao, Weipeng Yan

HIGHLIGHT: To overcome the two challenges, we propose Category-specific CNN (CSCNN) specially for CTR prediction.

264, TITLE: ConSTGAT: Contextual Spatial-Temporal Graph Attention Network for Travel Time Estimation at Baidu Maps
<https://dl.acm.org/doi/abs/10.1145/3394486.3403320>

AUTHORS: Xiaomin Fang, Jizhou Huang, Fan Wang, Lingke Zeng, Haijin Liang, Haifeng Wang

HIGHLIGHT: In this paper, we propose an end-to-end neural framework named ConSTGAT, which integrates traffic prediction and contextual information to address these two problems.

265, TITLE: Faster Secure Data Mining via Distributed Homomorphic Encryption

<https://dl.acm.org/doi/abs/10.1145/3394486.3403321>

AUTHORS: Junyi Li, Heng Huang

HIGHLIGHT: In this paper, we propose a novel general distributed HE-based data mining framework towards one step of solving the scaling problem.

266, TITLE: Contagious Chain Risk Rating for Networked-guarantee Loans

<https://dl.acm.org/doi/abs/10.1145/3394486.3403322>

AUTHORS: Dawei Cheng, Zhibin Niu, Yiyi Zhang

HIGHLIGHT: To this end, we propose a novel approach to rate the risk of contagion chains in the bank industry with the deep neural network.

267, TITLE: AutoKnow: Self-Driving Knowledge Collection for Products of Thousands of Types

<https://dl.acm.org/doi/abs/10.1145/3394486.3403323>

AUTHORS: Xin Luna Dong, Xiang He, Andrey Kan, Xian Li, Yan Liang, Jun Ma, Yifan Ethan Xu, Chenwei Zhang, Tong Zhao, Gabriel Blanco Saldana, Saurabh Deshpande, Alexandre Michetti Manduca, Jay Ren, Surender Pal Singh, Fan Xiao, Haw-Shiuan Chang, Giannis Karamanolakis, Yuning Mao, Yaqing Wang, Christos Faloutsos, Andrew McCallum, Jiawei Han

HIGHLIGHT: We describe AutoKnow, our automatic (self-driving) system that addresses these challenges.

268, TITLE: Personalized Image Retrieval with Sparse Graph Representation Learning

<https://dl.acm.org/doi/abs/10.1145/3394486.3403324>

AUTHORS: Xiaowei Jia, Handong Zhao, Zhe Lin, Ajinkya Kale, Vipin Kumar

HIGHLIGHT: In this paper, we develop a novel method CA-GCN for personalized image retrieval in the Adobe Stock image system.

269, TITLE: Comprehensive Information Integration Modeling Framework for Video Titling

<https://dl.acm.org/doi/abs/10.1145/3394486.3403325>

AUTHORS: Shengyu Zhang, Ziqi Tan, Zhou Zhao, Jin Yu, Kun Kuang, Tan Jiang, Jingren Zhou, Hongxia Yang, Fei Wu

HIGHLIGHT: To bridge this gap, we integrate comprehensive sources of information, including the content of consumer-generated videos, the narrative comment sentences supplied by consumers, and the product attributes, in an end-to-end modeling framework.

270, TITLE: Acoustic Measures for Real-Time Voice Coaching

<https://dl.acm.org/doi/abs/10.1145/3394486.3403326>

AUTHORS: Ying Li, Abraham Miller, Arthur Liu, Kyle Coburn, Luis J. Salazar

HIGHLIGHT: This paper presents methodologies for computing a set of physical properties from sound waves of a speaker's voice directly, referred to as acoustic measures.

271, TITLE: Geodemographic Influence Maximization

<https://dl.acm.org/doi/abs/10.1145/3394486.3403327>

AUTHORS: Kaichen Zhang, Jingbo Zhou, Donglai Tao, Panagiotis Karras, Qing Li, Hui Xiong

HIGHLIGHT: In this paper, we address the natural problem that arises such data: given a distribution of population and point-to-point movement statistics over a network, find a set of locations within a budget that achieves maximum expected reach.

272, TITLE: A Self-Evolving Mutually-Operative Recurrent Network-based Model for Online Tool Condition Monitoring in Delay Scenario

<https://dl.acm.org/doi/abs/10.1145/3394486.3403328>

AUTHORS: Monidipa Das, Mahardhika Pratama, Tegoeh Tjahjowidodo

HIGHLIGHT: In order to tackle these issues, we propose SERMON as a novel learning model based on a pair of self-evolving mutually-operative recurrent neural networks.

- 273, TITLE: Maximizing Cumulative User Engagement in Sequential Recommendation: An Online Optimization Perspective
https://dl.acm.org/doi/abs/10.1145/3394486.3403329
AUTHORS: Yifei Zhao, Yu-Hang Zhou, Mingdong Ou, Huan Xu, Nan Li
HIGHLIGHT: In this paper, we study this problem from an online optimization perspective, and propose a flexible and practical framework to explicitly tradeoff longer user browsing length and high immediate user engagement.
- 274, TITLE: Domain Specific Knowledge Graphs as a Service to the Public: Powering Social-Impact Funding in the US
https://dl.acm.org/doi/abs/10.1145/3394486.3403330
AUTHORS: Ying Li, Vitalii Zakhochyi, Daniel Zhu, Luis J. Salazar
HIGHLIGHT: This paper explores the practical applications of Domain Specific Knowledge Graphs that allow for the extraction of information from trusted published and unpublished sources, to map the extracted information to an ontology defined in collaboration with sector experts, and to enable the public to go from single queries into ongoing conversations meeting their knowledge needs reliably.
- 275, TITLE: LRSpeech: Extremely Low-Resource Speech Synthesis and Recognition
https://dl.acm.org/doi/abs/10.1145/3394486.3403331
AUTHORS: Jin Xu, Xu Tan, Yi Ren, Tao Qin, Jian Li, Sheng Zhao, Tie-Yan Liu
HIGHLIGHT: In this paper, we develop LRSpeech, a TTS and ASR system under the extremely low-resource setting, which can support rare languages with low data cost.
- 276, TITLE: Doing in One Go: Delivery Time Inference Based on Couriers' Trajectories
https://dl.acm.org/doi/abs/10.1145/3394486.3403332
AUTHORS: Sijie Ruan, Zi Xiong, Cheng Long, Yiheng Chen, Jie Bao, Tianfu He, Ruiyuan Li, Shengnan Wu, Zhongyuan Jiang, Yu Zheng
HIGHLIGHT: To this end, we propose Delivery Time Inference (DTInf), to automatically infer the delivery time of waybills based on couriers' trajectories.
- 277, TITLE: Improving Deep Learning for Airbnb Search
https://dl.acm.org/doi/abs/10.1145/3394486.3403333
AUTHORS: Malay Halder, Prashant Ramanathan, Tyler Sax, Mustafa Abdool, Lanbo Zhang, Aamir Mansawala, Shulin Yang, Bradley Turnbull, Junshuo Liao
HIGHLIGHT: In this paper we describe the journey beyond, discussing what we refer to as the ABCs of improving search: A for architecture, B for bias and C for cold start.
- 278, TITLE: General-Purpose User Embeddings based on Mobile App Usage
https://dl.acm.org/doi/abs/10.1145/3394486.3403334
AUTHORS: Junqi Zhang, Bing Bai, Ye Lin, Jian Liang, Kun Bai, Fei Wang
HIGHLIGHT: In this paper, we report our recent practice at Tencent for user modeling based on mobile app usage.
- 279, TITLE: Unsupervised Translation via Hierarchical Anchoring: Functional Mapping of Places across Cities
https://dl.acm.org/doi/abs/10.1145/3394486.3403335
AUTHORS: Takahiro Yabe, Kota Tsubouchi, Toru Shimizu, Yoshihide Sekimoto, Satish V. Ukkusuri
HIGHLIGHT: We address this problem by proposing an unsupervised translation method that translates embeddings by exploiting common hierarchical structures that exist across imbalanced domains.
- 280, TITLE: Debiasing Grid-based Product Search in E-commerce
https://dl.acm.org/doi/abs/10.1145/3394486.3403336
AUTHORS: Ruocheng Guo, Xiaoting Zhao, Adam Henderson, Liangjie Hong, Huan Liu
HIGHLIGHT: In this work, we extend unbiased learning to rank to the world of e-commerce search via considering a grid-based product search scenario.
- 281, TITLE: Forecasting the Evolution of Hydropower Generation
https://dl.acm.org/doi/abs/10.1145/3394486.3403337
AUTHORS: Fan Zhou, Liang Li, Kunpeng Zhang, Goce Trajcevski, Fuming Yao, Ying Huang, Ting Zhong, Jiahao Wang, Qiao Liu
HIGHLIGHT: In this paper, we present DeepHydro, a novel stochastic method for modeling multivariate time series (e.g., water inflow/outflow and temperature) and forecasting power generation of hydropower stations.
- 282, TITLE: Saliency and Market-aware Skill Extraction for Job Targeting
https://dl.acm.org/doi/abs/10.1145/3394486.3403338

AUTHORS: Baoxu Shi, Jaewon Yang, Feng Guo, Qi He
HIGHLIGHT: In this work, we show that the commonly used text-based salience and market-agnostic skill extraction approach is sub-optimal because it only considers skill mention and ignores the salient level of a skill and its market dynamics, i.e., the market supply and demand influence on the importance of skills.

283, TITLE: DATE: Dual Attentive Tree-aware Embedding for Customs Fraud Detection
<https://dl.acm.org/doi/abs/10.1145/3394486.3403339>
AUTHORS: Sundong Kim, Yu-Che Tsai, Karandeep Singh, Yeonsoo Choi, Etim Ibok, Cheng-Te Li, Meeyoung Cha
HIGHLIGHT: This paper proposes DATE, a model of Dual-task Attentive Tree-aware Embedding, to classify and rank illegal trade flows that contribute the most to the overall customs revenue when caught.

284, TITLE: User Sentiment as a Success Metric: Persistent Biases Under Full Randomization
<https://dl.acm.org/doi/abs/10.1145/3394486.3403340>
AUTHORS: Ercan Yildiz, Joshua Safyan, Marc Harper
HIGHLIGHT: We study user sentiment (reported via optional surveys) as a metric for fully randomized A/B tests.

285, TITLE: Improving Recommendation Quality in Google Drive
<https://dl.acm.org/doi/abs/10.1145/3394486.3403341>
AUTHORS: Suming J. Chen, Zhen Qin, Zac Wilson, Brian Calaci, Michael Rose, Ryan Evans, Sean Abraham, Donald Metzler, Sandeep Tata, Michael Colagrosso
HIGHLIGHT: In this paper, we discuss both the challenges of iteratively improving the quality of a personal recommendation system as well as the variety of approaches that we took in order to improve this feature.

286, TITLE: Large-Scale Training System for 100-Million Classification at Alibaba
<https://dl.acm.org/doi/abs/10.1145/3394486.3403342>
AUTHORS: Liuyihan Song, Pan Pan, Kang Zhao, Hao Yang, Yiming Chen, Yingya Zhang, Yinghui Xu, Rong Jin
HIGHLIGHT: In this paper, we propose a large-scale training system to address these challenges.

287, TITLE: Mining Implicit Relevance Feedback from User Behavior for Web Question Answering
<https://dl.acm.org/doi/abs/10.1145/3394486.3403343>
AUTHORS: Linjun Shou, Shining Bo, Feixiang Cheng, Ming Gong, Jian Pei, Daxin Jiang
HIGHLIGHT: In this paper, we make the first study to explore the correlation between user behavior and passage relevance, and propose a novel approach for mining training data for Web QA.

288, TITLE: Controllable Multi-Interest Framework for Recommendation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403344>
AUTHORS: Yukuo Cen, Jianwei Zhang, Xu Zou, Chang Zhou, Hongxia Yang, Jie Tang
HIGHLIGHT: In this paper, we propose a novel controllable multi-interest framework for the sequential recommendation, called ComiRec.

289, TITLE: Managing Diversity in Airbnb Search
<https://dl.acm.org/doi/abs/10.1145/3394486.3403345>
AUTHORS: Mustafa Abdool, Malay Haldar, Prashant Ramanathan, Tyler Sax, Lanbo Zhang, Aamir Manaswala, Lynn Yang, Bradley Turnbull, Qing Zhang, Thomas Legrand
HIGHLIGHT: In this paper, we describe our journey in tackling the problem of diversity for Airbnb search, starting from heuristic based approaches and concluding with a novel deep learning solution that produces an embedding of the entire query context by leveraging Recurrent Neural Networks (RNNs).

290, TITLE: Molecular Inverse-Design Platform for Material Industries
<https://dl.acm.org/doi/abs/10.1145/3394486.3403346>
AUTHORS: Seiji Takeda, Toshiyuki Hama, Hsiang-Han Hsu, Victoria A. Piunova, Dmitry Zubarev, Daniel P. Sanders, Jed W. Pitera, Makoto Kogoh, Takumi Hongo, Yenwei Cheng, Wolf Bocanett, Hideaki Nakashika, Akihiro Fujita, Yuta Tsuchiya, Katsuhiko Hino, Kentaro Yano, Shuichi Hirose, Hiroki Toda, Yasumitsu Orii, Daiju Nakano
HIGHLIGHT: In this paper, we present a material industry-oriented web platform of an AI-driven molecular inverse-design system, which automatically designs brand new molecular structures rapidly and diversely.

291, TITLE: Learning to Score Economic Development from Satellite Imagery
<https://dl.acm.org/doi/abs/10.1145/3394486.3403347>
AUTHORS: Sungwon Han, Donghyun Ahn, Sungwon Park, Jeasurk Yang, Susang Lee, Jihee Kim, Hyunjoo Yang, Sangyoon Park, Meeyoung Cha

HIGHLIGHT: In this paper, we introduce a novel approach for measuring economic development from high-resolution satellite images in the absence of ground truth statistics.

292, **TITLE:** A Request-level Guaranteed Delivery Advertising Planning: Forecasting and Allocation
<https://dl.acm.org/doi/abs/10.1145/3394486.3403348>
AUTHORS: Hong Zhang, Lan Zhang, Lan Xu, Xiaoyang Ma, Zhengtao Wu, Cong Tang, Wei Xu, Yiguo Yang
HIGHLIGHT: Facing the challenges, we present a holistic design of a request-level guaranteed delivery advertising planning system with careful optimization for all three critical components including impression forecasting, selling and serving.

293, **TITLE:** Two Sides of the Same Coin: White-box and Black-box Attacks for Transfer Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403349>
AUTHORS: Yinghua Zhang, Yangqiu Song, Jian Liang, Kun Bai, Qiang Yang
HIGHLIGHT: To figure out this problem, we conduct extensive empirical evaluations to show that fine-tuning effectively enhances model robustness under white-box FGSM attacks. We also propose a black-box attack method for transfer learning models which attacks the target model with the adversarial examples produced by its source model.

294, **TITLE:** Learning to Generate Personalized Query Auto-Completions via a Multi-View Multi-Task Attentive Approach
<https://dl.acm.org/doi/abs/10.1145/3394486.3403350>
AUTHORS: Di Yin, Jiwei Tan, Zhe Zhang, Hongbo Deng, Shujian Huang, Jiajun Chen
HIGHLIGHT: In this paper, we study the task of Query Auto-Completion (QAC), which is a very significant feature of modern search engines.

295, **TITLE:** A Sleeping, Recovering Bandit Algorithm for Optimizing Recurring Notifications
<https://dl.acm.org/doi/abs/10.1145/3394486.3403351>
AUTHORS: Kevin P. Yancey, Burr Settles
HIGHLIGHT: In this paper, we introduce the Recovering Difference Softmax Algorithm to address the particular challenges of this problem domain, and use it to successfully optimize millions of daily reminders for the online language-learning app Duolingo.

296, **TITLE:** Multi-objective Optimization for Guaranteed Delivery in Video Service Platform
<https://dl.acm.org/doi/abs/10.1145/3394486.3403352>
AUTHORS: Hang Lei, Yin Zhao, Longjun Cai
HIGHLIGHT: In this paper, we study the problem of how to maximize certain gains, such as video view (VV) or fairness of different contents (CTR variations between contents) under the GD constraints.

297, **TITLE:** Delivery Scope: A New Way of Restaurant Retrieval for On-demand Food Delivery Service
<https://dl.acm.org/doi/abs/10.1145/3394486.3403353>
AUTHORS: Xuetao Ding, Runfeng Zhang, Zhen Mao, Ke Xing, Fangxiao Du, Xingyu Liu, Guoxing Wei, Feifan Yin, Renqing He, Zhizhao Sun
HIGHLIGHT: In order to draw suitable delivery scopes for millions of restaurant partners, we propose a pioneering delivery scope generation framework.

298, **TITLE:** Fraud Transactions Detection via Behavior Tree with Local Intention Calibration
<https://dl.acm.org/doi/abs/10.1145/3394486.3403354>
AUTHORS: Can Liu, Qiwei Zhong, Xiang Ao, Li Sun, Wangli Lin, Jinghua Feng, Qing He, Jiayu Tang
HIGHLIGHT: In this paper, we devise a tree-like structure named behavior tree to reorganize the user behavioral data, in which a group of successive sequential actions denoting a specific user intention are represented as a branch on the tree.

299, **TITLE:** Balanced Order Batching with Task-Oriented Graph Clustering
<https://dl.acm.org/doi/abs/10.1145/3394486.3403355>
AUTHORS: Lu Duan, Haoyuan Hu, Zili Wu, Guozheng Li, Xinhang Zhang, Yu Gong, Yinghui Xu
HIGHLIGHT: In this paper, rather than designing heuristics, we propose an end-to-end learning and optimization framework named Balanced Task-orientated Graph Clustering Network (BTOGCN) to solve the BOBP by reducing it to balanced graph clustering optimization problem.

300, **TITLE:** Efficiently Solving the Practical Vehicle Routing Problem: A Novel Joint Learning Approach
<https://dl.acm.org/doi/abs/10.1145/3394486.3403356>
AUTHORS: Lu Duan, Yang Zhan, Haoyuan Hu, Yu Gong, Jiangwen Wei, Xiaodong Zhang, Yinghui Xu
HIGHLIGHT: We propose a strategy that combines the reinforcement learning manner with the supervised learning manner to train the model.

- 301, TITLE: Meta-Learning for Query Conceptualization at Web Scale
<https://dl.acm.org/doi/abs/10.1145/3394486.3403357>
AUTHORS: Fred X. Han, Di Niu, Haolan Chen, Weidong Guo, Shengli Yan, Bowei Long
HIGHLIGHT: In this paper, we study the problem of query conceptualization, which is to find the most appropriate matching concepts for any given search query from a large pool of pre-defined concepts.
- 302, TITLE: Hybrid Spatio-Temporal Graph Convolutional Network: Improving Traffic Prediction with Navigation Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3403358>
AUTHORS: Rui Dai, Shenkun Xu, Qian Gu, Chenguang Ji, Kaikui Liu
HIGHLIGHT: Specifically, we propose an algorithm to acquire the upcoming traffic volume from an online navigation engine.
- 303, TITLE: Multitask Mixture of Sequential Experts for User Activity Streams
<https://dl.acm.org/doi/abs/10.1145/3394486.3403359>
AUTHORS: Zhen Qin, Yicheng Cheng, Zhe Zhao, Zhe Chen, Donald Metzler, Jingzheng Qin
HIGHLIGHT: In this work, we study the challenging problem of how to model sequential user behavior in the neural multi-task learning settings.
- 304, TITLE: Identifying Homeless Youth At-Risk of Substance Use Disorder: Data-Driven Insights for Policymakers
<https://dl.acm.org/doi/abs/10.1145/3394486.3403360>
AUTHORS: Maryam Tabar, Heesoo Park, Stephanie Winkler, Dongwon Lee, Anamika Barman-Adhikari, Amulya Yadav
HIGHLIGHT: This work aims to fill this gap by making the following three contributions: (i) we use a real-world dataset collected from ~1,400 homeless youth (across six American states) to build accurate Machine Learning (ML) models for predicting the susceptibility of homeless youth to SUD; (ii) we find a representative set of factors associated with SUD among this population by analyzing feature importance values associated with our ML models; and (iii) we investigate the effect of geographical heterogeneity on the factors associated with SUD.
- 305, TITLE: Interleaved Sequence RNNs for Fraud Detection
<https://dl.acm.org/doi/abs/10.1145/3394486.3403361>
AUTHORS: Bernardo Branco, Pedro Abreu, Ana Sofia Gomes, Mariana S. C. Almeida, Joãõ Tiago Ascensãõ, Pedro Bizarro
HIGHLIGHT: We present a complete RNN framework to detect fraud in real-time, proposing an efficient ML pipeline from preprocessing to deployment.
- 306, TITLE: Attention based Multi-Modal New Product Sales Time-series Forecasting
<https://dl.acm.org/doi/abs/10.1145/3394486.3403362>
AUTHORS: Vijay Ekambaram, Kushagra Manglik, Sumanta Mukherjee, Surya Shravan Kumar Sajja, Satyam Dwivedi, Vikas Raykar
HIGHLIGHT: In this paper, we propose and empirically evaluate several novel attention-based multi-modal encoder-decoder models to forecast the sales for a new product purely based on product images, any available product attributes and also external factors like holidays, events, weather, and discount.
- 307, TITLE: Pest Management In Cotton Farms: An AI-System Case Study from the Global South
<https://dl.acm.org/doi/abs/10.1145/3394486.3403363>
AUTHORS: Aman Dalmia, Jerome White, Ankit Chaurasia, Vishal Agarwal, Rajesh Jain, Dhruvin Vora, Balasaheb Dhame, Raghu Dharmaraju, Rahul Panicker
HIGHLIGHT: We address this problem by presenting a new solution for pesticide management that uses deep learning, smartphone cameras, inexpensive pest traps, existing digital pipelines, and agricultural extension-worker programs.
- 308, TITLE: TIES: Temporal Interaction Embeddings for Enhancing Social Media Integrity at Facebook
<https://dl.acm.org/doi/abs/10.1145/3394486.3403364>
AUTHORS: Nima Noorshams, Saurabh Verma, Aude Hofleitner
HIGHLIGHT: In this paper, we present our efforts to protect various social media entities at Facebook from people who try to abuse our platform.
- 309, TITLE: Price Investment using Prescriptive Analytics and Optimization in Retail
<https://dl.acm.org/doi/abs/10.1145/3394486.3403365>
AUTHORS: Prakhar Mehrotra, Linsey Pang, Karthick Gopalswamy, Avinash Thangali, Timothy Winters, Ketki Gupte, Dnyanesh Kulkarni, Sunil Potnuru, Supreeth Shastry, Harshada Vuyyuri
HIGHLIGHT: In this paper, we apply Machine Learning (ML) algorithms and Operations Research techniques for forecasting and optimization to build a new price recommendation system, which improves our ability to generate price recommendations accurately and automatically.

- 310, TITLE: Climate Downscaling Using YNet: A Deep Convolutional Network with Skip Connections and Fusion
<https://dl.acm.org/doi/abs/10.1145/3394486.3403366>
AUTHORS: Yumin Liu, Auroop R. Ganguly, Jennifer Dy
HIGHLIGHT: In this paper, we proposed YNet, a novel deep convolutional neural network (CNN) with skip connections and fusion capabilities to perform downscaling for climate variables, on multiple GCMs directly rather than on reanalysis data.
- 311, TITLE: Cracking the Black Box: Distilling Deep Sports Analytics
<https://dl.acm.org/doi/abs/10.1145/3394486.3403367>
AUTHORS: Xiangyu Sun, Jack Davis, Oliver Schulte, Guiliang Liu
HIGHLIGHT: We propose and compare several scalable model tree learning heuristics to address the computational challenge from datasets with millions of data points.
- 312, TITLE: Taming Pretrained Transformers for Extreme Multi-label Text Classification
<https://dl.acm.org/doi/abs/10.1145/3394486.3403368>
AUTHORS: Wei-Cheng Chang, Hsiang-Fu Yu, Kai Zhong, Yiming Yang, Inderjit S. Dhillon
HIGHLIGHT: In this paper, we propose X-Transformer, the first scalable approach to fine-tuning deep transformer models for the XMC problem.
- 313, TITLE: Prediction of Hourly Earnings and Completion Time on a Crowdsourcing Platform
<https://dl.acm.org/doi/abs/10.1145/3394486.3403369>
AUTHORS: Anna Lioznova, Alexey Drutsa, Vladimir Kukushkin, Anastasia Bezzubtseva
HIGHLIGHT: We study the problem of predicting future hourly earnings and task completion time for a crowdsourcing platform user who sees the list of available tasks and wants to select one of them to execute.
- 314, TITLE: SimClusters: Community-Based Representations for Heterogeneous Recommendations at Twitter
<https://dl.acm.org/doi/abs/10.1145/3394486.3403370>
AUTHORS: Venu Satuluri, Yao Wu, Xun Zheng, Yilei Qian, Brian Wichers, Qieyun Dai, Gui Ming Tang, Jerry Jiang, Jimmy Lin
HIGHLIGHT: In this paper, we present SimClusters, a general-purpose representation layer based on overlapping communities into which users as well as heterogeneous content can be captured as sparse, interpretable vectors to support a multitude of recommendation tasks.
- 315, TITLE: Time-Aware User Embeddings as a Service
<https://dl.acm.org/doi/abs/10.1145/3394486.3403371>
AUTHORS: Martin Pavlovski, Jelena Gligorijevic, Ivan Stojkovic, Shubham Agrawal, Shabhareesh Komirishetty, Djordje Gligorijevic, Narayan Bhamidipati, Zoran Obradovic
HIGHLIGHT: To that end, we address the limitations of the current state-of-the-art self-supervised methods for task-independent (unsupervised) sequence embedding, and propose a novel Time-Aware Sequential Autoencoder (TASA) that accounts for the temporal aspects of sequences of activities.
- 316, TITLE: Shop The Look: Building a Large Scale Visual Shopping System at Pinterest
<https://dl.acm.org/doi/abs/10.1145/3394486.3403372>
AUTHORS: Raymond Shiau, Hao-Yu Wu, Eric Kim, Yue Li Du, Anqi Guo, Zhiyuan Zhang, Eileen Li, Kunlong Gu, Charles Rosenberg, Andrew Zhai
HIGHLIGHT: In this work, we provide a holistic view of how we built Shop The Look, a shopping oriented visual search system, along with lessons learned from addressing shopping needs.
- 317, TITLE: Dynamic Heterogeneous Graph Neural Network for Real-time Event Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403373>
AUTHORS: Wenjuan Luo, Han Zhang, Xiaodi Yang, Lin Bo, Xiaoqing Yang, Zang Li, Xiaohu Qie, Jieping Ye
HIGHLIGHT: In this paper, we propose to use dynamically constructed heterogeneous graph for each ongoing event to encode the attributes of the event and its surroundings.
- 318, TITLE: Bandit based Optimization of Multiple Objectives on a Music Streaming Platform
<https://dl.acm.org/doi/abs/10.1145/3394486.3403374>
AUTHORS: Rishabh Mehrotra, Niannan Xue, Mounia Lalmas
HIGHLIGHT: This paper aims at extending contextual bandits to multi-objective setting so as to power recommendations in a multi-stakeholder platforms.
- 319, TITLE: Multimodal Deep Learning Based Crop Classification Using Multispectral and Multitemporal Satellite Imagery

<https://dl.acm.org/doi/abs/10.1145/3394486.3403375>

AUTHORS: Krishna Karthik Gadiraju, Bharathkumar Ramachandra, Zexi Chen, Ranga Raju Vatsavai
HIGHLIGHT: In this paper, we present a multimodal deep learning solution that jointly exploits spatial-spectral and phenological properties to identify major crop types.

320, TITLE: BusTr: Predicting Bus Travel Times from Real-Time Traffic

<https://dl.acm.org/doi/abs/10.1145/3394486.3403376>

AUTHORS: Richard Barnes, Senaka Buthpitiya, James Cook, Alex Fabrikant, Andrew Tomkins, Fangzhou Xu
HIGHLIGHT: We present BusTr, a machine-learned model for translating road traffic forecasts into predictions of bus delays, used by Google Maps to serve the majority of the world's public transit systems where no official real-time bus tracking is provided.

321, TITLE: Characterizing and Learning Representation on Customer Contact Journeys in Cellular Services

<https://dl.acm.org/doi/abs/10.1145/3394486.3403377>

AUTHORS: Shuai Zhao, Wen-Ling Hsu, George Ma, Tan Xu, Guy Jacobson, Raif Rustamov
HIGHLIGHT: We propose to learn journey embeddings using a sequence-to-sequence framework that converts each customer journey into a fixed-length latent embedding.

322, TITLE: CrowdQuake: A Networked System of Low-Cost Sensors for Earthquake Detection via Deep Learning

<https://dl.acm.org/doi/abs/10.1145/3394486.3403378>

AUTHORS: Xin Huang, Jangsoo Lee, Young-Woo Kwon, Chul-Ho Lee
HIGHLIGHT: In this paper, we present CrowdQuake, a networked system based on low-cost acceleration sensors, which monitors ground motions and detects earthquakes, by developing a convolutional-recurrent neural network model.

323, TITLE: An Empirical Analysis of Backward Compatibility in Machine Learning Systems

<https://dl.acm.org/doi/abs/10.1145/3394486.3403379>

AUTHORS: Megha Srivastava, Besmira Nushi, Ece Kamar, Shital Shah, Eric Horvitz
HIGHLIGHT: We consider how updates, intended to improve ML models, can introduce new errors that can significantly affect downstream systems and users.

324, TITLE: DeepTriage: Automated Transfer Assistance for Incidents in Cloud Services

<https://dl.acm.org/doi/abs/10.1145/3394486.3403380>

AUTHORS: Phuong Pham, Vivek Jain, Lukas Dauterman, Justin Ormont, Navendu Jain
HIGHLIGHT: To address these challenges, we introduce DeepTriage, an intelligent incident transfer service combining multiple machine learning techniques - gradient boosted classifiers, clustering methods, and deep neural networks - in an ensemble to recommend the responsible team to triage an incident.

325, TITLE: An Automatic Approach for Generating Rich, Linked Geo-Metadata from Historical Map Images

<https://dl.acm.org/doi/abs/10.1145/3394486.3403381>

AUTHORS: Zekun Li, Yao-Yi Chiang, Sasan Tavakkol, Basel Shbita, Johannes H. Uhl, Stefan Leyk, Craig A. Knoblock
HIGHLIGHT: This paper presents an end-to-end approach to address the real-world problem of finding and indexing historical map images.

326, TITLE: Bootstrapping Complete The Look at Pinterest

<https://dl.acm.org/doi/abs/10.1145/3394486.3403382>

AUTHORS: Eileen Li, Eric Kim, Andrew Zhai, Josh Beal, Kunlong Gu
HIGHLIGHT: In this paper, we will describe how we bootstrapped the Complete The Look (CTL) system at Pinterest.

327, TITLE: Explainable Classification of Brain Networks via Contrast Subgraphs

<https://dl.acm.org/doi/abs/10.1145/3394486.3403383>

AUTHORS: Tommaso Lanciano, Francesco Bonchi, Aristides Gionis
HIGHLIGHT: In this paper we introduce a novel approach for classifying brain networks based on extracting contrast subgraphs, i.e., a set of vertices whose induced subgraphs are dense in one class of graphs and sparse in the other.

328, TITLE: Jointly Learning to Recommend and Advertise

<https://dl.acm.org/doi/abs/10.1145/3394486.3403384>

AUTHORS: Xiangyu Zhao, Xudong Zheng, Xiwang Yang, Xiaobing Liu, Jiliang Tang
HIGHLIGHT: To this end, in this paper, we propose a novel two-level reinforcement learning framework to jointly optimize the recommending and advertising strategies, where the first level generates a list of recommendations to optimize user experience in the long run; then the second level inserts ads into the recommendation list that can balance the immediate advertising revenue from advertisers and the negative influence of ads on long-term user experience.

- 329, TITLE: Fitbit for Chickens?: Time Series Data Mining Can Increase the Productivity of Poultry Farms
<https://dl.acm.org/doi/abs/10.1145/3394486.3403385>
AUTHORS: Alireza Abdoli, Sara Alaei, Shima Imani, Amy Murillo, Alec Gerry, Leslie Hickle, Eamonn Keogh
HIGHLIGHT: In this work, we propose a general-purpose framework to robustly learn and classify from datasets exhibiting these issues.
- 330, TITLE: CompactETA: A Fast Inference System for Travel Time Prediction
<https://dl.acm.org/doi/abs/10.1145/3394486.3403386>
AUTHORS: Kun Fu, Fanlin Meng, Jieping Ye, Zheng Wang
HIGHLIGHT: In this paper, we develop a novel ETA learning system named as CompactETA, which provides an accurate online travel time inference within 100 microseconds.
- 331, TITLE: Intelligent Exploration for User Interface Modules of Mobile App with Collective Learning
<https://dl.acm.org/doi/abs/10.1145/3394486.3403387>
AUTHORS: Jingbo Zhou, Zhenwei Tang, Min Zhao, Xiang Ge, Fuzheng Zhuang, Meng Zhou, Liming Zou, Chenglei Yang, Hui Xiong
HIGHLIGHT: To this end, we introduce FEELER, a framework to fast and intelligently explore design solutions of user interface modules with a collective machine learning approach.
- 332, TITLE: Gemini: A Novel and Universal Heterogeneous Graph Information Fusing Framework for Online Recommendations
<https://dl.acm.org/doi/abs/10.1145/3394486.3403388>
AUTHORS: Jixing Xu, Zhenlong Zhu, Jianxin Zhao, Xuanye Liu, Minghui Shan, Jiecheng Guo
HIGHLIGHT: To solve the above problems, we propose a universal and effective framework named Gemini, which only relies on the common interaction logs, avoiding the dependence on auxiliary information and ensuring a better generality.
- 333, TITLE: Hypergraph Convolutional Recurrent Neural Network
<https://dl.acm.org/doi/abs/10.1145/3394486.3403389>
AUTHORS: Jaehyuk Yi, Jinkyoo Park
HIGHLIGHT: In this study, we present a hypergraph convolutional recurrent neural network (HGC-RNN), which is a prediction model for structured time-series sensor network data.
- 334, TITLE: Towards Building an Intelligent Chatbot for Customer Service: Learning to Respond at the Appropriate Time
<https://dl.acm.org/doi/abs/10.1145/3394486.3403390>
AUTHORS: Che Liu, Junfeng Jiang, Chao Xiong, Yi Yang, Jieping Ye
HIGHLIGHT: In this paper, we propose a multi-turn response triggering model (MRTM) to address this problem.
- 335, TITLE: Ads Allocation in Feed via Constrained Optimization
<https://dl.acm.org/doi/abs/10.1145/3394486.3403391>
AUTHORS: Jinyun Yan, Zhiyuan Xu, Birjodh Tiwana, Shaunak Chatterjee
HIGHLIGHT: The paper describes how large-scale recommender system like feed ranking works, and why it is useful to consider ads allocation as a post-operation once the ranking of organic items and (separately) the ranking of ads are done.
- 336, TITLE: USAD: UnSupervised Anomaly Detection on Multivariate Time Series
<https://dl.acm.org/doi/abs/10.1145/3394486.3403392>
AUTHORS: Julien Audibert, Pietro Michiardi, Frédéric Guyard, Bastien Marti, Maria A. Zuluaga
HIGHLIGHT: In this paper, we propose a fast and stable method called UnSupervised Anomaly Detection for multivariate time series (USAD) based on adversely trained autoencoders.
- 337, TITLE: A Dual Heterogeneous Graph Attention Network to Improve Long-Tail Performance for Shop Search in E-Commerce
<https://dl.acm.org/doi/abs/10.1145/3394486.3403393>
AUTHORS: Xichuan Niu, Bofang Li, Chenliang Li, Rong Xiao, Haochuan Sun, Hongbo Deng, Zhenzhong Chen
HIGHLIGHT: Specifically, we propose a dual heterogeneous graph attention network (DHGAT) integrated with the two-tower architecture, using the user interaction data from both shop search and product search.
- 338, TITLE: Learning with Limited Labels via Momentum Damped & Differentially Weighted Optimization
<https://dl.acm.org/doi/abs/10.1145/3394486.3403394>
AUTHORS: Rishabh Mehrotra, Ashish Gupta

HIGHLIGHT: In this paper, we consider the task of learning from limited labeled data, wherein we aim at jointly leveraging strong supervision data (e.g. explicit judgments) along with weak supervision data (e.g. implicit feedback or labels from the related task) to train neural models.

339, **TITLE:** Learning to Simulate Human Mobility
<https://dl.acm.org/doi/abs/10.1145/3394486.3412862>
AUTHORS: Jie Feng, Zeyu Yang, Fengli Xu, Haisu Yu, Mudan Wang, Yong Li
HIGHLIGHT: To solve this problem, we propose a model-free generative adversarial framework, which effectively integrates the domain knowledge of human mobility regularity utilized in the model-based methods.

340, **TITLE:** Data-driven Simulation and Optimization for Covid-19 Exit Strategies
<https://dl.acm.org/doi/abs/10.1145/3394486.3412863>
AUTHORS: Salah Ghamizi, Renaud Rwemalika, Maxime Cordy, Lisa Veiber, Tegawendé, F. Bissyandée;, Mike Papadakis, Jacques Klein, Yves Le Traon
HIGHLIGHT: In this paper, we propose to augment epidemiological forecasting with actual data-driven models that will learn to fine-tune predictions for different contexts (e.g., per country).

341, **TITLE:** Understanding the Impact of the COVID-19 Pandemic on Transportation-related Behaviors with Human Mobility Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3412856>
AUTHORS: Jizhou Huang, Haifeng Wang, Miao Fan, An Zhuo, Yibo Sun, Ying Li
HIGHLIGHT: To be specific, we conduct data-driven analysis on transportation-related behaviors during the pandemic from the perspectives of 1) means of transportation, 2) type of visited venues, 3) check-in time of venues, 4) preference on "origin-destination" distance, and 5) "origin-transportation-destination" patterns.

342, **TITLE:** Simulating the Impact of Hospital Capacity and Social Isolation to Minimize the Propagation of Infectious Diseases
<https://dl.acm.org/doi/abs/10.1145/3394486.3412859>
AUTHORS: Shaon Bhatta Shuvo, Bonaventure C. Molokwu, Ziad Kobti
HIGHLIGHT: In this paper, we used artificial agent-based simulation modeling to identify the importance of social distancing and hospitals' capacity in terms of the number of beds to shorten the length of an outbreak and reduce the total number of infections and deaths during an epidemic.

343, **TITLE:** Effective Transfer Learning for Identifying Similar Questions: Matching User Questions to COVID-19 FAQs
<https://dl.acm.org/doi/abs/10.1145/3394486.3412861>
AUTHORS: Clara H. McCreery, Namit Katariya, Anitha Kannan, Manish Chablani, Xavier Amatriain
HIGHLIGHT: In this paper, we show how a double fine-tuning approach of pretraining a neural network on medical question-answer pairs followed by fine-tuning on medical question-question pairs is a particularly useful intermediate task for the ultimate goal of determining medical question similarity.

344, **TITLE:** Hi-COVIDNet: Deep Learning Approach to Predict Inbound COVID-19 Patients and Case Study in South Korea
<https://dl.acm.org/doi/abs/10.1145/3394486.3412864>
AUTHORS: Minseok Kim, Junhyeok Kang, Doyoung Kim, Hwanjun Song, Hyangsuk Min, Youngeun Nam, Dongmin Park, Jae-Gil Lee
HIGHLIGHT: In this paper, to aid in such allocation by predicting the number of inbound COVID-19 cases, we propose Hi-COVIDNet, which takes advantage of the geographic hierarchy.

345, **TITLE:** Exploring Automatic Diagnosis of COVID-19 from Crowdsourced Respiratory Sound Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3412865>
AUTHORS: Chloë, Brown, Jagmohan Chauhan, Andreas Grammenos, Jing Han, Apinan Hasthanasombat, Dimitris Spathis, Tong Xia, Pietro Cicuta, Cecilia Mascolo
HIGHLIGHT: In this paper we describe our data analysis over a large-scale crowdsourced dataset of respiratory sounds collected to aid diagnosis of COVID-19.

346, **TITLE:** Understanding the Urban Pandemic Spreading of COVID-19 with Real World Mobility Data
<https://dl.acm.org/doi/abs/10.1145/3394486.3412860>
AUTHORS: Qianyue Hao, Lin Chen, Fengli Xu, Yong Li
HIGHLIGHT: To address these challenges, we build a data-driven epidemic simulator with COVID-19 specific features, which incorporates real-world mobility data capturing the heterogeneity in urban environments.