

- 1, TITLE: The Power of (Statistical) Relational Thinking  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539216>  
AUTHORS: Lise Getoor  
HIGHLIGHT: In this talk, I will give an introduction to the field of Statistical Relational Learning (SRL), and I'll identify useful tips and tricks for exploiting structure in both the input and output space.
- 2, TITLE: AI for Social Impact: Results from Deployments for Public Health and Conversation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539217>  
AUTHORS: Milind Tambe  
HIGHLIGHT: I will focus on domains of public health and conservation, and address one key cross-cutting challenge: how to effectively deploy our limited intervention resources in these problem domains. I will present results from work around the globe in using AI for challenges in public health such as Maternal and Child care interventions, HIV prevention, and in conservation such as endangered wildlife protection.
- 3, TITLE: Beyond Traditional Characterizations in the Age of Data: Big Models, Scalable Algorithms, and Meaningful Solutions  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539510>  
AUTHORS: Shang-Hua Teng  
HIGHLIGHT: Thus, scalability, not just polynomial-time computability, should be elevated as the central complexity notion for characterizing efficient computation. In this talk, I will discuss some aspects of these challenges.
- 4, TITLE: GBPNet: Universal Geometric Representation Learning on Protein Structures  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539441>  
AUTHORS: Sarp Aykent, Tian Xia  
HIGHLIGHT: In this work, we introduce geometric bottleneck perceptron, and a general  $SO(3)$ -equivariant message passing neural network built on top of it for protein structure representation learning.
- 5, TITLE: Saliency-Regularized Deep Multi-Task Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539442>  
AUTHORS: Guangji Bai, Liang Zhao  
HIGHLIGHT: To address these challenges, this paper proposes a new multi-task learning framework that jointly learns latent features and explicit task relations by complementing the strength of existing shallow and deep multitask learning scenarios.
- 6, TITLE: Submodular Feature Selection for Partial Label Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539292>  
AUTHORS: Wei-Xuan Bao, Jun-Yi Hang, Min-Ling Zhang  
HIGHLIGHT: In this paper, the first attempt towards partial label feature selection is investigated via mutual-information-based dependency maximization.
- 7, TITLE: Motif Prediction with Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539343>  
AUTHORS: Maciej Besta, Raphael Grob, Cesare Miglioli, Nicola Bernold, Grzegorz Kwasniewski, Gabriel Gjini, Raghavendra Kanakagiri, Saleh Ashkboos, Lukas Gianinazzi, Nikoli Dryden, Torsten Hoefler  
HIGHLIGHT: We first show that existing link prediction schemes fail to effectively predict motifs. To alleviate this, we establish a general motif prediction problem and we propose several heuristics that assess the chances for a specified motif to appear.
- 8, TITLE: Practical Lossless Federated Singular Vector Decomposition over Billion-Scale Data  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539402>  
AUTHORS: Di Chai, Leye Wang, Junxue Zhang, Liu Yang, Shuwei Cai, Kai Chen, Qiang Yang  
HIGHLIGHT: In this paper, we propose FedSVD, a practical lossless federated SVD method over billion-scale data, which can simultaneously achieve lossless accuracy and high efficiency.
- 9, TITLE: Avoiding Biases due to Similarity Assumptions in Node Embeddings  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539287>  
AUTHORS: Deepayan Chakrabarti  
HIGHLIGHT: Our proposed embedding, called NEWS, makes no similarity assumptions, avoiding potential risks to privacy and fairness.
- 10, TITLE: Open-Domain Aspect-Opinion Co-Mining with Double-Layer Span Extraction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539386>  
AUTHORS: Mohna Chakraborty, Adithya Kulkarni, Qi Li  
HIGHLIGHT: We propose an Open-Domain Aspect-Opinion Co-Mining (ODAO) method with a Double-Layer span extraction framework.
- 11, TITLE: Multi-Variate Time Series Forecasting on Variable Subsets  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539394>  
AUTHORS: Jatin Chauhan, Aravindan Raghuvver, Rishi Saket, Jay Nandy, Balaraman Ravindran  
HIGHLIGHT: We propose a non-parametric, wrapper technique that can be applied on top any existing forecast models.
- 12, TITLE: FedMSplit: Correlation-Adaptive Federated Multi-Task Learning across Multimodal Split Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539384>

- AUTHORS: Jiayi Chen, Aidong Zhang  
HIGHLIGHT: In this paper, we address a novel challenging issue in MFL, the modality incongruity, where clients may have heterogeneous setups of sensors and their local data consists of different combinations of modalities.
- 13, TITLE: Efficient Join Order Selection Learning with Graph-based Representation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539303>  
AUTHORS: Jin Chen, Guanyu Ye, Yan Zhao, Shuncheng Liu, Liwei Deng, Xu Chen, Rui Zhou, Kai Zheng  
HIGHLIGHT: In this paper, we propose a novel framework, namely efficient Join Order selection learninG with Graph-basEd Representation (JOGGER).
- 14, TITLE: Knowledge-enhanced Black-box Attacks for Recommendations  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539359>  
AUTHORS: Jingfan Chen, Wenqi Fan, Guanghui Zhu, Xiangyu Zhao, Chunfeng Yuan, Qing Li, Yihua Huang  
HIGHLIGHT: More specifically, we propose a knowledge graph-enhanced black-box attacking framework (KGAttack) to effectively learn attacking policies through deep reinforcement learning techniques, in which knowledge graph is seamlessly integrated into hierarchical policy networks to generate fake user profiles for performing adversarial black-box attacks.
- 15, TITLE: Multi-modal Siamese Network for Entity Alignment  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539244>  
AUTHORS: Liyi Chen, Zhi Li, Tong Xu, Han Wu, Zhefeng Wang, Nicholas Jing Yuan, Enhong Chen  
HIGHLIGHT: To deal with that problem, in this paper, we propose a novel Multi-modal Siamese Network for Entity Alignment (MSNEA) to align entities in different MMKGs, in which multi-modal knowledge could be comprehensively leveraged by the exploitation of inter-modal effect.
- 16, TITLE: Efficient Orthogonal Multi-view Subspace Clustering  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539282>  
AUTHORS: Man-Sheng Chen, Chang-Dong Wang, Dong Huang, Jian-Huang Lai, Philip S. Yu  
HIGHLIGHT: How to learn a set of high-quality orthogonal bases in a unified framework, while maintaining its scalability for very large datasets, remains a big challenge. In view of this, we propose an Efficient Orthogonal Multi-view Subspace Clustering (OMSC) model with almost linear complexity.
- 17, TITLE: Scalar is Not Enough: Vectorization-based Unbiased Learning to Rank  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539468>  
AUTHORS: Mouxiang Chen, Chenghao Liu, Zemin Liu, Jianling Sun  
HIGHLIGHT: In this paper, we propose a vector-based EH and formulate the click probability as a dot product of two vector functions.
- 18, TITLE: Learning to Rotate: Quaternion Transformer for Complicated Periodical Time Series Forecasting  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539234>  
AUTHORS: Weiqi Chen, Wenwei Wang, Bingqing Peng, Qingsong Wen, Tian Zhou, Liang Sun  
HIGHLIGHT: To address these challenges, we design an innovative framework Quaternion Transformer (Quatformer), along with three major components: 1). learning-to-rotate attention (LRA) based on quaternions which introduces learnable period and phase information to depict intricate periodical patterns. 2). trend normalization to normalize the series representations in hidden layers of the model considering the slowly varying characteristic of trend. 3). decoupling LRA using global memory to achieve linear complexity without losing prediction accuracy.
- 19, TITLE: Efficient Approximate Algorithms for Empirical Variance with Hashed Block Sampling  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539377>  
AUTHORS: Xingguang Chen, Fangyuan Zhang, Sibao Wang  
HIGHLIGHT: Based on our sampling strategy, we present an approximate algorithm for empirical variance and an approximate top-k algorithm to return the k columns with the highest empirical variance scores.
- 20, TITLE: Learning Binarized Graph Representations with Multi-faceted Quantization Reinforcement for Top-K Recommendation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539452>  
AUTHORS: Yankai Chen, Huifeng Guo, Yingxue Zhang, Chen Ma, Ruiming Tang, Jingjie Li, Irwin King  
HIGHLIGHT: In this paper, we propose a novel quantization framework to learn Binarized Graph Representations for Top-K Recommendation (BiGear).
- 21, TITLE: RLogic: Recursive Logical Rule Learning from Knowledge Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539421>  
AUTHORS: Kewei Cheng, Jiahao Liu, Wei Wang, Yizhou Sun  
HIGHLIGHT: Instead of completely relying on rule instances for rule evaluation, RLogic defines a predicate representation learning-based scoring model, which is trained by sampled rule instances. In addition, RLogic incorporates one of the most significant properties of logical rules, the deductive nature, into rule learning, which is critical especially when a rule lacks supporting evidence.
- 22, TITLE: Sufficient Vision Transformer  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539322>  
AUTHORS: Zhi Cheng, Xiu Su, Xueyu Wang, Shan You, Chang Xu

**HIGHLIGHT:** Nevertheless, task-irrelevant information such as background nuisance and noise in patch tokens would damage the performance of ViT-based models. In this paper, we develop Sufficient Vision Transformer (Suf-ViT) as a new solution to address this issue.

23, **TITLE:** HyperAid: Denoising in Hyperbolic Spaces for Tree-fitting and Hierarchical Clustering  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539378>

**AUTHORS:** Eli Chien, Puoya Tabaghi, Olga Milenkovic

**HIGHLIGHT:** First, we propose a new approach to tree-metric denoising (HyperAid) in hyperbolic spaces which transforms the original data into data that is "more" tree-like, when evaluated in terms of Gromov's  $d$  hyperbolicity. Second, we perform an ablation study involving two choices for the approximation objective,  $l_p$  norms and the Dasgupta loss. Third, we integrate HyperAid with schemes for enforcing nonnegative edge-weights.

24, **TITLE:** TARNet: Task-Aware Reconstruction for Time-Series Transformer  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539329>

**AUTHORS:** Ranak Roy Chowdhury, Xiyuan Zhang, Jingbo Shang, Rajesh K. Gupta, Dezhi Hong

**HIGHLIGHT:** In this work, we propose TARNet, Task-Aware Reconstruction Network, a new model using Transformers to learn task-aware data reconstruction that augments end-task performance.

25, **TITLE:** Scalable Differentially Private Clustering via Hierarchically Separated Trees  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539409>

**AUTHORS:** Vincent Cohen-Addad, Alessandro Epasto, Silvio Lattanzi, Vahab Mirrokni, Andres Munoz Medina, David Saupic, Chris Schwiegelshohn, Sergei Vassilvitskii

**HIGHLIGHT:** We study the private  $k$ -median and  $k$ -means clustering problem in  $d$  dimensional Euclidean space.

26, **TITLE:** Noisy Interactive Graph Search  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539267>

**AUTHORS:** Qianhao Cong, Jing Tang, Kai Han, Yuming Huang, Lei Chen, Yeow Meng Chee

**HIGHLIGHT:** Our objective in this problem is to minimize the query complexity while ensuring accuracy. We propose a method to select the query node such that we can push the search process as much as possible and an online method to infer which node is the target after collecting a new answer.

27, **TITLE:** Collaboration Equilibrium in Federated Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539237>

**AUTHORS:** Sen Cui, Jian Liang, Weishen Pan, Kun Chen, Changshui Zhang, Fei Wang

**HIGHLIGHT:** We propose the concept of benefit graph which describes how each client can benefit from collaborating with other clients and advance a Pareto optimization approach to identify the optimal collaborators.

28, **TITLE:** A Generalized Doubly Robust Learning Framework for Debiasing Post-Click Conversion Rate Prediction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539270>

**AUTHORS:** Quanyu Dai, Haoxuan Li, Peng Wu, Zhenhua Dong, Xiao-Hua Zhou, Rui Zhang, Rui Zhang, Jie Sun

**HIGHLIGHT:** Based on the framework, we propose two new DR methods, namely DR-BIAS and DR-MSE.

29, **TITLE:** Discovering Significant Patterns under Sequential False Discovery Control  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539398>

**AUTHORS:** Sebastian Dalleiger, Jilles Vreeken

**HIGHLIGHT:** We are interested in discovering those patterns from data with an empirical frequency that is significantly differently than expected.

30, **TITLE:** Debiasing the Cloze Task in Sequential Recommendation with Bidirectional Transformers  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539430>

**AUTHORS:** Khalil Damak, Sami Khenissi, Olfa Nasraoui

**HIGHLIGHT:** In this work, we argue and prove that IPS does not extend to sequential recommendation because it fails to account for the temporal nature of the problem.

31, **TITLE:** Framing Algorithmic Recourse for Anomaly Detection  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539344>

**AUTHORS:** Debanjan Datta, Feng Chen, Naren Ramakrishnan

**HIGHLIGHT:** We present an approach-Context preserving Algorithmic Recourse for Anomalies in Tabular data(CARAT), that is effective, scalable, and agnostic to the underlying anomaly detection model.

32, **TITLE:** Robust Event Forecasting with Spatiotemporal Confounder Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539427>

**AUTHORS:** Songgaojun Deng, Huzefa Rangwala, Yue Ning

**HIGHLIGHT:** In this work, we introduce a deep learning framework that integrates causal effect estimation into event forecasting.

33, **TITLE:** Addressing Unmeasured Confounder for Recommendation with Sensitivity Analysis  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539240>

**AUTHORS:** Sihao Ding, Peng Wu, Fuli Feng, Yitong Wang, Xiangnan He, Yong Liao, Yongdong Zhang

**HIGHLIGHT:** This work combats the risk of unmeasured confounders in recommender systems. Towards this end, we propose Robust Deconfounder (RD) that accounts for the effect of unmeasured confounders on propensities, under the mild assumption that the effect is bounded.

34, **TITLE:** On Structural Explanation of Bias in Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539319>  
**AUTHORS:** Yushun Dong, Song Wang, Yu Wang, Tyler Derr, Jundong Li  
**HIGHLIGHT:** In this paper, we study a novel research problem of structural explanation of bias in GNNs.

35, **TITLE:** Fair Labeled Clustering  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539451>  
**AUTHORS:** Seyed A. Esmaili, Sharmila Duppala, John P. Dickerson, Brian Brubach  
**HIGHLIGHT:** To ensure group fairness in such a setting, we would desire proportional group representation in every label but not necessarily in every cluster as is done in group fair clustering. We provide algorithms for such problems and show that in contrast to their NP-hard counterparts in group fair clustering, they permit efficient solutions.

36, **TITLE:** On Aligning Tuples for Regression  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539373>  
**AUTHORS:** Chenguang Fang, Shaoxu Song, Yinan Mei, Ye Yuan, Jianmin Wang  
**HIGHLIGHT:** To deal with timestamp variations, existing time series matching techniques rely on the similarity of values and timestamps, which unfortunately are very likely to be absent among the variables in regression (no similarity between engine torque and speed values). In this sense, we propose to bridge tuple alignment and regression.

37, **TITLE:** Spatio-Temporal Trajectory Similarity Learning in Road Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539375>  
**AUTHORS:** Ziquan Fang, Yuntao Du, Xinjun Zhu, Danlei Hu, Lu Chen, Yunjun Gao, Christian S. Jensen  
**HIGHLIGHT:** However, existing learning-based trajectory similarity learning solutions prioritize spatial similarity over temporal similarity, making them suboptimal for time-aware analyses. To this end, we propose ST2Vec, a representation learning based solution that considers fine-grained spatial and temporal relations between trajectories to enable spatio-temporal similarity computation in road networks.

38, **TITLE:** FreeKD: Free-direction Knowledge Distillation for Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539320>  
**AUTHORS:** Kaituo Feng, Changsheng Li, Ye Yuan, Guoren Wang  
**HIGHLIGHT:** In this paper, we propose the first Free-direction Knowledge Distillation framework via Reinforcement learning for GNNs, called FreeKD, which is no longer required to provide a deeper well-optimized teacher GNN. The core idea of our work is to collaboratively build two shallower GNNs in an effort to exchange knowledge between them via reinforcement learning in a hierarchical way.

39, **TITLE:** Meta-Learned Metrics over Multi-Evolution Temporal Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539313>  
**AUTHORS:** Dongqi Fu, Liri Fang, Ross Maciejewski, Vette I. Torvik, Jingrui He  
**HIGHLIGHT:** To learn a good metric over temporal graphs, we propose a temporal graph metric learning framework, Temp-GFSM.

40, **TITLE:** SIFP: Sampling Method for Inverse Protein Folding  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539284>  
**AUTHORS:** Tianfan Fu, Jimeng Sun  
**HIGHLIGHT:** To address the issues, we propose a sampling method for inverse protein folding (SIFP).

41, **TITLE:** Antibody Complementarity Determining Regions (CDRs) design using Constrained Energy Model  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539285>  
**AUTHORS:** Tianfan Fu, Jimeng Sun  
**HIGHLIGHT:** However, the existing methods faced the challenges of maintaining the specific geometry shape of the CDR loops. This paper proposes a Constrained Energy Model (CEM) to address this issue.

42, **TITLE:** Optimal Interpretable Clustering Using Oblique Decision Trees  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539361>  
**AUTHORS:** Magzhan Gabidolla, Miguel & Aacute;, Carreira-Perpi&ntilde;&aacute;n  
**HIGHLIGHT:** Here, we focus on the relatively unexplored case of interpretable clustering.

43, **TITLE:** Finding Meta Winning Ticket to Train Your MAML  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539467>  
**AUTHORS:** Dawei Gao, Yuexiang Xie, Zimu Zhou, Zhen Wang, Yaliang Li, Bolin Ding  
**HIGHLIGHT:** In this paper, to achieve rapid learning with less computational cost, we explore LTH in the context of meta learning.

44, **TITLE:** ClusterEA: Scalable Entity Alignment with Stochastic Training and Normalized Mini-batch Similarities  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539331>  
**AUTHORS:** Yunjun Gao, Xiaoze Liu, Junyang Wu, Tianyi Li, Pengfei Wang, Lu Chen

**HIGHLIGHT:** However, the increasing scale of KGs renders it hard for EA models to adopt the normalization processes, thus limiting their usage in real-world applications. To tackle this challenge, we present ClusterEA, a general framework that is capable of scaling up EA models and enhancing their results by leveraging normalization methods on mini-batches with a high entity equivalent rate.

45, **TITLE:** RES: A Robust Framework for Guiding Visual Explanation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539419>

**AUTHORS:** Yuyang Gao, Tong Steven Sun, Guangji Bai, Siyi Gu, Sungsoo Ray Hong, Zhao Liang

**HIGHLIGHT:** To address the challenges, we propose a generic RES framework for guiding visual explanation by developing a novel objective that handles inaccurate boundary, incomplete region, and inconsistent distribution of human annotations, with a theoretical justification on model generalizability.

46, **TITLE:** Disentangled Ontology Embedding for Zero-shot Learning

<https://dl.acm.org/doi/abs/10.1145/3534678.3539453>

**AUTHORS:** Yuxia Geng, Jiaoyan Chen, Wen Zhang, Yajing Xu, Zhuo Chen, Jeff Z. Pan, Yufeng Huang, Feiyu Xiong, Huajun Chen

**HIGHLIGHT:** In this paper, we focus on ontologies for augmenting ZSL, and propose to learn disentangled ontology embeddings guided by ontology properties to capture and utilize more fine-grained class relationships in different aspects.

47, **TITLE:** PARSRec: Explainable Personalized Attention-fused Recurrent Sequential Recommendation Using Session Partial Actions

<https://dl.acm.org/doi/abs/10.1145/3534678.3539432>

**AUTHORS:** Ehsan Gholami, Mohammad Motamedi, Ashwin Aravindakshan

**HIGHLIGHT:** This approach, while effective, is oblivious to subtle idiosyncrasies that differentiate humans from each other. Focusing on this observation, we propose an architecture that relies on common patterns as well as individual behaviors to tailor its recommendations for each person.

48, **TITLE:** Robust Inverse Framework using Knowledge-guided Self-Supervised Learning: An application to Hydrology

<https://dl.acm.org/doi/abs/10.1145/3534678.3539448>

**AUTHORS:** Rahul Ghosh, Arvind Renganathan, Kshitij Tayal, Xiang Li, Ankush Khandelwal, Xiaowei Jia, Christopher Duffy, John Nieber, Vipin Kumar

**HIGHLIGHT:** Existing basin characteristics suffer from noise and uncertainty, among many other things, which adversely impact model performance. To tackle the above challenges, in this paper, we propose a novel Knowledge-guided Self-Supervised Learning (KGSSL) inverse framework to extract system characteristics from driver(input) and response(output) data.

49, **TITLE:** Subset Node Anomaly Tracking over Large Dynamic Graphs

<https://dl.acm.org/doi/abs/10.1145/3534678.3539389>

**AUTHORS:** Xingzhi Guo, Baojian Zhou, Steven Skiena

**HIGHLIGHT:** This paper proposes DynAnom, an efficient framework to quantify the changes and localize per-node anomalies over large dynamic weighted-graphs.

50, **TITLE:** BLISS: A Billion scale Index using Iterative Re-partitioning

<https://dl.acm.org/doi/abs/10.1145/3534678.3539414>

**AUTHORS:** Gaurav Gupta, Tharun Medini, Anshumali Shrivastava, Alexander J. Smola

**HIGHLIGHT:** To improve the trade-off, we propose a new algorithm, called BaLanced Index for Scalable Search (BLISS), a highly tunable indexing algorithm with enviably small index sizes, making it easy to scale to billions of vectors.

51, **TITLE:** ProActive: Self-Attentive Temporal Point Process Flows for Activity Sequences

<https://dl.acm.org/doi/abs/10.1145/3534678.3539477>

**AUTHORS:** Vinayak Gupta, Srikanta Bedathur

**HIGHLIGHT:** In this paper, we present ProActive, a neural marked temporal point process (MTPP) framework for modeling the continuous-time distribution of actions in an activity sequence while simultaneously addressing three high-impact problems - next action prediction, sequence-goal prediction, and end-to-end sequence generation.

52, **TITLE:** Connecting Low-Loss Subspace for Personalized Federated Learning

<https://dl.acm.org/doi/abs/10.1145/3534678.3539254>

**AUTHORS:** Seok-Ju Hahn, Minwoo Jeong, Junghye Lee

**HIGHLIGHT:** We proposed SuPerFed, a personalized federated learning method that induces an explicit connection between the optima of the local and the federated model in weight space for boosting each other.

53, **TITLE:** Continuous-Time and Multi-Level Graph Representation Learning for Origin-Destination Demand Prediction

<https://dl.acm.org/doi/abs/10.1145/3534678.3539273>

**AUTHORS:** Liangzhe Han, Xiaojian Ma, Leilei Sun, Bowen Du, Yanjie Fu, Weifeng Lv, Hui Xiong

**HIGHLIGHT:** Among them, the pairwise Origin-Destination (OD) demand prediction is a valuable but challenging problem due to several factors: (i) the large number of possible OD pairs, (ii) implicitness of spatial dependence, and (iii) complexity of traffic states. To address the above issues, this paper proposes a Continuous-time and Multi-level dynamic graph representation learning method for Origin-Destination demand prediction (CMOD).

54, **TITLE:** Streaming Hierarchical Clustering Based on Point-Set Kernel

<https://dl.acm.org/doi/abs/10.1145/3534678.3539323>

- AUTHORS: Xin Han, Ye Zhu, Kai Ming Ting, De-Chuan Zhan, Gang Li  
HIGHLIGHT: This is because they rely on pairwise point-based similarity calculations and the similarity measure is independent of data distribution. In this paper, we aim to overcome these weaknesses and propose a novel efficient hierarchical clustering called StreakKHC that enables massive streaming data to be mined.
- 55, TITLE: Compressing Deep Graph Neural Networks via Adversarial Knowledge Distillation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539315>  
AUTHORS: Huarui He, Jie Wang, Zhanqiu Zhang, Feng Wu  
HIGHLIGHT: However, using the same distance for graphs of various structures may be unfit, and the optimal distance formulation is hard to determine. To tackle these problems, we propose a novel Adversarial Knowledge Distillation framework for graph models named GraphAKD, which adversarially trains a discriminator and a generator to adaptively detect and decrease the discrepancy.
- 56, TITLE: Partial Label Learning with Semantic Label Representations  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539434>  
AUTHORS: Shuo He, Lei Feng, Fengmao Lv, Wen Li, Guowu Yang  
HIGHLIGHT: In this paper, we propose a novel framework partial label learning with semantic label representations dubbed ParSE, which consists of two synergistic processes, including visual-semantic representation learning and powerful label disambiguation.
- 57, TITLE: Quantifying and Reducing Registration Uncertainty of Spatial Vector Labels on Earth Imagery  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539410>  
AUTHORS: Wenchong He, Zhe Jiang, Marcus Kriby, Yiqun Xie, Xiaowei Jia, Da Yan, Yang Zhou  
HIGHLIGHT: To fill the gap, this paper proposes a novel learning framework that explicitly quantifies vector labels' registration uncertainty.
- 58, TITLE: Core-periphery Partitioning and Quantum Annealing  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539261>  
AUTHORS: Catherine F. Higham, Desmond J. Higham, Francesco Tudisco  
HIGHLIGHT: We propose a new kernel that quantifies success for the task of computing a core-periphery partition for an undirected network.
- 59, TITLE: AdaAX: Explaining Recurrent Neural Networks by Learning Automata with Adaptive States  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539356>  
AUTHORS: Dat Hong, Alberto Maria Segre, Tong Wang  
HIGHLIGHT: We propose a new method to construct deterministic finite automata to explain RNN.
- 60, TITLE: Towards Universal Sequence Representation Learning for Recommender Systems  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539381>  
AUTHORS: Yupeng Hou, Shanlei Mu, Wayne Xin Zhao, Yaliang Li, Bolin Ding, Ji-Rong Wen  
HIGHLIGHT: In order to develop effective sequential recommenders, a series of sequence representation learning (SRL) methods are proposed to model historical user behaviors.
- 61, TITLE: GraphMAE: Self-Supervised Masked Graph Autoencoders  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539321>  
AUTHORS: Zhenyu Hou, Xiao Liu, Yukuo Cen, Yuxiao Dong, Hongxia Yang, Chunjie Wang, Jie Tang  
HIGHLIGHT: In this paper, we identify and examine the issues that negatively impact the development of GAEs, including their reconstruction objective, training robustness, and error metric.
- 62, TITLE: Few-Shot Fine-Grained Entity Typing with Automatic Label Interpretation and Instance Generation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539443>  
AUTHORS: Jiaxin Huang, Yu Meng, Jiawei Han  
HIGHLIGHT: In this work, we propose a novel framework for few-shot FET consisting of two modules: (1) an entity type label interpretation module automatically learns to relate type labels to the vocabulary by jointly leveraging few-shot instances and the label hierarchy, and (2) a type-based contextualized instance generator produces new instances based on given instances to enlarge the training set for better generalization.
- 63, TITLE: LinE: Logical Query Reasoning over Hierarchical Knowledge Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539338>  
AUTHORS: Zijian Huang, Meng-Fen Chiang, Wang-Chien Lee  
HIGHLIGHT: To bridge the gap, we propose a logical query reasoning framework, Line Embedding (LinE), for FOL queries.
- 64, TITLE: Local Evaluation of Time Series Anomaly Detection Algorithms  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539339>  
AUTHORS: Alexis Huet, Jose Manuel Navarro, Dario Rossi  
HIGHLIGHT: To cope with the above problems, we propose a theoretically grounded, robust, parameter-free and interpretable extension to precision/recall metrics, based on the concept of "affiliation" between the ground truth and the prediction sets.
- 65, TITLE: Low-rank Nonnegative Tensor Decomposition in Hyperbolic Space  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539317>

- AUTHORS: Bo Hui, Wei-Shinn Ku  
HIGHLIGHT: In this paper, we propose to decompose tensor in hyperbolic space.
- 66, TITLE: Global Self-Attention as a Replacement for Graph Convolution  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539296>  
AUTHORS: Md Shamim Hussain, Mohammed J. Zaki, Dharmashankar Subramanian  
HIGHLIGHT: We propose an extension to the transformer neural network architecture for general-purpose graph learning by adding a dedicated pathway for pairwise structural information, called edge channels.
- 67, TITLE: Flexible Modeling and Multitask Learning using Differentiable Tree Ensembles  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539412>  
AUTHORS: Shibal Ibrahim, Hussein Hazimeh, Rahul Mazumder  
HIGHLIGHT: We propose a flexible framework for learning tree ensembles, which goes beyond existing toolkits to support arbitrary loss functions, missing responses, and multi-task learning.
- 68, TITLE: Dual-Geometric Space Embedding Model for Two-View Knowledge Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539350>  
AUTHORS: Roshni G. Iyer, Yunsheng Bai, Wei Wang, Yizhou Sun  
HIGHLIGHT: For works that seek to put both views of the KG together, the instance and ontology views are assumed to belong to the same geometric space, such as all nodes embedded in the same Euclidean space or non-Euclidean product space, an assumption no longer reasonable for two-view KGs where different portions of the graph exhibit different structures. To address this issue, we define and construct a dual-geometric space embedding model (DGS) that models two-view KGs using a complex non-Euclidean geometric space, by embedding different portions of the KG in different geometric spaces.
- 69, TITLE: Detecting Cash-out Users via Dense Subgraphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539252>  
AUTHORS: Yingsheng Ji, Zheng Zhang, Xinlei Tang, Jiachen Shen, Xi Zhang, Guangwen Yang  
HIGHLIGHT: In this paper, we focus on discerning fraudulent cash-out users by taking advantage of only the personal credit card data from banks.
- 70, TITLE: A Spectral Representation of Networks: The Path of Subgraphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539433>  
AUTHORS: Shengmin Jin, Hao Tian, Jiayu Li, Reza Zafarani  
HIGHLIGHT: However, sometimes networks with different structures or sizes can have the same or similar spectral moments, not to mention the existence of the cospectral graphs. To address such problems, we propose a 3D network representation that relies on the spectral information of subgraphs: the Spectral Path, a path connecting the spectral moments of the network and those of its subgraphs of different sizes.
- 71, TITLE: Feature Overcorrelation in Deep Graph Neural Networks: A New Perspective  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539445>  
AUTHORS: Wei Jin, Xiaorui Liu, Yao Ma, Charu Aggarwal, Jiliang Tang  
HIGHLIGHT: In this paper, we propose a new perspective to look at the performance degradation of deep GNNs, i.e., feature overcorrelation.
- 72, TITLE: Condensing Graphs via One-Step Gradient Matching  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539429>  
AUTHORS: Wei Jin, Xianfeng Tang, Haoming Jiang, Zheng Li, Danqing Zhang, Jiliang Tang, Bing Yin  
HIGHLIGHT: To bridge the gap, we investigate efficient dataset condensation tailored for graph datasets where we model the discrete graph structure as a probabilistic model.
- 73, TITLE: Selective Cross-City Transfer Learning for Traffic Prediction via Source City Region Re-Weighting  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539250>  
AUTHORS: Yilun Jin, Kai Chen, Qiang Yang  
HIGHLIGHT: To address the problem, we propose CrossTReS, a selective transfer learning framework for traffic prediction that adaptively re-weights source regions to assist target fine-tuning.
- 74, TITLE: JuryGCN: Quantifying Jackknife Uncertainty on Graph Convolutional Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539286>  
AUTHORS: Jian Kang, Qinghai Zhou, Hanghang Tong  
HIGHLIGHT: In this paper, we propose the first frequentist-based approach named JuryGCN in quantifying the uncertainty of GCN, where the key idea is to quantify the uncertainty of a node as the width of confidence interval by a jackknife estimator.
- 75, TITLE: HyperLogLogLog: Cardinality Estimation With One Log More  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539246>  
AUTHORS: Matti Karppa, Rasmus Pagh  
HIGHLIGHT: We present HyperLogLogLog, a practical compression of the HyperLogLog sketch that compresses the sketch from  $O(m \log n)$  bits down to  $m \log_2 \log_2 m + O(m \log n)$  bits for estimating the number of distinct elements using  $m$  registers.
- 76, TITLE: SOS: Score-based Oversampling for Tabular Data

<https://dl.acm.org/doi/abs/10.1145/3534678.3539454>

**AUTHORS:** Jayoung Kim, Chaejeong Lee, Yehjin Shin, Sewon Park, Minjung Kim, Noseong Park, Jihoon Cho  
**HIGHLIGHT:** SGMs are known to surpass other generative models, e.g., generative adversarial networks (GANs) and variational autoencoders (VAEs). Being inspired by their big success, in this work, we fully customize them for generating fake tabular data.

77, **TITLE:** CoRGi: Content-Rich Graph Neural Networks with Attention

<https://dl.acm.org/doi/abs/10.1145/3534678.3539306>

**AUTHORS:** Jooyeon Kim, Angus Lamb, Simon Woodhead, Simon Peyton Jones, Cheng Zhang, Miltiadis Allamanis  
**HIGHLIGHT:** However, when processing graphs with graph neural networks (GNN), such information is either ignored or summarized into a single vector representation used to initialize the GNN. Towards addressing this, we present CoRGi, a GNN that considers the rich data within nodes in the context of their neighbors.

78, **TITLE:** Learned Token Pruning for Transformers

<https://dl.acm.org/doi/abs/10.1145/3534678.3539260>

**AUTHORS:** Sehoon Kim, Sheng Shen, David Thorsley, Amir Gholami, Woosuk Kwon, Joseph Hassoun, Kurt Keutzer  
**HIGHLIGHT:** Efficient deployment of transformer models in practice is challenging due to their inference cost including memory footprint, latency, and power consumption, which scales quadratically with input sequence length. To address this, we present a novel token reduction method dubbed Learned Token Pruning (LTP) which adaptively removes unimportant tokens as an input sequence passes through transformer layers.

79, **TITLE:** ExMeshCNN: An Explainable Convolutional Neural Network Architecture for 3D Shape Analysis

<https://dl.acm.org/doi/abs/10.1145/3534678.3539463>

**AUTHORS:** Seonggyeom Kim, Dong-Kyu Chae  
**HIGHLIGHT:** In this paper, we propose ExMeshCNN, a novel and explainable CNN structure for learning 3D meshes.

80, **TITLE:** In Defense of Core-set: A Density-aware Core-set Selection for Active Learning

<https://dl.acm.org/doi/abs/10.1145/3534678.3539476>

**AUTHORS:** Yeachan Kim, Bonggun Shin  
**HIGHLIGHT:** In this work, we analyze the feature space through the lens of density and, interestingly, observe that locally sparse regions tend to have more informative samples than dense regions.

81, **TITLE:** FlowGEN: A Generative Model for Flow Graphs

<https://dl.acm.org/doi/abs/10.1145/3534678.3539406>

**AUTHORS:** Furkan Kocayusufoglu, Arlei Silva, Ambuj K. Singh  
**HIGHLIGHT:** We introduce FlowGEN, an implicit generative model for flow graphs, that learns how to jointly generate graph topologies and flows with diverse dynamics directly from data using a novel (flow) graph neural network.

82, **TITLE:** Variational Inference for Training Graph Neural Networks in Low-Data Regime through Joint Structure-Label Estimation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539283>

**AUTHORS:** Danning Lao, Xinyu Yang, Qitian Wu, Junchi Yan  
**HIGHLIGHT:** In real-world scenarios where complete input graph structure and sufficient node labels might not be achieved easily, GNN models would encounter with severe performance degradation. To address this problem, we propose WSGNN, short for weakly-supervised graph neural network.

83, **TITLE:** Modeling Network-level Traffic Flow Transitions on Sparse Data

<https://dl.acm.org/doi/abs/10.1145/3534678.3539236>

**AUTHORS:** Xiaoliang Lei, Hao Mei, Bin Shi, Hua Wei  
**HIGHLIGHT:** In this paper, we consider the problem of modeling network-level traffic flow under a real-world setting, where the available data is sparse (i.e., only part of the traffic system is observed).

84, **TITLE:** The DipEncoder: Enforcing Multimodality in Autoencoders

<https://dl.acm.org/doi/abs/10.1145/3534678.3539407>

**AUTHORS:** Collin Leiber, Lena G. M. Bauer, Michael Neumayr, Claudia Plant, Christian B&ouml;hm  
**HIGHLIGHT:** In this paper, we show how to apply the gradient not only with respect to the projection axis but also with respect to the data to improve the cluster structure.

85, **TITLE:** KPGT: Knowledge-Guided Pre-training of Graph Transformer for Molecular Property Prediction

<https://dl.acm.org/doi/abs/10.1145/3534678.3539426>

**AUTHORS:** Han Li, Dan Zhao, Jianyang Zeng  
**HIGHLIGHT:** To this end, we introduce Knowledge-guided Pre-training of Graph Transformer (KPGT), a novel self-supervised learning framework for molecular graph representation learning, to alleviate the aforementioned issues and improve the performance on the downstream molecular property prediction tasks.

86, **TITLE:** Domain Adaptation in Physical Systems via Graph Kernel

<https://dl.acm.org/doi/abs/10.1145/3534678.3539380>

**AUTHORS:** Haoran Li, Hanghang Tong, Yang Weng  
**HIGHLIGHT:** In this paper, we propose a novel cross-graph DA based on two core designs of graph kernels and graph coarsening.



- 87, TITLE: Sampling-based Estimation of the Number of Distinct Values in Distributed Environment  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539390>  
AUTHORS: Jiajun Li, Zhewei Wei, Bolin Ding, Xiening Dai, Lu Lu, Jingren Zhou  
HIGHLIGHT: This paper proposes a novel sketch-based distributed method that achieves sub-linear communication costs for distributed sampling-based NDV estimation under mild assumptions.
- 88, TITLE: HierCDF: A Bayesian Network-based Hierarchical Cognitive Diagnosis Framework  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539486>  
AUTHORS: Jiatong Li, Fei Wang, Qi Liu, Mengxiao Zhu, Wei Huang, Zhenya Huang, Enhong Chen, Yu Su, Shijin Wang  
HIGHLIGHT: To address these limitations, we propose a novel Bayesian network-based Hierarchical Cognitive Diagnosis Framework (HierCDF), which enables many traditional diagnostic models to flexibly integrate the attribute hierarchy for better diagnosis.
- 89, TITLE: Communication-Efficient Robust Federated Learning with Noisy Labels  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539328>  
AUTHORS: Junyi Li, Jian Pei, Heng Huang  
HIGHLIGHT: Training with corrupted labels is harmful to the federated learning task; however, little attention has been paid to FL in the case of label noise. In this paper, we focus on this problem and propose a learning-based reweighting approach to mitigate the effect of noisy labels in FL.
- 90, TITLE: Reliable Representations Make A Stronger Defender: Unsupervised Structure Refinement for Robust GNN  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539484>  
AUTHORS: Kuan Li, Yang Liu, Xiang Ao, Jianfeng Chi, Jinghua Feng, Hao Yang, Qing He  
HIGHLIGHT: We need representations that carry both feature information and as much correct structure information as possible and are insensitive to structural perturbations. To this end, we propose an unsupervised pipeline, named STABLE, to optimize the graph structure.
- 91, TITLE: Mining Spatio-Temporal Relations via Self-Paced Graph Contrastive Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539422>  
AUTHORS: Rongfan Li, Ting Zhong, Xinke Jiang, Goce Trajcevski, Jin Wu, Fan Zhou  
HIGHLIGHT: Unlike spatio-temporal GNNs focusing on designing complex architectures, we propose a novel adaptive graph construction strategy: Self-Paced Graph Contrastive Learning (SPGCL).
- 92, TITLE: PAC-Wrap: Semi-Supervised PAC Anomaly Detection  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539408>  
AUTHORS: Shuo Li, Xiayan Ji, Edgar Dobriban, Oleg Sokolsky, Insup Lee  
HIGHLIGHT: Given their safety-criticality, these applications benefit from provable bounds on various errors in anomaly detection. To achieve this goal in the semi-supervised setting, we propose to provide Probably Approximately Correct (PAC) guarantees on the false negative and false positive detection rates for anomaly detection algorithms.
- 93, TITLE: TransBO: Hyperparameter Optimization via Two-Phase Transfer Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539255>  
AUTHORS: Yang Li, Yu Shen, Huaijun Jiang, Wentao Zhang, Zhi Yang, Ce Zhang, Bin Cui  
HIGHLIGHT: In this paper, we propose TransBO, a novel two-phase transfer learning framework for HPO, which can deal with the complementary nature among source tasks and dynamics during knowledge aggregation issues simultaneously.
- 94, TITLE: Transfer Learning based Search Space Design for Hyperparameter Tuning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539369>  
AUTHORS: Yang Li, Yu Shen, Huaijun Jiang, Tianyi Bai, Wentao Zhang, Ce Zhang, Bin Cui  
HIGHLIGHT: In this work, we introduce an automatic method to design the BO search space with the aid of tuning history from past tasks.
- 95, TITLE: Sparse Conditional Hidden Markov Model for Weakly Supervised Named Entity Recognition  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539247>  
AUTHORS: Yinghao Li, Le Song, Chao Zhang  
HIGHLIGHT: However, evaluating the LFs is challenging due to the lack of ground truths. To address this issue, we propose the sparse conditional hidden Markov model (Sparse-CHMM).
- 96, TITLE: Graph Structural Attack by Perturbing Spectral Distance  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539435>  
AUTHORS: Lu Lin, Ethan Blaser, Hongning Wang  
HIGHLIGHT: In this paper, an effective graph structural attack is investigated to disrupt graph spectral filters in the Fourier domain, which are the theoretical foundation of GCNs.
- 97, TITLE: Deep Representations for Time-varying Brain Datasets  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539301>  
AUTHORS: Sikun Lin, Shuyun Tang, Scott T. Grafton, Ambuj K. Singh  
HIGHLIGHT: This paper builds an efficient graph neural network model that incorporates both region-mapped fMRI sequences and structural connectivities obtained from DWI (diffusion-weighted imaging) as inputs.

- 98, TITLE: Source Localization of Graph Diffusion via Variational Autoencoders for Graph Inverse Problems  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539288>  
AUTHORS: Chen Ling, Junji Jiang, Junxiang Wang, Zhao Liang  
HIGHLIGHT: To solve the above challenges, this paper presents a generic framework: Source Localization Variational AutoEncoder (SL-VAE) for locating the diffusion sources under arbitrary diffusion patterns.
- 99, TITLE: Semantic Enhanced Text-to-SQL Parsing via Iteratively Learning Schema Linking Graph  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539294>  
AUTHORS: Aiwei Liu, Xuming Hu, Li Lin, Lijie Wen  
HIGHLIGHT: In this paper, we propose a framework named ISESL-SQL to iteratively build a semantic enhanced schema-linking graph between question tokens and database schemas.
- 100, TITLE: Partial-Quasi-Newton Methods: Efficient Algorithms for Minimax Optimization Problems with Unbalanced Dimensionality  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539379>  
AUTHORS: Chengchang Liu, Shuxian Bi, Luo Luo, John C.S. Lui  
HIGHLIGHT: We propose a novel second-order optimization algorithm, called Partial-Quasi-Newton (PQN) method, which takes the advantage of unbalanced structure in the problem to establish the Hessian estimate efficiently.
- 101, TITLE: MSDR: Multi-Step Dependency Relation Networks for Spatial Temporal Forecasting  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539397>  
AUTHORS: Dachuan Liu, Jin Wang, Shuo Shang, Peng Han  
HIGHLIGHT: In this paper, we argue that it is insufficient to capture the long-range spatial dependencies from the implicit representations learned by temporal extracting modules.
- 102, TITLE: User-Event Graph Embedding Learning for Context-Aware Recommendation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539458>  
AUTHORS: Dugang Liu, Mingkai He, Jinwei Luo, Jiangxu Lin, Meng Wang, Xiaolian Zhang, Weike Pan, Zhong Ming  
HIGHLIGHT: However, an embedding layer with random initialization often suffers in practice from the sparsity of the contextual features, as well as the interactions between the users (or items) and context. In this paper, we propose a novel user-event graph embedding learning (UEG-EL) framework to address these two sparsity challenges.
- 103, TITLE: Graph-in-Graph Network for Automatic Gene Ontology Description Generation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539258>  
AUTHORS: Fenglin Liu, Bang Yang, Chenyu You, Xian Wu, Shen Ge, Adelaide Woicik, Sheng Wang  
HIGHLIGHT: In this paper, we propose a novel task: GO term description generation.
- 104, TITLE: Graph Rationalization with Environment-based Augmentations  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539347>  
AUTHORS: Gang Liu, Tong Zhao, Jiaxin Xu, Tengfei Luo, Meng Jiang  
HIGHLIGHT: In this work, we introduce a new augmentation operation called environment replacement that automatically creates virtual data examples to improve rationale identification.
- 105, TITLE: Label-enhanced Prototypical Network with Contrastive Learning for Multi-label Few-shot Aspect Category Detection  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539340>  
AUTHORS: Han Liu, Feng Zhang, Xiaotong Zhang, Siyang Zhao, Junjie Sun, Hong Yu, Xianchao Zhang  
HIGHLIGHT: In this paper, we propose a novel label-enhanced prototypical network (LPN) for multi-label few-shot aspect category detection.
- 106, TITLE: Fair Representation Learning: An Alternative to Mutual Information  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539302>  
AUTHORS: Ji Liu, Zenan Li, Yuan Yao, Feng Xu, Xiaoxing Ma, Miao Xu, Hanghang Tong  
HIGHLIGHT: In this paper, we introduce distance covariance as a new dependence measure into fair representation learning.
- 107, TITLE: Joint Knowledge Graph Completion and Question Answering  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539289>  
AUTHORS: Lihui Liu, Boxin Du, Jiejun Xu, Yinglong Xia, Hanghang Tong  
HIGHLIGHT: In this work, we propose a neural model named BiNet to jointly handle KGC and multi-hop KGQA, and formulate it as a multi-task learning problem.
- 108, TITLE: RL2: A Call for Simultaneous Representation Learning and Rule Learning for Graph Streams  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539309>  
AUTHORS: Qu Liu, Tingjian Ge  
HIGHLIGHT: The goal of this paper is to show that it is feasible to simultaneously and efficiently perform representation learning (for connectionist networks) and rule learning spontaneously out of the same online training process for graph streams.
- 109, TITLE: Mask and Reason: Pre-Training Knowledge Graph Transformers for Complex Logical Queries  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539472>

- AUTHORS: Xiao Liu, Shiyu Zhao, Kai Su, Yukuo Cen, Jiezhong Qiu, Mengdi Zhang, Wei Wu, Yuxiao Dong, Jie Tang  
HIGHLIGHT: In this work, we present the Knowledge Graph Transformer (kgTransformer) with masked pre-training and fine-tuning strategies.
- 110, TITLE: UD-GNN: Uncertainty-aware Debaised Training on Semi-Homophilous Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539483>  
AUTHORS: Yang Liu, Xiang Ao, Fuli Feng, Qing He  
HIGHLIGHT: To mitigate the bias issue, we explore an Uncertainty-aware Debiasing (UD) framework, which retains the knowledge of the biased model on certain nodes and compensates for the nodes with high uncertainty.
- 111, TITLE: Practical Counterfactual Policy Learning for Top-K Recommendations  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539295>  
AUTHORS: Yaxu Liu, Jui-Nan Yen, Bowen Yuan, Rundong Shi, Peng Yan, Chih-Jen Lin  
HIGHLIGHT: This work studies policy learning approaches for top-K recommendations with a large item space and points out several difficulties related to importance weight explosion, observation insufficiency, and training efficiency.
- 112, TITLE: Geometer: Graph Few-Shot Class-Incremental Learning via Prototype Representation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539280>  
AUTHORS: Bin Lu, Xiaoying Gan, Lina Yang, Weinan Zhang, Luoyi Fu, Xinbing Wang  
HIGHLIGHT: Novel classes appear incrementally along with few labeling due to its newly emergence or lack of exploration. In this paper, we focus on this challenging but practical graph few-shot class-incremental learning (GFSCIL) problem and propose a novel method called Geometer.
- 113, TITLE: Spatio-Temporal Graph Few-Shot Learning with Cross-City Knowledge Transfer  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539281>  
AUTHORS: Bin Lu, Xiaoying Gan, Weinan Zhang, Huaxiu Yao, Luoyi Fu, Xinbing Wang  
HIGHLIGHT: However, the spatio-temporal graphs among different cities show irregular structures and varied features, which limits the feasibility of existing Few-Shot Learning (FSL) methods. Therefore, we propose a model-agnostic few-shot learning framework for spatio-temporal graph called ST-GFSL.
- 114, TITLE: Matrix Profile XXIV: Scaling Time Series Anomaly Detection to Trillions of Datapoints and Ultra-fast Arriving Data Streams  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539271>  
AUTHORS: Yue Lu, Renjie Wu, Abdullah Mueen, Maria A. Zuluaga, Eamonn Keogh  
HIGHLIGHT: First, they are limited to the batch case, whereas the online case is more actionable. Second, these algorithms exhibit poor scalability beyond tens of thousands of datapoints. In this work we introduce DAMP, a novel algorithm that addresses both these issues.
- 115, TITLE: S2RL: Do We Really Need to Perceive All States in Deep Multi-Agent Reinforcement Learning?  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539481>  
AUTHORS: Shuang Luo, Yinchuan Li, Jiahui Li, Kun Kuang, Furui Liu, Yunfeng Shao, Chao Wu  
HIGHLIGHT: To this end, we propose a sparse state based MARL (S2RL) framework, which utilizes a sparse attention mechanism to discard irrelevant information in local observations.
- 116, TITLE: Learning Differential Operators for Interpretable Time Series Modeling  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539245>  
AUTHORS: Yingtao Luo, Chang Xu, Yang Liu, Weiqing Liu, Shun Zheng, Jiang Bian  
HIGHLIGHT: In this work, we propose an learning framework that can automatically obtain interpretable PDE models from sequential data.
- 117, TITLE: Learning Causal Effects on Hypergraphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539299>  
AUTHORS: Jing Ma, Mengting Wan, Longqi Yang, Jundong Li, Brent Hecht, Jaime Teevan  
HIGHLIGHT: Specifically, in this paper, we focus on the problem of individual treatment effect (ITE) estimation on hypergraphs, aiming to estimate how much an intervention (e.g., wearing face covering) would causally affect an outcome (e.g., COVID-19 infection) of each individual node.
- 118, TITLE: ML4S: Learning Causal Skeleton from Vicinal Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539447>  
AUTHORS: Pingchuan Ma, Rui Ding, Haoyue Dai, Yuanyuan Jiang, Shuai Wang, Shi Han, Dongmei Zhang  
HIGHLIGHT: Our proposed framework, ML4S, adopts order-based cascade classifiers and pruning strategies that can withstand high computational overhead without sacrificing accuracy.
- 119, TITLE: Non-stationary Time-aware Kernelized Attention for Temporal Event Prediction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539470>  
AUTHORS: Yu Ma, Zhining Liu, Chenyi Zhuang, Yize Tan, Yi Dong, Wenliang Zhong, Jinjie Gu  
HIGHLIGHT: In this paper, we present a non-stationary time-aware kernelized attention approach for input sequences of neural networks.
- 120, TITLE: CrossCBR: Cross-view Contrastive Learning for Bundle Recommendation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539229>

AUTHORS: Yunshan Ma, Yingzhi He, An Zhang, Xiang Wang, Tat-Seng Chua

HIGHLIGHT: In this work, we propose to model the cooperative association between the two different views through cross-view contrastive learning.

121, TITLE: Discovering Invariant and Changing Mechanisms from Data

<https://dl.acm.org/doi/abs/10.1145/3534678.3539479>

AUTHORS: Sarah Mameche, David Kaltenpoth, Jilles Vreeken

HIGHLIGHT: To discover invariant and changing mechanisms from data, we propose extending the algorithmic model for causation to mechanism changes and instantiating it using Minimum Description Length.

122, TITLE: Learning Models of Individual Behavior in Chess

<https://dl.acm.org/doi/abs/10.1145/3534678.3539367>

AUTHORS: Reid McIlroy-Young, Russell Wang, Siddhartha Sen, Jon Kleinberg, Ashton Anderson

HIGHLIGHT: Existing work has focused on capturing human behavior in an aggregate sense, which potentially limits the benefit any particular individual could gain from interaction with these systems. We extend this line of work by developing highly accurate predictive models of individual human behavior in chess.

123, TITLE: Minimizing Congestion for Balanced Dominators

<https://dl.acm.org/doi/abs/10.1145/3534678.3539371>

AUTHORS: Yosuke Mizutani, Annie Staker, Blair D. Sullivan

HIGHLIGHT: Recent work leverages the sparsity of the assembly graph to find  $r$ -dominating sets which enable rapid approximate queries through a dominator-centric graph partition. In this paper, we consider two problems related to reducing uncertainty and improving scalability in this setting.

124, TITLE: Extracting Relevant Information from User's Utterances in Conversational Search and Recommendation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539471>

AUTHORS: Ali MontazerAlghaem, James Allan

HIGHLIGHT: In this paper, we propose a model based on reinforcement learning, namely RelInCo, which takes the user's utterances and the context of the conversation and classifies each word in the user's utterances as belonging to the relevant or non-relevant class.

125, TITLE: Nonlinearity Encoding for Extrapolation of Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3534678.3539326>

AUTHORS: Gyoung S. Na, Chanyoung Park

HIGHLIGHT: In this paper, we propose automated nonlinearity encoder (ANE) that is a data-agnostic embedding method to improve the extrapolation capabilities of neural networks by conversely linearizing the original input-to-target relationships without architectural modifications of prediction models.

126, TITLE: Learning Fair Representation via Distributional Contrastive Disentanglement

<https://dl.acm.org/doi/abs/10.1145/3534678.3539232>

AUTHORS: Changdae Oh, Heeji Won, Junhyuk So, Taero Kim, Yewon Kim, Hosik Choi, Kyungwoo Song

HIGHLIGHT: We propose a new approach, learningFAir Representation via distributional CONtrastive Variational AutoEncoder (FarconVAE), which induces the latent space to be disentangled into sensitive and non-sensitive parts.

127, TITLE: Predicting Opinion Dynamics via Sociologically-Informed Neural Networks

<https://dl.acm.org/doi/abs/10.1145/3534678.3539228>

AUTHORS: Maya Okawa, Tomoharu Iwata

HIGHLIGHT: In this work, we present the first hybrid method called Sociologically-Informed Neural Network (SINN), which integrates theoretical models and social media data by transporting the concepts of physics-informed neural networks (PINNs) from natural science (i.e., physics) into social science (i.e., sociology and social psychology).

128, TITLE: FedWalk: Communication Efficient Federated Unsupervised Node Embedding with Differential Privacy

<https://dl.acm.org/doi/abs/10.1145/3534678.3539308>

AUTHORS: Qiying Pan, Yifei Zhu

HIGHLIGHT: In this paper, we introduce FedWalk, a random-walk-based unsupervised node embedding algorithm that operates in such a node-level visibility graph with raw graph information remaining locally.

129, TITLE: MetaV: A Meta-Verifier Approach to Task-Agnostic Model Fingerprinting

<https://dl.acm.org/doi/abs/10.1145/3534678.3539257>

AUTHORS: Xudong Pan, Yifan Yan, Mi Zhang, Min Yang

HIGHLIGHT: However, these methods heavily rely on the characteristics of classification tasks which inhibits their application to more general scenarios. To address this issue, we present MetaV, the first task-agnostic model fingerprinting framework which enables fingerprinting on a much wider range of DNNs independent from the downstream learning task, and exhibits strong robustness against a variety of ownership obfuscation techniques.

130, TITLE: Core-periphery Models for Hypergraphs

<https://dl.acm.org/doi/abs/10.1145/3534678.3539272>

AUTHORS: Marios Papachristou, Jon Kleinberg

HIGHLIGHT: We introduce a random hypergraph model for core-periphery structure.

- 131, TITLE: Compute Like Humans: Interpretable Step-by-step Symbolic Computation with Deep Neural Network  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539276>  
AUTHORS: Shuai Peng, Di Fu, Yong Cao, Yijun Liang, Gu Xu, Liangcai Gao, Zhi Tang  
HIGHLIGHT: In this paper, we argue that any complex symbolic computation can be broken down to a sequence of finite Fundamental Computation Transformations (FCT), which are grounded as certain mathematical expression computation transformations.
- 132, TITLE: Bilateral Dependency Optimization: Defending Against Model-inversion Attacks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539376>  
AUTHORS: Xiong Peng, Feng Liu, Jingfeng Zhang, Long Lan, Junjie Ye, Tongliang Liu, Bo Han  
HIGHLIGHT: In this paper, we aim to minimize the dependency between the latent representations and the inputs while maximizing the dependency between latent representations and the outputs, named a bilateral dependency optimization (BiDO) strategy.
- 133, TITLE: Evaluating Knowledge Graph Accuracy Powered by Optimized Human-machine Collaboration  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539233>  
AUTHORS: Yifan Qi, Weiguo Zheng, Liang Hong, Lei Zou  
HIGHLIGHT: Motivated by the fact that the major advance of machines is the strong computing power while humans are skilled in correctness verification, we propose an efficient interactive method to reduce the overall cost for evaluating the KG quality, which produces accuracy estimates with a statistical guarantee for both triples and entities.
- 134, TITLE: Neural Bandit with Arm Group Graph  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539312>  
AUTHORS: Yunzhe Qi, Yikun Ban, Jingrui He  
HIGHLIGHT: Motivated by the fact that the arms usually exhibit group behaviors and the mutual impacts exist among groups, we introduce a new model, Arm Group Graph (AGG), where the nodes represent the groups of arms and the weighted edges formulate the correlations among groups.
- 135, TITLE: Rep2Vec: Repository Embedding via Heterogeneous Graph Adversarial Contrastive Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539324>  
AUTHORS: Yiyue Qian, Yiming Zhang, Qianlong Wen, Yanfang Ye, Chuxu Zhang  
HIGHLIGHT: In addition, they usually require a mass of resources to obtain sufficient labeled data for model training while ignoring the usefully handy unlabeled data. To this end, we propose a novel model Rep2Vec which integrates the code content, the structural relations, and the unlabeled data to learn the repository representations.
- 136, TITLE: External Knowledge Infusion for Tabular Pre-training Models with Dual-adapters  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539403>  
AUTHORS: Can Qin, Sungchul Kim, Handong Zhao, Tong Yu, Ryan A. Rossi, Yun Fu  
HIGHLIGHT: To this end, we propose the dual-adapters inserted within the pre-trained tabular model for flexible and efficient knowledge injection.
- 137, TITLE: Releasing Private Data for Numerical Queries  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539424>  
AUTHORS: Yuan Qiu, Wei Dong, Ke Yi, Bin Wu, Feifei Li  
HIGHLIGHT: In this paper, we present a new mechanism to privatize a dataset  $D$  for a given set  $Q$  of numerical queries, achieving an error of  $\epsilon$  ( $\epsilon$  is a function of  $w(D)$ ) for each query  $w \in Q$ , where  $w(D)$  is the maximum contribution of any tuple in  $D$  queried by  $w$ .
- 138, TITLE: Importance Prioritized Policy Distillation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539266>  
AUTHORS: Xinghua Qu, Yew Soon Ong, Abhishek Gupta, Pengfei Wei, Zhu Sun, Zejun Ma  
HIGHLIGHT: Based on the analysis, we propose an importance prioritized PD framework that highlights the training on important frames, so as to learn efficiently.
- 139, TITLE: Synthesising Audio Adversarial Examples for Automatic Speech Recognition  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539268>  
AUTHORS: Xinghua Qu, Pengfei Wei, Mingyong Gao, Zhu Sun, Yew Soon Ong, Zejun Ma  
HIGHLIGHT: For the first time, we propose the Speech Synthesising based Attack (SSA), a novel threat model that constructs audio adversarial examples entirely from scratch, i.e., without depending on any existing audio to fool cutting-edge ASR models. To this end, we introduce a conditional variational auto-encoder (CVAE) as the speech synthesiser.
- 140, TITLE: p-Meta: Towards On-device Deep Model Adaptation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539293>  
AUTHORS: Zhongnan Qu, Zimu Zhou, Yongxin Tong, Lothar Thiele  
HIGHLIGHT: To this end, we propose p-Meta, a new meta learning method that enforces structure-wise partial parameter updates while ensuring fast generalization to unseen tasks.
- 141, TITLE: Fair and Interpretable Models for Survival Analysis  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539259>

- AUTHORS: Md Mahmudur Rahman, Sanjay Purushotham  
HIGHLIGHT: We propose novel fair and interpretable survival models which use pseudo valued-based objective functions with fairness definitions as constraints for predicting subject-specific survival probabilities.
- 142, TITLE: Graph-Flashback Network for Next Location Recommendation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539383>  
AUTHORS: Xuan Rao, Lisi Chen, Yong Liu, Shuo Shang, Bin Yao, Peng Han  
HIGHLIGHT: To incorporate the learned graph into sequential model, we propose a novel network Graph-Flashback for recommendation.
- 143, TITLE: SMORE: Knowledge Graph Completion and Multi-hop Reasoning in Massive Knowledge Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539405>  
AUTHORS: Hongyu Ren, Hanjun Dai, Bo Dai, Xinyun Chen, Denny Zhou, Jure Leskovec, Dale Schuurmans  
HIGHLIGHT: Here we present Scalable Multi-hOp REasoning (SMORE), the first general framework for both single-hop and multi-hop reasoning in KGs.
- 144, TITLE: DICE: Domain-attack Invariant Causal Learning for Improved Data Privacy Protection and Adversarial Robustness  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539242>  
AUTHORS: Qibing Ren, Yiting Chen, Yichuan Mo, Qitian Wu, Junchi Yan  
HIGHLIGHT: Based on DICM, we propose a coherent causal invariant principle, which guides our algorithm design to infer the human-like causal relations.
- 145, TITLE: Variational Flow Graphical Model  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539450>  
AUTHORS: Shaogang Ren, Belhal Karimi, Dingcheng Li, Ping Li  
HIGHLIGHT: This paper introduces a novel approach embedding flow-based models in hierarchical structures.
- 146, TITLE: Semi-supervised Drifted Stream Learning with Short Lookback  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539297>  
AUTHORS: Weijieying Ren, Pengyang Wang, Xiaolin Li, Charles E. Hughes, Yanjie Fu  
HIGHLIGHT: SDSL imposes two under-addressed challenges on existing methods in semi-supervised learning and continuous learning: 1) robust pseudo-labeling under gradual shifts and 2) anti-forgetting adaptation with short lookback. To tackle these challenges, we propose a principled and generic generation-replay framework to solve SDSL.
- 147, TITLE: Fair Ranking as Fair Division: Impact-Based Individual Fairness in Ranking  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539353>  
AUTHORS: Yuta Saito, Thorsten Joachims  
HIGHLIGHT: Our axioms of envy-freeness and dominance over uniform ranking postulate that for a fair ranking policy every item should prefer their own rank allocation over that of any other item, and that no item should be actively disadvantaged by the rankings. To compute ranking policies that are fair according to these axioms, we propose a new ranking objective related to the Nash Social Welfare.
- 148, TITLE: A Generalized Backward Compatibility Metric  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539465>  
AUTHORS: Tomoya Sakai  
HIGHLIGHT: In this paper, we first analyze the existing backward compatibility metrics and reveal that these metrics essentially assess the same quantity between old and new models. In addition, to obtain a unified view of backward compatibility metrics, we propose a generalized backward compatibility (GBC) metric that can represent the existing backward compatibility metrics.
- 149, TITLE: Balancing Bias and Variance for Active Weakly Supervised Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539264>  
AUTHORS: Hitesh Sapkota, Qi Yu  
HIGHLIGHT: We propose to conduct novel active deep multiple instance learning that samples a small subset of informative instances for annotation, aiming to significantly boost the instance-level prediction.
- 150, TITLE: On Missing Labels, Long-tails and Propensities in Extreme Multi-label Classification  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539466>  
AUTHORS: Erik Schultheis, Marek Wydmuch, Rohit Babbar, Krzysztof Dembczynski  
HIGHLIGHT: The propensity model introduced by Jain et al has become a standard approach for dealing with missing and long-tail labels in extreme multi-label classification (XMLC). In this paper, we critically revise this approach showing that despite its theoretical soundness, its application in contemporary XMLC works is debatable.
- 151, TITLE: Active Model Adaptation Under Unknown Shift  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539262>  
AUTHORS: Jie-Jing Shao, Yunlu Xu, Zhanzhan Cheng, Yu-Feng Li  
HIGHLIGHT: To cope with such a novel problem Resource Constrained Adaptation under Unknown Shift, in this paper we study active model adaptation both theoretically and empirically.

- 152, TITLE: Pre-training Enhanced Spatial-temporal Graph Neural Network for Multivariate Time Series Forecasting  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539396>  
AUTHORS: Zezhi Shao, Zhao Zhang, Fei Wang, Yongjun Xu  
HIGHLIGHT: However, the patterns of time series and the dependencies between them (i.e., the temporal and spatial patterns) need to be analyzed based on long-term historical MTS data. To address this issue, we propose a novel framework, in which STGNN is Enhanced by a scalable time series Pre-training model (STEP).
- 153, TITLE: Multi-View Clustering for Open Knowledge Base Canonicalization  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539449>  
AUTHORS: Wei Shen, Yang Yang, Yinan Liu  
HIGHLIGHT: In this paper, we propose CMVC, a novel unsupervised framework that leverages these two views of knowledge jointly for canonicalizing OKBs without the need of manually annotated labels. To achieve this goal, we propose a multi-view CH K-Means clustering algorithm to mutually reinforce the clustering of view-specific embeddings learned from each view by considering their different clustering qualities.
- 154, TITLE: Deep Learning for Prognosis Using Task-fMRI: A Novel Architecture and Training Scheme  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539362>  
AUTHORS: Ge Shi, Jason Smucny, Ian Davidson  
HIGHLIGHT: We propose a deep multi-model architecture to encode multi-view brain activities from t-fMRI data and a multi-layer perceptron ensemble model to combine these view models and make subject-wise predictions.
- 155, TITLE: Pairwise Adversarial Training for Unsupervised Class-imbalanced Domain Adaptation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539243>  
AUTHORS: Weili Shi, Ronghang Zhu, Sheng Li  
HIGHLIGHT: In this paper, we propose a pairwise adversarial training approach for class-imbalanced domain adaptation.
- 156, TITLE: State Dependent Parallel Neural Hawkes Process for Limit Order Book Event Stream Prediction and Simulation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539462>  
AUTHORS: Zijian Shi, John Cartlidge  
HIGHLIGHT: Following recent successes in the literature that combine stochastic point processes with neural networks to model event stream patterns, we propose a novel state-dependent parallel neural Hawkes process to predict LOB events and simulate realistic LOB data.
- 157, TITLE: Robust and Informative Text Augmentation (RITA) via Constrained Worst-Case Transformations for Low-Resource Named Entity Recognition  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539349>  
AUTHORS: Hyunwoo Sohn, Baekwan Park  
HIGHLIGHT: However, deep learning models often require a large amount of annotated data to achieve satisfactory performance, and NER annotation is significantly time-consuming and labor-intensive due to the fine-grained labels. To address this issue, we propose a textual data augmentation method that can automatically generate informative synthetic samples, which contribute to the development of a robust classifier.
- 158, TITLE: GUIDE: Group Equality Informed Individual Fairness in Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539346>  
AUTHORS: Weihao Song, Yushun Dong, Ninghao Liu, Jundong Li  
HIGHLIGHT: This leads to drastically different levels of individual fairness among groups. We tackle this problem by proposing a novel GNN framework GUIDE to achieve group equality informed individual fairness in GNNs.
- 159, TITLE: Learning on Graphs with Out-of-Distribution Nodes  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539457>  
AUTHORS: Yu Song, Donglin Wang  
HIGHLIGHT: In this work, we define the problem of graph learning with out-of-distribution nodes.
- 160, TITLE: RGVISNet: A Hybrid Retrieval-Generation Neural Framework Towards Automatic Data Visualization Generation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539330>  
AUTHORS: Yuanfeng Song, Xuefang Zhao, Raymond Chi-Wing Wong, Di Jiang  
HIGHLIGHT: Inspired by how developers reuse previously validated source code snippets from code search engines or a large-scale codebase when they conduct software development, we provide a novel hybrid retrieval-generation framework named RGVISNet for text-to-vis.
- 161, TITLE: Towards an Optimal Asymmetric Graph Structure for Robust Semi-supervised Node Classification  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539332>  
AUTHORS: Zixing Song, Yifei Zhang, Irwin King  
HIGHLIGHT: In this paper, we give a precise definition on the optimality of the refined graph and provide the exact form of an optimal asymmetric graph structure designed explicitly for the semi-supervised node classification by distinguishing the different roles of labeled and unlabeled nodes through theoretical analysis.
- 162, TITLE: ERNet: Unsupervised Collective Extraction and Registration in Neuroimaging Data  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539227>

- AUTHORS: Yao Su, Zhentian Qian, Lifang He, Xiangnan Kong  
HIGHLIGHT: In this paper, we study the problem of unsupervised collective extraction and registration in neuroimaging data.
- 163, TITLE: Detecting Arbitrary Order Beneficial Feature Interactions for Recommender Systems  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539238>  
AUTHORS: Yixin Su, Yunxiang Zhao, Sarah Erfani, Junhao Gan, Rui Zhang  
HIGHLIGHT: In this paper, we propose a hypergraph neural network based model named HIRS.
- 164, TITLE: Knowledge Enhanced Search Result Diversification  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539459>  
AUTHORS: Zhan Su, Zhicheng Dou, Yutao Zhu, Ji-Rong Wen  
HIGHLIGHT: Given that the knowledge base can offer well-defined entities and explicit relationships between entities, we exploit knowledge to model the relationship between documents and the query and propose a knowledge-enhanced search result diversification approach KEDIV.
- 165, TITLE: Causal Attention for Interpretable and Generalizable Graph Classification  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539366>  
AUTHORS: Yongduo Sui, Xiang Wang, Jiancan Wu, Min Lin, Xiangnan He, Tat-Seng Chua  
HIGHLIGHT: In this work, we take a causal look at the GNN modeling for graph classification.
- 166, TITLE: Demystify Hyperparameters for Stochastic Optimization with Transferable Representations  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539298>  
AUTHORS: Jianhui Sun, Mengdi Huai, Kishlay Jha, Aidong Zhang  
HIGHLIGHT: In this paper, we give a unified analysis of several popular optimizers, e.g., Polyak's heavy ball momentum and Nesterov's accelerated gradient.
- 167, TITLE: GPPT: Graph Pre-training and Prompt Tuning to Generalize Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539249>  
AUTHORS: Mingchen Sun, Kaixiong Zhou, Xin He, Ying Wang, Xin Wang  
HIGHLIGHT: Based on the pre-trained model, we propose the graph prompting function to modify the standalone node into a token pair, and reformulate the downstream node classification looking the same as edge prediction.
- 168, TITLE: pureGAM: Learning an Inherently Pure Additive Model  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539256>  
AUTHORS: Xingzhi Sun, Ziyu Wang, Rui Ding, Shi Han, Dongmei Zhang  
HIGHLIGHT: In this paper, we propose pureGAM, an inherently pure additive model of both main effects and higher-order interactions.
- 169, TITLE: Learning Optimal Priors for Task-Invariant Representations in Variational Autoencoders  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539291>  
AUTHORS: Hiroshi Takahashi, Tomoharu Iwata, Atsutoshi Kumagai, Sekitoshi Kanai, Masanori Yamada, Yuuki Yamanaka, Hisashi Kashima  
HIGHLIGHT: In this study, we theoretically investigate why the CVAE cannot sufficiently reduce the task-dependency and show that the simple standard Gaussian prior is one of the causes.
- 170, TITLE: Clustering with Fair-Center Representation: Parameterized Approximation Algorithms and Heuristics  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539487>  
AUTHORS: Suhas Thejaswi, Ameet Gaddekar, Bruno Ordozgoiti, Michal Osadnik  
HIGHLIGHT: We study a variant of classical clustering formulations in the context of algorithmic fairness, known as diversity-aware clustering.
- 171, TITLE: Incremental Cognitive Diagnosis for Intelligent Education  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539399>  
AUTHORS: Shiwei Tong, Jiayu Liu, Yuting Hong, Zhenya Huang, Le Wu, Qi Liu, Wei Huang, Enhong Chen, Dan Zhang  
HIGHLIGHT: To this end, we propose a novel framework, Incremental Cognitive Diagnosis (ICD), to tailor cognitive diagnosis into the online scenario of intelligent education.
- 172, TITLE: Improving Data-driven Heterogeneous Treatment Effect Estimation Under Structure Uncertainty  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539444>  
AUTHORS: Christopher Tran, Elena Zheleva  
HIGHLIGHT: At the same time, accounting for the causal structure of real-world data is rarely trivial since the causal mechanisms that gave rise to the data are typically unknown. To address this problem, we develop a feature selection method that considers each feature's value for HTE estimation and learns the relevant parts of the causal structure from data.
- 173, TITLE: Aligning Dual Disentangled User Representations from Ratings and Textual Content  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539474>  
AUTHORS: Nhu-Thuat Tran, Hady W. Lauw  
HIGHLIGHT: To further improve not only the effectiveness of recommendations but also the interpretability of the representations, we propose to learn a second set of disentangled user representations from textual content and to align the two sets of representations with one another.



- 174, TITLE: Dense Feature Tracking of Atmospheric Winds with Deep Optical Flow  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539345>  
AUTHORS: Thomas J. Vandal, Kate Duffy, Will McCarty, Akira Sewnath, Ramakrishna Nemani  
HIGHLIGHT: This work presents WindFlow as the first machine learning based system for feature tracking atmospheric motion using optical flow.
- 175, TITLE: Towards Representation Alignment and Uniformity in Collaborative Filtering  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539253>  
AUTHORS: Chenyang Wang, Yuanqing Yu, Weizhi Ma, Min Zhang, Chong Chen, Yiqun Liu, Shaoping Ma  
HIGHLIGHT: In this paper, we measure the representation quality in CF from the perspective of alignment and uniformity on the hypersphere.
- 176, TITLE: Group-wise Reinforcement Feature Generation for Optimal and Explainable Representation Space Reconstruction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539278>  
AUTHORS: Dongjie Wang, Yanjie Fu, Kunpeng Liu, Xiaolin Li, Yan Solihie  
HIGHLIGHT: Can we simultaneously address the automation, explicitness, and optimal challenges in representation space reconstruction for a machine learning task? To answer this question, we propose a group-wise reinforcement generation perspective.
- 177, TITLE: A Model-Agnostic Approach to Differentially Private Topic Mining  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539417>  
AUTHORS: Han Wang, Jayashree Sharma, Shuya Feng, Kai Shu, Yuan Hong  
HIGHLIGHT: To our best knowledge, we propose the first differentially private topic mining technique (namely TopicDP) which injects well-calibrated Gaussian noise into the matrix output of any topic mining algorithm to ensure differential privacy and good utility.
- 178, TITLE: Toward Learning Robust and Invariant Representations with Alignment Regularization and Data Augmentation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539438>  
AUTHORS: Haohan Wang, Zeyi Huang, Xindi Wu, Eric Xing  
HIGHLIGHT: In this paper, motivated by a proliferation of options of alignment regularizations, we seek to evaluate the performances of several popular design choices along the dimensions of robustness and invariance, for which we introduce a new test procedure.
- 179, TITLE: Estimating Individualized Causal Effect with Confounded Instruments  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539335>  
AUTHORS: Haotian Wang, Wenjing Yang, Longqi Yang, Anpeng Wu, Liyang Xu, Jing Ren, Fei Wu, Kun Kuang  
HIGHLIGHT: In this paper, we focus on estimating the ICE with confounded instruments that violate the unconfounded instruments assumption.
- 180, TITLE: Make Fairness More Fair: Fair Item Utility Estimation and Exposure Re-Distribution  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539354>  
AUTHORS: Jiayin Wang, Weizhi Ma, Jiayu Li, Hongyu Lu, Min Zhang, Biao Li, Yiqun Liu, Peng Jiang, Shaoping Ma  
HIGHLIGHT: In this work, we propose the concept of items' fair utility, defined as the proportion of users who are interested in the item among all users.
- 181, TITLE: Streaming Graph Neural Networks with Generative Replay  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539336>  
AUTHORS: Junshan Wang, Wenhao Zhu, Guojie Song, Liang Wang  
HIGHLIGHT: In this paper, we propose a streaming GNN based on generative replay, which can incrementally learn new patterns while maintaining existing knowledge without accessing historical data.
- 182, TITLE: Proton: Probing Schema Linking Information from Pre-trained Language Models for Text-to-SQL Parsing  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539305>  
AUTHORS: Lihan Wang, Bowen Qin, Binyuan Hui, Bowen Li, Min Yang, Bailin Wang, Binhua Li, Jian Sun, Fei Huang, Luo Si, Yongbin Li  
HIGHLIGHT: In this work, we propose a novel framework to elicit relational structures from large-scale pre-trained language models (PLMs) via a probing procedure based on Poincaré distance metric, and use the induced relations to augment current graph-based parsers for better schema linking.
- 183, TITLE: Stabilizing Voltage in Power Distribution Networks via Multi-Agent Reinforcement Learning with Transformer  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539480>  
AUTHORS: Minrui Wang, Mingxiao Feng, Wengang Zhou, Houqiang Li  
HIGHLIGHT: In this paper, we introduce the transformer architecture to extract representations adapting to power network problems and propose a Transformer-based Multi-Agent Actor-Critic framework (T-MAAC) to stabilize voltage in power distribution networks.
- 184, TITLE: Task-Adaptive Few-shot Node Classification  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539265>  
AUTHORS: Song Wang, Kaize Ding, Chuxu Zhang, Chen Chen, Jundong Li

**HIGHLIGHT:** Therefore, to effectively alleviate the impact of task variance, we propose a task-adaptive node classification framework under the few-shot learning setting.

185, **TITLE:** Partial Label Learning with Discrimination Augmentation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539363>

**AUTHORS:** Wei Wang, Min-Ling Zhang

**HIGHLIGHT:** Nevertheless, the feature representations of partial label training examples may be less informative of the ground-truth labels, which may result in negative influences on the disambiguation process. To circumvent this difficulty, the first attempt towards discrimination augmentation for partial label learning is investigated in this paper.

186, **TITLE:** Towards Unified Conversational Recommender Systems via Knowledge-Enhanced Prompt Learning

<https://dl.acm.org/doi/abs/10.1145/3534678.3539382>

**AUTHORS:** Xiaolei Wang, Kun Zhou, Ji-Rong Wen, Wayne Xin Zhao

**HIGHLIGHT:** However, these approaches still rely on different architectures or techniques to develop the two modules, making it difficult for effective module integration. To address this problem, we propose a unified CRS model named UniCRS based on knowledge-enhanced prompt learning.

187, **TITLE:** Improving Fairness in Graph Neural Networks via Mitigating Sensitive Attribute Leakage

<https://dl.acm.org/doi/abs/10.1145/3534678.3539404>

**AUTHORS:** Yu Wang, Yuying Zhao, Yushun Dong, Huiyuan Chen, Jundong Li, Tyler Derr

**HIGHLIGHT:** Motivated by our analysis, we propose Fair View Graph Neural Network (FairVGNN) to generate fair views of features by automatically identifying and masking sensitive-correlated features considering correlation variation after feature propagation.

188, **TITLE:** Graph Neural Networks with Node-wise Architecture

<https://dl.acm.org/doi/abs/10.1145/3534678.3539387>

**AUTHORS:** Zhen Wang, Zhewei Wei, Yaliang Li, Weirui Kuang, Bolin Ding

**HIGHLIGHT:** Nevertheless, node-wise architecture cannot be realized by trivially applying NAS methods node by node due to the scalability issue and the need for determining test nodes' architectures. To tackle these challenges, we propose a framework wherein the parametric controllers decide the GNN architecture for each node based on its local patterns.

189, **TITLE:** Debiasing Learning for Membership Inference Attacks Against Recommender Systems

<https://dl.acm.org/doi/abs/10.1145/3534678.3539392>

**AUTHORS:** Zihan Wang, Na Huang, Fei Sun, Pengjie Ren, Zhumin Chen, Hengliang Luo, Maarten de Rijke, Zhaochun Ren

**HIGHLIGHT:** To address the above limitations, we propose a Debiasing Learning for Membership Inference Attacks against recommender systems (DL-MIA) framework that has four main components: (i) a difference vector generator, (ii) a disentangled encoder, (iii) a weight estimator, and (iv) an attack model.

190, **TITLE:** Invariant Preference Learning for General Debiasing in Recommendation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539439>

**AUTHORS:** Zimu Wang, Yue He, Jiashuo Liu, Wenchao Zou, Philip S. Yu, Peng Cui

**HIGHLIGHT:** In this paper, we consider a more practical setting where we aim to conduct general debiasing with the biased observational data alone.

191, **TITLE:** An Embedded Feature Selection Framework for Control

<https://dl.acm.org/doi/abs/10.1145/3534678.3539290>

**AUTHORS:** Jiawen Wei, Fangyuan Wang, Wanxin Zeng, Wenwei Lin, Ning Gui

**HIGHLIGHT:** In this paper, a novel framework, namely the Dual-world embedded Attentive Feature Selection (D-AFS), can efficiently select the most relevant sensors for the system under dynamic control.

192, **TITLE:** Comprehensive Fair Meta-learned Recommender System

<https://dl.acm.org/doi/abs/10.1145/3534678.3539269>

**AUTHORS:** Tianxin Wei, Jingrui He

**HIGHLIGHT:** In this paper, we propose a comprehensive fair meta-learning framework, named CLOVER, for ensuring the fairness of meta-learned recommendation models.

193, **TITLE:** SagDRE: Sequence-Aware Graph-Based Document-Level Relation Extraction with Adaptive Margin Loss

<https://dl.acm.org/doi/abs/10.1145/3534678.3539304>

**AUTHORS:** Ying Wei, Qi Li

**HIGHLIGHT:** In this work, we propose SagDRE model, which further considers and captures the original sequential information from the text.

194, **TITLE:** Disentangled Dynamic Heterogeneous Graph Learning for Opioid Overdose Prediction

<https://dl.acm.org/doi/abs/10.1145/3534678.3539279>

**AUTHORS:** Qianlong Wen, Zhongyu Ouyang, Jianfei Zhang, Yiyue Qian, Yanfang Ye, Chuxu Zhang

**HIGHLIGHT:** To this end, we propose a novel model DDHGNN - Disentangled Dynamic Heterogeneous Graph Neural Network, for over-prescribing prediction.

195, **TITLE:** Beyond Point Prediction: Capturing Zero-Inflated & Heavy-Tailed Spatiotemporal Data with Deep Extreme Mixture Models

- <https://dl.acm.org/doi/abs/10.1145/3534678.3539464>  
AUTHORS: Tyler Wilson, Andrew McDonald, Asadullah Hill Galib, Pang-Ning Tan, Lifeng Luo  
HIGHLIGHT: To address these challenges, we propose Deep Extreme Mixture Model (DEMM), fusing a deep learning-based hurdle model with extreme value theory to enable point and distribution prediction of zero-inflated, heavy-tailed spatiotemporal variables.
- 196, TITLE: Multi-fidelity Hierarchical Neural Processes  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539364>  
AUTHORS: Dongxia Wu, Matteo Chinazzi, Alessandro Vespignani, Yi-An Ma, Rose Yu  
HIGHLIGHT: We propose Multi-fidelity Hierarchical Neural Processes (MF-HNP), a unified neural latent variable model for multi-fidelity surrogate modeling.
- 197, TITLE: Domain Adaptation with Dynamic Open-Set Targets  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539235>  
AUTHORS: Jun Wu, Jingrui He  
HIGHLIGHT: In this paper, we focus on the more realistic open-set domain adaptation setting with a static source task and a time evolving target task where novel unknown target classes appear over time.
- 198, TITLE: Adversarial Gradient Driven Exploration for Deep Click-Through Rate Prediction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539461>  
AUTHORS: Kailun Wu, Weijie Bian, Zhangming Chan, Lejian Ren, Shiming Xiang, Shu-Guang Han, Hongbo Deng, Bo Zheng  
HIGHLIGHT: For production deployment, we propose a dynamic gating unit to pre-determine the utility of an exploration.
- 199, TITLE: CLARE: A Semi-supervised Community Detection Algorithm  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539370>  
AUTHORS: Xixi Wu, Yun Xiong, Yao Zhang, Yizhu Jiao, Caihua Shan, Yiheng Sun, Yangyong Zhu, Philip S. Yu  
HIGHLIGHT: To address these issues, we propose CLARE, which consists of two key components, Community Locator and Community Rewriter.
- 200, TITLE: Geometric Policy Iteration for Markov Decision Processes  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539478>  
AUTHORS: Yue Wu, Jes&uacute;s A. De Loera  
HIGHLIGHT: Inspired by these geometric properties, we propose a new algorithm, Geometric Policy Iteration (GPI), to solve discounted MDPs.
- 201, TITLE: Non-stationary A/B Tests  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539325>  
AUTHORS: Yuhang Wu, Zeyu Zheng, Guangyu Zhang, Zuohua Zhang, Chu Wang  
HIGHLIGHT: When the experiment design phase of an A/B test allows, we propose a new time-grouped randomization approach to make a better balance on treatment and control assignments in presence of time nonstationarity.
- 202, TITLE: Robust Tensor Graph Convolutional Networks via T-SVD based Graph Augmentation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539436>  
AUTHORS: Zhebin Wu, Lin Shu, Ziyue Xu, Yaomin Chang, Chuan Chen, Zibin Zheng  
HIGHLIGHT: In this paper, we propose a Robust Tensor Graph Convolutional Network (RT-GCN) model to improve the robustness.
- 203, TITLE: Self-Supervised Hypergraph Transformer for Recommender Systems  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539473>  
AUTHORS: Lianghao Xia, Chao Huang, Chuxu Zhang  
HIGHLIGHT: In this paper, we propose SHT, a novel Self-Supervised Hypergraph Transformer framework (SHT) which augments user representations by exploring the global collaborative relationships in an explicit way.
- 204, TITLE: Sample-Efficient Kernel Mean Estimator with Marginalized Corrupted Data  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539318>  
AUTHORS: Xiaobo Xia, Shuo Shan, Mingming Gong, Nannan Wang, Fei Gao, Haikun Wei, Tongliang Liu  
HIGHLIGHT: In this work, we propose to corrupt data examples with noise from known distributions and present a new kernel mean estimator, called the marginalized kernel mean estimator, which estimates kernel mean under the corrupted distributions.
- 205, TITLE: RetroGraph: Retrosynthetic Planning with Graph Search  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539446>  
AUTHORS: Shufang Xie, Rui Yan, Peng Han, Yingce Xia, Lijun Wu, Chenjuan Guo, Bin Yang, Tao Qin  
HIGHLIGHT: We propose a graph-based search policy that eliminates the redundant explorations of any intermediate molecules.
- 206, TITLE: Ultrahyperbolic Knowledge Graph Embeddings  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539333>  
AUTHORS: Bo Xiong, Shichao Zhu, Mojtaba Nayyeri, Chengjin Xu, Shirui Pan, Chuan Zhou, Steffen Staab

**HIGHLIGHT:** To capture the topological heterogeneity of KGs, we present an ultrahyperbolic KG embedding (UltraE) in an ultrahyperbolic (or pseudo-Riemannian) manifold that seamlessly interleaves hyperbolic and spherical manifolds.

207, **TITLE:** End-to-End Semi-Supervised Ordinal Regression AUC Maximization with Convolutional Kernel Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539307>

**AUTHORS:** Ziran Xiong, Wanli Shi, Bin Gu

**HIGHLIGHT:** Although recent research works have shown that directly optimizing AUC can impose a better ranking on the data than optimizing traditional error rate, it is still an open question to design an efficient semi-supervised ordinal regression AUC maximization algorithm based on CKN with convergence guarantee. To address this question, in this paper, we propose a new semi-supervised ordinal regression CKN algorithm ( $S^2$ CKNOR) with end-to-end AUC maximization.

208, **TITLE:** MetaPTP: An Adaptive Meta-optimized Model for Personalized Spatial Trajectory Prediction

<https://dl.acm.org/doi/abs/10.1145/3534678.3539360>

**AUTHORS:** Yuan Xu, Jiajie Xu, Jing Zhao, Kai Zheng, An Liu, Lei Zhao, Xiaofang Zhou

**HIGHLIGHT:** To this end, we propose an adaptive meta-optimized model called MetaPTP for personalized spatial trajectory prediction.

209, **TITLE:** Towards a Native Quantum Paradigm for Graph Representation Learning: A Sampling-based Recurrent Embedding Approach

<https://dl.acm.org/doi/abs/10.1145/3534678.3539327>

**AUTHORS:** Ge Yan, Yehui Tang, Junchi Yan

**HIGHLIGHT:** Different from many existing classical-quantum hybrid machine learning models on graphs, in this paper we take a more aggressive initiative for developing a native quantum paradigm for (attributed) graph representation learning, which to our best knowledge, has not been fulfilled in literature yet.

210, **TITLE:** Solving the Batch Stochastic Bin Packing Problem in Cloud: A Chance-constrained Optimization Approach

<https://dl.acm.org/doi/abs/10.1145/3534678.3539334>

**AUTHORS:** Jie Yan, Yunlei Lu, Liting Chen, Si Qin, Yixin Fang, Qingwei Lin, Thomas Moscibroda, Saravan Rajmohan, Dongmei Zhang

**HIGHLIGHT:** This paper investigates a critical resource allocation problem in the first party cloud: scheduling containers to machines.

211, **TITLE:** On-Device Learning for Model Personalization with Large-Scale Cloud-Coordinated Domain Adaption

<https://dl.acm.org/doi/abs/10.1145/3534678.3539263>

**AUTHORS:** Yikai Yan, Chaoyue Niu, Renjie Gu, Fan Wu, Shaojie Tang, Lifeng Hua, Chengfei Lyu, Guihai Chen

**HIGHLIGHT:** In this work, we propose a new device-cloud collaborative learning framework under the paradigm of domain adaption, called MPDA, to break the dilemmas of purely cloud-based learning and on-device training.

212, **TITLE:** Enhancing Machine Learning Approaches for Graph Optimization Problems with Diversifying Graph Augmentation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539437>

**AUTHORS:** Chen-Hsu Yang, Chih-Ya Shen

**HIGHLIGHT:** To address this critical issue, in this paper, we propose a new framework, named Learning with Iterative Graph Diversification (LIGD), and formulate a new research problem, named Diverse Graph Modification Problem (DGMP), that iteratively generate diversified training graphs and train the models that solve graph optimization problems to significantly improve their performance.

213, **TITLE:** Causal Discovery on Non-Euclidean Data

<https://dl.acm.org/doi/abs/10.1145/3534678.3539485>

**AUTHORS:** Jing Yang, Kai Xie, Ning An

**HIGHLIGHT:** We start by proposing the Non-Euclidean Causal Model (NECM) which describes the causal generative relationship of non-Euclidean data and creates a new tensor data type along with a mapping process for the non-Euclidean causal mechanism.

214, **TITLE:** HICF: Hyperbolic Informative Collaborative Filtering

<https://dl.acm.org/doi/abs/10.1145/3534678.3539475>

**AUTHORS:** Menglin Yang, Zhihao Li, Min Zhou, Jiahong Liu, Irwin King

**HIGHLIGHT:** Nonetheless, it remains unclear which kinds of items can be effectively recommended by the hyperbolic model and which cannot. To address the above concerns, we take the most basic recommendation technique, collaborative filtering, as a medium, to investigate the behaviors of hyperbolic and Euclidean recommendation models.

215, **TITLE:** Toward Real-life Dialogue State Tracking Involving Negative Feedback Utterances

<https://dl.acm.org/doi/abs/10.1145/3534678.3539385>

**AUTHORS:** Puhai Yang, Heyan Huang, Wei Wei, Xian-Ling Mao

**HIGHLIGHT:** Thus, in this paper, we will explore the role of negative feedback utterances in dialogue state tracking in detail through simulated negative feedback utterances.

216, **TITLE:** Numerical Tuple Extraction from Tables with Pre-training

<https://dl.acm.org/doi/abs/10.1145/3534678.3539460>

**AUTHORS:** Qingping Yang, Yixuan Cao, Ping Luo

**HIGHLIGHT:** To represent cells with their intricate correlations in tables, we propose a BERT-based pre-trained language model, TableLM, to encode tables with diverse layouts.

217, **TITLE:** Learning Task-relevant Representations for Generalization via Characteristic Functions of Reward Sequence Distributions

<https://dl.acm.org/doi/abs/10.1145/3534678.3539391>

**AUTHORS:** Rui Yang, Jie Wang, Zijie Geng, Mingxuan Ye, Shuiwang Ji, Bin Li, Feng Wu

**HIGHLIGHT:** However, visual distractions---which are common in real scenes---from high-dimensional observations can be hurtful to the learned representations in visual RL, thus degrading the performance of generalization. To tackle this problem, we propose a novel approach, namely Characteristic Reward Sequence Prediction (CRESP), to extract the task-relevant information by learning reward sequence distributions (RSDs), as the reward signals are task-relevant in RL and invariant to visual distractions.

218, **TITLE:** Reinforcement Subgraph Reasoning for Fake News Detection

<https://dl.acm.org/doi/abs/10.1145/3534678.3539277>

**AUTHORS:** Ruichao Yang, Xiting Wang, Yiqiao Jin, Chaozhuo Li, Jianxun Lian, Xing Xie

**HIGHLIGHT:** In particular, we propose a reinforced subgraph generation method, and perform fine-grained modeling on the generated subgraphs by developing a Hierarchical Path-aware Kernel Graph Attention Network.

219, **TITLE:** Multi-Behavior Hypergraph-Enhanced Transformer for Sequential Recommendation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539342>

**AUTHORS:** Yuhao Yang, Chao Huang, Lianghao Xia, Yuxuan Liang, Yanwei Yu, Chenliang Li

**HIGHLIGHT:** Despite their effectiveness, existing methods have far focused on item sequence representation with singular type of interactions, and thus are limited to capture dynamic heterogeneous relational structures between users and items (e.g., page view, add-to-favorite, purchase). To tackle this challenge, we design a Multi-Behavior Hypergraph-enhanced Transformer framework (MBHT) to capture both short-term and long-term cross-type behavior dependencies.

220, **TITLE:** TrajGAT: A Graph-based Long-term Dependency Modeling Approach for Trajectory Similarity Computation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539358>

**AUTHORS:** Di Yao, Haonan Hu, Lun Du, Gao Cong, Shi Han, Jingping Bi

**HIGHLIGHT:** In this paper, we propose a novel graph-based method, namely TrajGAT, to explicitly model the hierarchical spatial structure and improve the performance of long trajectory similarity computation.

221, **TITLE:** Learning Classifiers under Delayed Feedback with a Time Window Assumption

<https://dl.acm.org/doi/abs/10.1145/3534678.3539372>

**AUTHORS:** Shota Yasui, Masahiro Kato

**HIGHLIGHT:** However, existing studies reported that simply using a subset of all samples based on the time window assumption does not perform well, and that using all samples along with the time window assumption improves empirical performance. We extend these existing studies and propose a method with the unbiased and convex empirical risk that is constructed from all samples under the time window assumption.

222, **TITLE:** Learning the Evolutionary and Multi-scale Graph Structure for Multivariate Time Series Forecasting

<https://dl.acm.org/doi/abs/10.1145/3534678.3539274>

**AUTHORS:** Junchen Ye, Zihan Liu, Bowen Du, Leilei Sun, Weimiao Li, Yanjie Fu, Hui Xiong

**HIGHLIGHT:** To equip the graph neural network with a flexible and practical graph structure, in this paper, we investigate how to model the evolutionary and multi-scale interactions of time series.

223, **TITLE:** LeapAttack: Hard-Label Adversarial Attack on Text via Gradient-Based Optimization

<https://dl.acm.org/doi/abs/10.1145/3534678.3539357>

**AUTHORS:** Muchao Ye, Jinghui Chen, Chenglin Miao, Ting Wang, Fenglong Ma

**HIGHLIGHT:** In this paper, we propose a gradient-based optimization method named LeapAttack to craft high-quality text adversarial examples in the hard-label setting.

224, **TITLE:** Deconfounding Actor-Critic Network with Policy Adaptation for Dynamic Treatment Regimes

<https://dl.acm.org/doi/abs/10.1145/3534678.3539413>

**AUTHORS:** Changchang Yin, Ruoqi Liu, Jeffrey Caterino, Ping Zhang

**HIGHLIGHT:** In this study, we develop a new deconfounding actor-critic network (DAC) to learn optimal DTR policies for patients.

225, **TITLE:** Nimble GNN Embedding with Tensor-Train Decomposition

<https://dl.acm.org/doi/abs/10.1145/3534678.3539423>

**AUTHORS:** Chunxing Yin, Da Zheng, Israt Nisa, Christos Faloutsos, George Karypis, Richard Vuduc

**HIGHLIGHT:** This paper describes a new method for representing embedding tables of graph neural networks (GNNs) more compactly via tensor-train (TT) decomposition.

226, **TITLE:** Accurate Node Feature Estimation with Structured Variational Graph Autoencoder

<https://dl.acm.org/doi/abs/10.1145/3534678.3539337>

**AUTHORS:** Jaemin Yoo, Hyunsik Jeon, Jinhong Jung, U Kang

**HIGHLIGHT:** In this work, we propose SVGA (Structured Variational Graph Autoencoder), an accurate method for feature estimation.

- 227, TITLE: Adaptive Model Pooling for Online Deep Anomaly Detection from a Complex Evolving Data Stream  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539348>  
AUTHORS: Susik Yoon, Youngjun Lee, Jae-Gil Lee, Byung Suk Lee  
HIGHLIGHT: This paper presents a framework for online deep anomaly detection, ARCUS, which can be instantiated with any autoencoder-based deep anomaly detection methods.
- 228, TITLE: ROLAND: Graph Learning Framework for Dynamic Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539300>  
AUTHORS: Jiaxuan You, Tianyu Du, Jure Leskovec  
HIGHLIGHT: Here we propose ROLAND, an effective graph representation learning framework for real-world dynamic graphs.
- 229, TITLE: Availability Attacks Create Shortcuts  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539241>  
AUTHORS: Da Yu, Huishuai Zhang, Wei Chen, Jian Yin, Tie-Yan Liu  
HIGHLIGHT: Availability attacks, which poison the training data with imperceptible perturbations, can make the data not exploitable by machine learning algorithms so as to prevent unauthorized use of data. In this work, we investigate why these perturbations work in principle.
- 230, TITLE: Multiplex Heterogeneous Graph Convolutional Network  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539482>  
AUTHORS: Pengyang Yu, Chaofan Fu, Yanwei Yu, Chao Huang, Zhongying Zhao, Junyu Dong  
HIGHLIGHT: However, most existing works ignore the relation heterogeneity with multiplex network between multi-typed nodes and different importance of relations in meta-paths for node embedding, which can hardly capture the heterogeneous structure signals across different relations. To tackle this challenge, this work proposes a Multiplex Heterogeneous Graph Convolutional Network (MHGCN) for heterogeneous network embedding.
- 231, TITLE: MDP2 Forest: A Constrained Continuous Multi-dimensional Policy Optimization Approach for Short-video Recommendation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539341>  
AUTHORS: Sizhe Yu, Ziyi Liu, Shixiang Wan, Jia Zheng, Zang Li, Fan Zhou  
HIGHLIGHT: In this paper, we formalize the exposure proportion strategy as a policy-making problem with multi-dimensional continuous treatment under certain constraints from a causal inference point of view.
- 232, TITLE: Intrinsic-Motivated Sensor Management: Exploring with Physical Surprise  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539230>  
AUTHORS: Jingyi Yuan, Yang Weng, Erik Blasch  
HIGHLIGHT: This paper develops physics-embedded and self-supervised reinforcement learning for sensor management using an intrinsic reward.
- 233, TITLE: Dual Bidirectional Graph Convolutional Networks for Zero-shot Node Classification  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539316>  
AUTHORS: Qin Yue, Jiye Liang, Junbiao Cui, Liang Bai  
HIGHLIGHT: This paper proposes a Dual Bidirectional Graph Convolutional Networks (DBiGCN) that consists of dual BiGCNs from the perspective of the nodes and the classes, respectively.
- 234, TITLE: M3Care: Learning with Missing Modalities in Multimodal Healthcare Data  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539388>  
AUTHORS: Chaohe Zhang, Xu Chu, Liantao Ma, Yinghao Zhu, Yasha Wang, Jiangtao Wang, Junfeng Zhao  
HIGHLIGHT: To relieve the underdetermined system, we propose a model solving a direct problem, dubbed learning with Missing Modalities in Multimodal healthcare data (M3Care).
- 235, TITLE: Variational Graph Author Topic Modeling  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539310>  
AUTHORS: Delvin Ce Zhang, Hady W. Lauw  
HIGHLIGHT: Given above two challenges, we propose a Variational Graph Author Topic Model for documents to integrate both semantic interpretability and authorship and venue modeling into a unified VGAE framework.
- 236, TITLE: Physics-infused Machine Learning for Crowd Simulation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539440>  
AUTHORS: Guozhen Zhang, Zihan Yu, Depeng Jin, Yong Li  
HIGHLIGHT: In this work, we propose to jointly leverage the strength of the physical and neural network models for crowd simulation by a Physics-Infused Machine Learning (PIML) framework.
- 237, TITLE: Few-shot Heterogeneous Graph Learning via Cross-domain Knowledge Transfer  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539431>  
AUTHORS: Qiannan Zhang, Xiaodong Wu, Qiang Yang, Chuxu Zhang, Xiangliang Zhang  
HIGHLIGHT: To this end, we study the cross-domain few-shot learning problem over HGs and develop a novel model for Cross-domain Heterogeneous Graph Meta learning (CrossHG-Meta).

- 238, TITLE: M-Mix: Generating Hard Negatives via Multi-sample Mixing for Contrastive Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539248>  
AUTHORS: Shaofeng Zhang, Meng Liu, Junchi Yan, Hengrui Zhang, Lingxiao Huang, Xiaokang Yang, Pinyan Lu  
HIGHLIGHT: Inspired by recent hard negative mining methods via pairwise mixup operation in vision, we propose M-Mix, which dynamically generates a sequence of hard negatives.
- 239, TITLE: Multi-Agent Graph Convolutional Reinforcement Learning for Dynamic Electric Vehicle Charging Pricing  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539416>  
AUTHORS: Weijia Zhang, Hao Liu, Jindong Han, Yong Ge, Hui Xiong  
HIGHLIGHT: To this end, in this paper, we propose a Multi-Agent Graph Convolutional Reinforcement Learning (MAGC) framework to enable CSOs to achieve more effective use of these stations by providing dynamic pricing for each of the continuously arising charging requests with optimizing multiple long-term commercial goals.
- 240, TITLE: MetroGAN: Simulating Urban Morphology with Generative Adversarial Network  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539239>  
AUTHORS: Weiyu Zhang, Yiyang Ma, Di Zhu, Lei Dong, Yu Liu  
HIGHLIGHT: Here, we propose a GAN framework with geographical knowledge, namely Metropolitan GAN (MetroGAN), for urban morphology simulation.
- 241, TITLE: Model Degradation Hinders Deep Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539374>  
AUTHORS: Wentao Zhang, Zeang Sheng, Ziqi Yin, Yuezihan Jiang, Yikuan Xia, Jun Gao, Zhi Yang, Bin Cui  
HIGHLIGHT: In this paper, we disentangle the conventional graph convolution operation into two independent operations: Propagation (P) and Transformation (T).
- 242, TITLE: Counteracting User Attention Bias in Music Streaming Recommendation via Reward Modification  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539393>  
AUTHORS: Xiao Zhang, Sunhao Dai, Jun Xu, Zhenhua Dong, Quanyu Dai, Ji-Rong Wen  
HIGHLIGHT: In this paper, we propose a learning-based counterfactual approach to adjusting the user auto-feedbacks and learning the recommendation models using Neural Dueling Bandit algorithm, called NDB.
- 243, TITLE: Improving Social Network Embedding via New Second-Order Continuous Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539415>  
AUTHORS: Yanfu Zhang, Shangqian Gao, Jian Pei, Heng Huang  
HIGHLIGHT: We propose a semi-model-agnostic method based on our model to enhance the prediction explanation using high-order information.
- 244, TITLE: COSTA: Covariance-Preserving Feature Augmentation for Graph Contrastive Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539425>  
AUTHORS: Yifei Zhang, Hao Zhu, Zixing Song, Piotr Koniusz, Irwin King  
HIGHLIGHT: In this paper, we show that the node embedding obtained via the graph augmentations is highly biased, somewhat limiting contrastive models from learning discriminative features for downstream tasks. Thus, instead of investigating graph augmentation in the input space, we alternatively propose to perform augmentations on the hidden features (feature augmentation).
- 245, TITLE: Unsupervised Key Event Detection from Massive Text Corpora  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539395>  
AUTHORS: Yunyi Zhang, Fang Guo, Jiaming Shen, Jiawei Han  
HIGHLIGHT: In this paper, we propose a new task, key event detection at the intermediate level, which aims to detect from a news corpus key events (e.g., "HK Airport Protest on Aug. 12-14"), each happening at a particular time/location and focusing on the same topic.
- 246, TITLE: FLDetector: Defending Federated Learning Against Model Poisoning Attacks via Detecting Malicious Clients  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539231>  
AUTHORS: Zaixi Zhang, Xiaoyu Cao, Jinyuan Jia, Neil Zhenqiang Gong  
HIGHLIGHT: It is still an open challenge how to defend against model poisoning attacks with a large number of malicious clients. Our FLDetector addresses this challenge via detecting malicious clients.
- 247, TITLE: Adaptive Learning for Weakly Labeled Streams  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539351>  
AUTHORS: Zhen-Yu Zhang, Yu-Yang Qian, Yu-Jie Zhang, Yuan Jiang, Zhi-Hua Zhou  
HIGHLIGHT: When the data are constantly gathered with unknown noise on labels, it is quite challenging to design algorithms to obtain a well-generalized classifier. To address this difficulty, we propose a novel noise transition matrix estimation approach for data streams with scarce noisy labels by online anchor points identification.
- 248, TITLE: Adaptive Fairness-Aware Online Meta-Learning for Changing Environments  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539420>  
AUTHORS: Chen Zhao, Feng Mi, Xintao Wu, Kai Jiang, Latifur Khan, Feng Chen  
HIGHLIGHT: To address the fairness-aware online learning problem in changing environments, in this paper, we first construct a novel regret metric FairSAR by adding long-term fairness constraints onto a strongly adapted loss regret. Furthermore, to

determine a good model parameter at each round, we propose a novel adaptive fairness-aware online meta-learning algorithm, namely FairSAOML, which is able to adapt to changing environments in both bias control and model precision.

- 249, TITLE: MT-FlowFormer: A Semi-Supervised Flow Transformer for Encrypted Traffic Classification  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539314>  
AUTHORS: Ruijie Zhao, Xianwen Deng, Zhicong Yan, Jun Ma, Zhi Xue, Yijun Wang  
HIGHLIGHT: However, these works still suffer from two main intrinsic limitations: (1) the feature extraction process lacks a mechanism to take into account correlations between flows in the flow sequence; and (2) a large volume of manually-labeled data is required for training an effective deep classifier. In this paper, we propose a novel semi-supervised framework to address these problems.
- 250, TITLE: Integrity Authentication in Tree Models  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539428>  
AUTHORS: Weijie Zhao, Yingjie Lao, Ping Li  
HIGHLIGHT: In this paper, we study the problem of model integrity authentication in tree models.
- 251, TITLE: Contrastive Learning with Complex Heterogeneity  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539311>  
AUTHORS: Lecheng Zheng, Jinjun Xiong, Yada Zhu, Jingrui He  
HIGHLIGHT: To overcome the issues, in this paper, we propose a unified heterogeneous learning framework, which combines both the weighted unsupervised contrastive loss and the weighted supervised contrastive loss to model multiple types of heterogeneity.
- 252, TITLE: Instant Graph Neural Networks for Dynamic Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539352>  
AUTHORS: Yanping Zheng, Hanzhi Wang, Zhewei Wei, Jiajun Liu, Sibow Wang  
HIGHLIGHT: In this paper, we propose Instant Graph Neural Network (InstantGNN), an incremental computation approach for the graph representation matrix of dynamic graphs.
- 253, TITLE: KRATOS: Context-Aware Cell Type Classification and Interpretation using Joint Dimensionality Reduction and Clustering  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539455>  
AUTHORS: Zihan Zhou, Zijia Du, Somali Chaterji  
HIGHLIGHT: In our system, KRATOS, we alter the three-step workflow to a two-step one, where we jointly optimize the first two steps and add the third (interpretability) step to form an integrated sc-RNA-seq analysis pipeline.
- 254, TITLE: Unified 2D and 3D Pre-Training of Molecular Representations  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539368>  
AUTHORS: Jinhua Zhu, Yingce Xia, Lijun Wu, Shufang Xie, Tao Qin, Wengang Zhou, Houqiang Li, Tie-Yan Liu  
HIGHLIGHT: We note that most previous work handles 2D and 3D information separately, while jointly leveraging these two sources may foster a more informative representation. In this work, we explore this appealing idea and propose a new representation learning method based on a unified 2D and 3D pre-training.
- 255, TITLE: How does Heterophily Impact the Robustness of Graph Neural Networks?: Theoretical Connections and Practical Implications  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539418>  
AUTHORS: Jiong Zhu, Junchen Jin, Donald Loveland, Michael T. Schaub, Danaï Koutra  
HIGHLIGHT: We bridge two research directions on graph neural networks (GNNs), by formalizing the relation between heterophily of node labels (i.e., connected nodes tend to have dissimilar labels) and the robustness of GNNs to adversarial attacks.
- 256, TITLE: A Nearly-Linear Time Algorithm for Minimizing Risk of Conflict in Social Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539469>  
AUTHORS: Liwang Zhu, Zhongzhi Zhang  
HIGHLIGHT: In this paper, we study the problem of minimizing risk of conflict in social networks by modifying the initial opinions of a small number of nodes.
- 257, TITLE: A Process-Aware Decision Support System for Business Processes  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539088>  
AUTHORS: Perna Agarwal, Buyu Gao, Siyu Huo, Prabhat Reddy, Sampath Dechu, Yazan Obeidi, Vinod Muthusamy, Vatche Isahagian, Sebastian Carbajales  
HIGHLIGHT: Overlooking some of the essential factors or lack of knowledge can impact the throughput and business outcomes. Therefore, we propose an end-to-end automated decision support system with explanation for business processes.
- 258, TITLE: RCAD: Real-time Collaborative Anomaly Detection System for Mobile Broadband Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539097>  
AUTHORS: Azza H. Ahmed, Michael A. Riegler, Steven A. Hicks, Ahmed Elmokashfi  
HIGHLIGHT: In this paper, we propose, RCAD, a novel distributed architecture for detecting anomalies in network data forwarding latency in an unsupervised fashion.
- 259, TITLE: Generalizable Floorplanner through Corner Block List Representation and Hypergraph Embedding  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539220>



- AUTHORS:** Mohammad Amini, Zhanguang Zhang, Surya Penmetta, Yingxue Zhang, Jianye Hao, Wulong Liu  
**HIGHLIGHT:** In this work, we propose a novel deep reinforcement learning agent to perform floorplanning, one of the early stages of VLSI physical design.
- 260, **TITLE:** ItemSage: Learning Product Embeddings for Shopping Recommendations at Pinterest  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539170>  
**AUTHORS:** Paul Baltescu, Haoyu Chen, Nikil Pancha, Andrew Zhai, Jure Leskovec, Charles Rosenberg  
**HIGHLIGHT:** At Pinterest, we build a single set of product embeddings called ItemSage to provide relevant recommendations in all shopping use cases including user, image and search based recommendations.
- 261, **TITLE:** Company-as-Tribe: Company Financial Risk Assessment on Tribe-Style Graph with Hierarchical Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539129>  
**AUTHORS:** Wendong Bi, Bingbing Xu, Xiaoqian Sun, Zidong Wang, Huawei Shen, Xueqi Cheng  
**HIGHLIGHT:** In this paper, we propose a novel Hierarchical Graph Neural Network (TH-GNN) for Tribe-style graphs via two levels, with the first level to encode the structure pattern of the tribes with contrastive learning, and the second level to diffuse information based on the inter-tribe relations, achieving effective and efficient risk assessment.
- 262, **TITLE:** Personalized Chit-Chat Generation for Recommendation Using External Chat Corpora  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539215>  
**AUTHORS:** Changyu Chen, Xiting Wang, Xiaoyuan Yi, Fangzhao Wu, Xing Xie, Rui Yan  
**HIGHLIGHT:** We find with a user study that generating appropriate chit-chat for news articles can help expand user interest and increase the probability that a user reads a recommended news article. Based on this observation, we propose a method to generate personalized chit-chat for news recommendation.
- 263, **TITLE:** EXTR: Click-Through Rate Prediction with Externalities in E-Commerce Sponsored Search  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539053>  
**AUTHORS:** Chi Chen, Hui Chen, Kangzhi Zhao, Junsheng Zhou, Li He, Hongbo Deng, Jian Xu, Bo Zheng, Yong Zhang, Chunxiao Xing  
**HIGHLIGHT:** Facing the above challenges, inspired by the Transformer, we propose EXternality TRansformer (EXTR) which regards target ad with all slots as query and external items as key&value to model externalities in all exposure situations in parallel.
- 264, **TITLE:** BrainNet: Epileptic Wave Detection from SEEG with Hierarchical Graph Diffusion Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539178>  
**AUTHORS:** Junru Chen, Yang Yang, Tao Yu, Yingying Fan, Xiaolong Mo, Carl Yang  
**HIGHLIGHT:** Moreover, the nature of epileptic waves and SEEG data inevitably leads to extremely imbalanced labels and severe noise. To address these challenges, we propose a novel model (BrainNet) that jointly learns the dynamic diffusion graphs and models the brain wave diffusion patterns.
- 265, **TITLE:** Physics-Guided Graph Meta Learning for Predicting Water Temperature and Streamflow in Stream Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539115>  
**AUTHORS:** Shengyu Chen, Jacob A. Zwart, Xiaowei Jia  
**HIGHLIGHT:** This paper proposes a graph-based meta learning approach to separately predict water quantity and quality variables for river segments in stream networks.
- 266, **TITLE:** AntiBenford Subgraphs: Unsupervised Anomaly Detection in Financial Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539100>  
**AUTHORS:** Tianyi Chen, Charalampos Tsourakakis  
**HIGHLIGHT:** We propose the AntiBenford subgraph framework that is founded on well-established statistical principles.
- 267, **TITLE:** Interpreting Trajectories from Multiple Views: A Hierarchical Self-Attention Network for Estimating the Time of Arrival  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539051>  
**AUTHORS:** Zebin Chen, Xiaolin Xiao, Yue-Jiao Gong, Jun Fang, Nan Ma, Hua Chai, Zhiguang Cao  
**HIGHLIGHT:** To overcome the limitation, this study proposes multi-view trajectory representation that comprehensively interprets a trajectory from the segment-, link-, and intersection-views.
- 268, **TITLE:** ILASR: Privacy-Preserving Incremental Learning for Automatic Speech Recognition at Production Scale  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539174>  
**AUTHORS:** Gopinath Chennupati, Milind Rao, Gurpreet Chadha, Aaron Eakin, Anirudh Raju, Gautam Tiwari, Anit Kumar Sahu, Ariya Rastrow, Jasha Droppo, Andy Oberlin, Buddha Nandanoor, Prahalad Venkataramanan, Zheng Wu, Pankaj Sitpure  
**HIGHLIGHT:** Motivated by these challenges, in this paper we use a cloud based framework for production systems to demonstrate insights from privacy preserving incremental learning for automatic speech recognition (ILASR).
- 269, **TITLE:** Graph-based Multilingual Language Model: Leveraging Product Relations for Search Relevance  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539158>  
**AUTHORS:** Nurendra Choudhary, Nikhil Rao, Karthik Subbian, Chandan K. Reddy  
**HIGHLIGHT:** In this paper, we formulate search relevance as a multi-class classification problem and propose a graph-based solution to classify a given query-item pair as exact, substitute, complement, or irrelevant (ESCI).

- 270, TITLE: Ask to Know More: Generating Counterfactual Explanations for Fake Claims  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539205>  
AUTHORS: Shih-Chieh Dai, Yi-Li Hsu, Aiping Xiong, Lun-Wei Ku  
HIGHLIGHT: In this paper, we propose elucidating fact-checking predictions using counterfactual explanations to help people understand why a specific piece of news was identified as fake.
- 271, TITLE: The Good, the Bad, and the Outliers: A Testing Framework for Decision Optimization Model Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539094>  
AUTHORS: Orit Davidovich, Gheorghe-Teodor Bercea, Segev Wasserkrug  
HIGHLIGHT: We introduce an open-source framework designed for large-scale testing and solution quality analysis of DO model learning algorithms.
- 272, TITLE: Amazon Shop the Look: A Visual Search System for Fashion and Home  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539071>  
AUTHORS: Ming Du, Arnau Ramisa, Amit Kumar K C, Sampath Chanda, Mengjiao Wang, Neelakandan Rajesh, Shasha Li, Yingchuan Hu, Tao Zhou, Nagashri Lakshminarayana, Son Tran, Doug Gray  
HIGHLIGHT: In this paper, we introduce Shop the Look, a web-scale fashion and home product visual search system deployed at Amazon.
- 273, TITLE: Affective Signals in a Social Media Recommender System  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539054>  
AUTHORS: Jane Dwivedi-Yu, Yi-Chia Wang, Lijing Qin, Cristian Canton-Ferrer, Alon Y. Halevy  
HIGHLIGHT: This paper describes the challenges and solutions we developed to apply Affective Computing to social media recommendation systems.
- 274, TITLE: TwHIN: Embedding the Twitter Heterogeneous Information Network for Personalized Recommendation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539080>  
AUTHORS: Ahmed El-Kishky, Thomas Markovich, Serim Park, Chetan Verma, Baekjin Kim, Ramy Eskander, Yury Malkov, Frank Portman, Sof&iacute;a Samaniego, Ying Xiao, Aria Haghighi  
HIGHLIGHT: In this work, we investigate knowledge-graph embeddings for entities in the Twitter HIN (TwHIN); we show that these pretrained representations yield significant offline and online improvement for a diverse range of downstream recommendation and classification tasks: personalized ads rankings, account follow-recommendation, offensive content detection, and search ranking.
- 275, TITLE: Automatic Generation of Product-Image Sequence in E-commerce  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539149>  
AUTHORS: Xiaochuan Fan, Chi Zhang, Yong Yang, Yue Shang, Xueying Zhang, Zhen He, Yun Xiao, Bo Long, Lingfei Wu  
HIGHLIGHT: To address these challenges, in this paper, we present a new learning framework in order to achieve Automatic Generation of Product-Image Sequence (AGPIS) in e-commerce.
- 276, TITLE: SAMCNet: Towards a Spatially Explainable AI Approach for Classifying MxIF Oncology Data  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539168>  
AUTHORS: Majid Farhadloo, Carl Molnar, Gaoxiang Luo, Yan Li, Shashi Shekhar, Rachel L. Maus, Svetomir Markovic, Alexey Leontovich, Raymond Moore  
HIGHLIGHT: In addition, the related deep neural networks are limited to category pairs and do not explore larger subsets of point categories. To overcome these limitations, we propose a Spatial-interaction Aware Multi-Category deep neural Network (SAMCNet) architecture and contribute novel local reference frame characterization and point pair prioritization layers for spatially explainable classification.
- 277, TITLE: Large-Scale Acoustic Automobile Fault Detection: Diagnosing Engines Through Sound  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539066>  
AUTHORS: Dennis Fedorishin, Justas Birgiolas, Deen Dayal Mohan, Livio Forte, Philip Schneider, Srirangaraj Setlur, Venu Govindaraju  
HIGHLIGHT: In this paper we present AMPNet, an acoustic abnormality detection model deployed at ACV Auctions to automatically identify engine faults of vehicles listed on the ACV Auctions platform.
- 278, TITLE: Precise Mobility Intervention for Epidemic Control Using Unobservable Information via Deep Reinforcement Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539195>  
AUTHORS: Tao Feng, Tong Xia, Xiaochen Fan, Huandong Wang, Zefang Zong, Yong Li  
HIGHLIGHT: In this paper, we propose a Variational hiErarchiCal reinforcement Learning method for Epidemic control via individual-level mobility intervention, namely Vehicle.
- 279, TITLE: Alexa Teacher Model: Pretraining and Distilling Multi-Billion-Parameter Encoders for Natural Language Understanding Systems  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539173>  
AUTHORS: Jack FitzGerald, Shankar Ananthkrishnan, Konstantine Arkoudas, Davide Bernardi, Abhishek Bhagia, Claudio Delli Bovi, Jin Cao, Rakesh Chada, Amit Chauhan, Luoxin Chen, Anurag Dwarakanath, Satyam Dwivedi, Turan Gojavey, Karthik

Gopalakrishnan, Thomas Gueudre, Dilek Hakkani-Tur, Wael Hamza, Jonathan J. H&uuml;ser, Kevin Martin Jose, Haidar Khan, Beiye Liu, Jianhua Lu, Alessandro Manzotti, Pradeep Natarajan, Karolina Owczarzak, Gokmen Oz, Enrico Palumbo, Charith Peris, Chandana Satya Prakash, Stephen Rawls, Andy Rosenbaum, Anjali Shenoy, Saleh Soltan, Mukund Harakere Sridhar, Lizhen Tan, Fabian Triefenbach, Pan Wei, Haiyang Yu, Shuai Zheng, Gokhan Tur, Prem Natarajan  
HIGHLIGHT: We present results from a large-scale experiment on pretraining encoders with non-embedding parameter counts ranging from 700M to 9.3B, their subsequent distillation into smaller models ranging from 17M-170M parameters, and their application to the Natural Language Understanding (NLU) component of a virtual assistant system.

280, TITLE: DP-GAT: A Framework for Image-based Disease Progression Prediction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539113>  
AUTHORS: Alex Foo, Wynne Hsu, Mong Li Lee, Gavin S. W. Tan  
HIGHLIGHT: In this work, we propose a framework called DP-GAT to identify regions containing significant biological structures and model the relationships among these regions as a graph along with their respective contexts.

281, TITLE: Graph Meta-Reinforcement Learning for Transferable Autonomous Mobility-on-Demand  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539180>  
AUTHORS: Daniele Gammelli, Kaidi Yang, James Harrison, Filipe Rodrigues, Francisco Pereira, Marco Pavone  
HIGHLIGHT: However, real-world system operators can hardly afford to fully re-train AMoD controllers for every city they operate in, as this could result in a high number of poor-quality decisions during training, making the single-city strategy a potentially impractical solution. To address these limitations, we propose to formalize the multi-city AMoD problem through the lens of meta-reinforcement learning (meta-RL) and devise an actor-critic algorithm based on recurrent graph neural networks.

282, TITLE: Applying Deep Learning Based Probabilistic Forecasting to Food Preparation Time for On-Demand Delivery Service  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539035>  
AUTHORS: Chengliang Gao, Fan Zhang, Yue Zhou, Ronggen Feng, Qiang Ru, Kaigui Bian, Renqing He, Zhizhao Sun  
HIGHLIGHT: In this paper, we apply probabilistic forecasting to FPT for the first time and propose a non-parametric method based on deep learning.

283, TITLE: Collaborative Intelligence Orchestration: Inconsistency-Based Fusion of Semi-Supervised Learning and Active Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539022>  
AUTHORS: Jiannan Guo, Yangyang Kang, Yu Duan, Xiaozhong Liu, Siliang Tang, Wenqiao Zhang, Kun Kuang, Changlong Sun, Fei Wu  
HIGHLIGHT: Motivated by the industry practice of labeling data, we propose an innovative Inconsistency-based virtual aDvErsarial Active Learning (IDEAL) algorithm to further investigate SSL-AL's potential superiority and achieve mutual enhancement of AL and SSL, i.e., SSL propagates label information to unlabeled samples and provides smoothed embeddings for AL, while AL excludes samples with inconsistent predictions and considerable uncertainty for SSL.

284, TITLE: Automatic Controllable Product Copywriting for E-Commerce  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539171>  
AUTHORS: Xiaojie Guo, Qingkai Zeng, Meng Jiang, Yun Xiao, Bo Long, Lingfei Wu  
HIGHLIGHT: In this paper, we report our experience in deploying an E-commerce Prefix-based Controllable Copywriting Generation (EPCCG) system into the JD.com e-commerce product recommendation platform.

285, TITLE: Talent Demand-Supply Joint Prediction with Dynamic Heterogeneous Graph Enhanced Meta-Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539139>  
AUTHORS: Zhuoning Guo, Hao Liu, Le Zhang, Qi Zhang, Hengshu Zhu, Hui Xiong  
HIGHLIGHT: To this end, in this paper, we propose a Dynamic Heterogeneous Graph Enhanced Meta-learning (DH-GEM) framework for fine-grained talent demand-supply joint prediction.

286, TITLE: Real-Time Rideshare Driver Supply Values Using Online Reinforcement Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539141>  
AUTHORS: Benjamin Han, Hyungjun Lee, S&eacute;bastien Martin  
HIGHLIGHT: In this paper, we present Online Supply Values (OSV), a system for estimating the return of available rideshare drivers to match drivers to ride requests at Lyft.

287, TITLE: Learning Sparse Latent Graph Representations for Anomaly Detection in Multivariate Time Series  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539117>  
AUTHORS: Siho Han, Simon S. Woo  
HIGHLIGHT: In this work, we introduce Fused Sparse Autoencoder and Graph Net (FuSAGNet), which jointly optimizes reconstruction and forecasting while explicitly modeling the relationships within multivariate time series.

288, TITLE: Three-Stage Root Cause Analysis for Logistics Time Efficiency via Explainable Machine Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539024>  
AUTHORS: Shiqi Hao, Yang Liu, Yu Wang, Yuan Wang, Wenming Zhe  
HIGHLIGHT: However, the delay in logistics transportation and delivery can still happen due to various practical issues, which significantly impact the quality of logistics service. In order to address this issue, this work investigates the root causes impacting the time efficiency, thereby facilitating the operation of logistics systems such that resources can be appropriately allocated to improve the performance.

- 289, TITLE: Unsupervised Learning Style Classification for Learning Path Generation in Online Education Platforms  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539107>  
AUTHORS: Zhicheng He, Wei Xia, Kai Dong, Huifeng Guo, Ruiming Tang, Dingyin Xia, Rui Zhang  
HIGHLIGHT: In this paper, we give a formal definition of the unsupervised LSC problem and summarize the domain knowledge into problem-solving heuristics (which addresses C1).
- 290, TITLE: Greyscale: Deploying Flexible Forecasting at Scale at LinkedIn  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539165>  
AUTHORS: Reza Hosseini, Albert Chen, Kaixu Yang, Sayan Patra, Yi Su, Saad Eddin Al Orjany, Sishi Tang, Parvez Ahammad  
HIGHLIGHT: We present Greyscale, an open-source Python library for forecasting that has been deployed on over twenty use cases at LinkedIn.
- 291, TITLE: Learning Backward Compatible Embeddings  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539194>  
AUTHORS: Weihua Hu, Rajas Bansal, Kaidi Cao, Nikhil Rao, Karthik Subbian, Jure Leskovec  
HIGHLIGHT: Our key idea is that whenever a new embedding model is trained, we learn it together with a light-weight backward compatibility transformation that aligns the new embedding to the previous version of it.
- 292, TITLE: ERNIE-GeoL: A Geography-and-Language Pre-trained Model and its Applications in Baidu Maps  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539021>  
AUTHORS: Jizhou Huang, Haifeng Wang, Yibo Sun, Yunsheng Shi, Zhengjie Huang, An Zhuo, Shikun Feng  
HIGHLIGHT: One of the main reasons for this plateau is the lack of readily available geographic knowledge in generic PTMs. To address this problem, in this paper, we present ERNIE-GeoL, which is a geography-and-language pre-trained model designed and developed for improving the geo-related tasks at Baidu Maps.
- 293, TITLE: DuIVA: An Intelligent Voice Assistant for Hands-free and Eyes-free Voice Interaction with the Baidu Maps App  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539030>  
AUTHORS: Jizhou Huang, Haifeng Wang, Shiqiang Ding, Shaolei Wang  
HIGHLIGHT: In this paper, we present our efforts and findings of a 4-year longitudinal study on designing and implementing DuIVA, which is an intelligent voice assistant (IVA) embedded in the Baidu Maps app for hands-free, eyes-free human-to-app interaction in a fully voice-controlled manner.
- 294, TITLE: Rax: Composable Learning-to-Rank Using JAX  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539065>  
AUTHORS: Rolf Jagerman, Xuanhui Wang, Honglei Zhuang, Zhen Qin, Michael Bendersky, Marc Najork  
HIGHLIGHT: The goal of Rax is to facilitate easy prototyping of LTR systems by leveraging the flexibility and simplicity of JAX.
- 295, TITLE: A Fully Differentiable Set Autoencoder  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539153>  
AUTHORS: Nikita Janakarajan, Jannis Born, Matteo Manica  
HIGHLIGHT: Leveraging deep representation learning, we propose a generic, robust and systematic model that is able to combine multiple data modalities in a permutation and modes-number-invariant fashion, both fundamental properties to properly face changes in data type content and availability.
- 296, TITLE: Precision CityShield Against Hazardous Chemicals Threats via Location Mining and Self-Supervised Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539028>  
AUTHORS: Jiahao Ji, Jingyuan Wang, Junjie Wu, Boyang Han, Junbo Zhang, Yu Zheng  
HIGHLIGHT: How to recognize these unknown HCLs and identify their risk levels is an essential task for urban hazardous chemicals management. To accomplish this task, in this work, we propose a system named as CityShield to discover hidden HCLs and classify their risk levels based on trajectories of hazardous chemicals transportation vehicles.
- 297, TITLE: Augmenting Log-based Anomaly Detection Models to Reduce False Anomalies with Human Feedback  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539106>  
AUTHORS: Tong Jia, Ying Li, Yong Yang, Gang Huang, Zhonghai Wu  
HIGHLIGHT: Through the study, we identify four typical anti-patterns that affect the detection results the most. Based on these patterns, we propose HiLog, an effective human-in-the-loop log-based anomaly detection approach that integrates human knowledge to augment anomaly detection models.
- 298, TITLE: T-Cell Receptor-Peptide Interaction Prediction with Physical Model Augmented Pseudo-Labeling  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539075>  
AUTHORS: Yiren Jian, Erik Kruus, Martin Renqiang Min  
HIGHLIGHT: To combat the data scarcity issue presented in the current datasets, we propose to extend the training dataset by physical modeling of TCR-peptide pairs.
- 299, TITLE: Analyzing Online Transaction Networks with Network Motifs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539096>

- AUTHORS: Jiawei Jiang, Yusong Hu, Xiaosen Li, Wen Ouyang, Zhitao Wang, Fangcheng Fu, Bin Cui  
HIGHLIGHT: In this work, we analyze online transaction networks from the perspective of network motif.
- 300, TITLE: Predicting Bearings Degradation Stages for Predictive Maintenance in the Pharmaceutical Industry  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539057>  
AUTHORS: Dovile Juodelyte, Veronika Cheplygina, Therese Graversen, Philippe Bonnet  
HIGHLIGHT: In this paper, we focus on rolling-elements bearings and we propose a framework for predicting their degradation stages automatically.
- 301, TITLE: Vexation-Aware Active Learning for On-Menu Restaurant Dish Availability  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539152>  
AUTHORS: Jean-François Kagy, Flip Korn, Afshin Rostamizadeh, Chris Welty  
HIGHLIGHT: In this paper, we study the problem of Vexation-Aware Active Learning (VAAL), where judiciously selected questions are targeted towards improving restaurant-dish model prediction, subject to a limit on the percentage of "unsure" answers or "dismissals" (e.g., swiping the app closed) measuring user vexation.
- 302, TITLE: COBART: Controlled, Optimized, Bidirectional and Auto-Regressive Transformer for Ad Headline Generation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539069>  
AUTHORS: Yashal Shakti Kanungo, Gyanendra Das, Pooja A, Sumit Negi  
HIGHLIGHT: We propose a novel method that uses prefix control tokens along with BART [16] fine-tuning.
- 303, TITLE: Preventing Catastrophic Forgetting in Continual Learning of New Natural Language Tasks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539169>  
AUTHORS: Sudipta Kar, Giuseppe Castellucci, Simone Filice, Shervin Malmasi, Oleg Rokhlenko  
HIGHLIGHT: In this paper, we approach the problem of incrementally expanding MTL models' capability to solve new tasks over time by distilling the knowledge of an already trained model on  $n$  tasks into a new one for solving  $n+1$  tasks.
- 304, TITLE: SoccerCPD: Formation and Role Change-Point Detection in Soccer Matches Using Spatiotemporal Tracking Data  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539150>  
AUTHORS: Hyunsung Kim, Bit Kim, Dongwook Chung, Jinsung Yoon, Sang-Ki Ko  
HIGHLIGHT: However, existing approaches either assume that team formation is consistent throughout a match or assign formations frame-by-frame, which disagree with real situations. To tackle this issue, we propose a change-point detection framework named SoccerCPD that distinguishes tactically intended formation and role changes from temporary changes in soccer matches.
- 305, TITLE: Fast Mining and Forecasting of Co-evolving Epidemiological Data Streams  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539078>  
AUTHORS: Tasuku Kimura, Yasuko Matsubara, Koki Kawabata, Yasushi Sakurai  
HIGHLIGHT: In this paper, we propose a new streaming algorithm, EPICAST, which is able to model, understand and forecast dynamical patterns in large co-evolving epidemiological data streams.
- 306, TITLE: A/B Testing Intuition Busters: Common Misunderstandings in Online Controlled Experiments  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539160>  
AUTHORS: Ron Kohavi, Alex Deng, Lukas Vermeer  
HIGHLIGHT: While the statistics behind controlled experiments are well documented and some basic pitfalls known, we have observed some seemingly intuitive concepts being touted, including by A/B tool vendors and agencies, which are misleading, often badly so. Our goal is to describe these misunderstandings, the "intuition" behind them, and to explain and bust that intuition with solid statistical reasoning.
- 307, TITLE: Multi-Aspect Dense Retrieval  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539137>  
AUTHORS: Weize Kong, Swaraj Khadanga, Cheng Li, Shaleen Kumar Gupta, Mingyang Zhang, Wensong Xu, Michael Bendersky  
HIGHLIGHT: We propose to explicitly represent multiple aspects using one embedding per aspect.
- 308, TITLE: Self-Supervised Augmentation and Generation for Multi-lingual Text Advertisements at Bing  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539091>  
AUTHORS: Xiaoyu Kou, Tianqi Zhao, Fan Zhang, Song Li, Qi Zhang  
HIGHLIGHT: In this paper, we propose a unified Self-Supervised Augmentation and Generation (SAG) architecture to handle the multi-lingual text advertisements generation task in a real production scenario.
- 309, TITLE: A New Generation of Perspective API: Efficient Multilingual Character-level Transformers  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539147>  
AUTHORS: Alyssa Lees, Vinh Q. Tran, Yi Tay, Jeffrey Sorensen, Jai Gupta, Donald Metzler, Lucy Vasserman  
HIGHLIGHT: In this paper, we present the fundamentals behind the next version of the Perspective API from Google Jigsaw.
- 310, TITLE: EdgeWatch: Collaborative Investigation of Data Integrity at the Edge based on Blockchain  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539104>  
AUTHORS: Bo Li, Qiang He, Liang Yuan, Feifei Chen, Lingjuan Lyu, Yun Yang

**HIGHLIGHT:** There are two main challenges in practice: 1) there is a lack of Byzantine-tolerant collaborative investigation method; and 2) edge servers may be reluctant to collaborate without proper incentives. To tackle these challenges systematically, this paper proposes a novel scheme named EdgeWatch to enable robust and collaborative EDI investigation in a decentralized manner based on blockchain.

311, **TITLE:** Design Domain Specific Neural Network via Symbolic Testing  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539118>  
**AUTHORS:** Hui Li, Xing Fu, Ruofan Wu, Jinyu Xu, Kai Xiao, Xiaofu Chang, Weiqiang Wang, Shuai Chen, Leilei Shi, Tao Xiong, Yuan Qi

**HIGHLIGHT:** A systematic investigation over simulated data reveals the fact that the self-attention architecture fails to learn some standard symbolic expressions like the count distinct operation. To overcome this deficiency, we propose a novel architecture named SHORING, which contains two components: event network and sequence network.

312, **TITLE:** Causal Inference-Based Root Cause Analysis for Online Service Systems with Intervention Recognition  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539041>

**AUTHORS:** Mingjie Li, Zeyan Li, Kanglin Yin, Xiaohui Nie, Wenchi Zhang, Kaixin Sui, Dan Pei

**HIGHLIGHT:** In this paper, we formulate the root cause analysis problem as a new causal inference task named intervention recognition.

313, **TITLE:** AutoFAS: Automatic Feature and Architecture Selection for Pre-Ranking System

<https://dl.acm.org/doi/abs/10.1145/3534678.3539083>

**AUTHORS:** Xiang Li, Xiaojiang Zhou, Yao Xiao, Peihao Huang, Dayao Chen, Sheng Chen, Yunsen Xian

**HIGHLIGHT:** In this work, a novel framework AutoFAS is proposed which jointly optimizes the efficiency and effectiveness of the pre-ranking model: (i) AutoFAS for the first time simultaneously selects the most valuable features and network architectures using Neural Architecture Search (NAS) technique; (ii) equipped with ranking model guided reward during NAS procedure, AutoFAS can select the best pre-ranking architecture for a given ranking teacher without any computation overhead.

314, **TITLE:** Arbitrary Distribution Modeling with Censorship in Real-Time Bidding Advertising

<https://dl.acm.org/doi/abs/10.1145/3534678.3539048>

**AUTHORS:** Xu Li, Michelle Ma Zhang, Zhenya Wang, Youjun Tong

**HIGHLIGHT:** In this paper, we devise a novel loss function, Neighborhood Likelihood Loss (NLL), collaborating with a proposed framework, Arbitrary Distribution Modeling (ADM), to predict the winning price distribution under censorship with no pre-assumption required.

315, **TITLE:** Automatically Discovering User Consumption Intents in Meituan

<https://dl.acm.org/doi/abs/10.1145/3534678.3539122>

**AUTHORS:** Yinfeng Li, Chen Gao, Xiaoyi Du, Huazhou Wei, Hengliang Luo, Depeng Jin, Yong Li

**HIGHLIGHT:** For the intent discovery decoder, we propose to build intent-pair pseudo labels based on the denoised feature similarities to transfer knowledge from known intents to new ones.

316, **TITLE:** Towards Learning Disentangled Representations for Time Series

<https://dl.acm.org/doi/abs/10.1145/3534678.3539140>

**AUTHORS:** Yuening Li, Zhengzhang Chen, Daochen Zha, Mengnan Du, Jingchao Ni, Denghui Zhang, Haifeng Chen, Xia Hu

**HIGHLIGHT:** In this paper, we propose Disentangle Time-Series, a novel disentanglement enhancement framework for time series data.

317, **TITLE:** TaxoTrans: Taxonomy-Guided Entity Translation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539188>

**AUTHORS:** Zhuliu Li, Yiming Wang, Xiao Yan, Weizhi Meng, Yanen Li, Jaewon Yang

**HIGHLIGHT:** In this paper, we tackle the task of taxonomy entity translation, which is to translate the names of taxonomy entities in a source language to a target language.

318, **TITLE:** Persia: An Open, Hybrid System Scaling Deep Learning-based Recommenders up to 100 Trillion Parameters

<https://dl.acm.org/doi/abs/10.1145/3534678.3539070>

**AUTHORS:** Xiangru Lian, Binhang Yuan, Xuefeng Zhu, Yulong Wang, Yongjun He, Honghuan Wu, Lei Sun, Haodong Lyu, Chengjun Liu, Xing Dong, Yiqiao Liao, Mingnan Luo, Congfei Zhang, Jingru Xie, Haonan Li, Lei Chen, Renjie Huang, Jianying Lin, Chengchun Shu, Xuezhong Qiu, Zhishan Liu, Dongying Kong, Lei Yuan, Hai Yu, Sen Yang, Ce Zhang, Ji Liu

**HIGHLIGHT:** However, the training of such models is challenging even within industrial scale data centers. We resolve this challenge by careful co-design of both optimization algorithm and distributed system architecture.

319, **TITLE:** Duplex Conversation: Towards Human-like Interaction in Spoken Dialogue Systems

<https://dl.acm.org/doi/abs/10.1145/3534678.3539209>

**AUTHORS:** Ting-En Lin, Yuchuan Wu, Fei Huang, Luo Si, Jian Sun, Yongbin Li

**HIGHLIGHT:** In this paper, we present Duplex Conversation, a multi-turn, multimodal spoken dialogue system that enables telephone-based agents to interact with customers like a human.

320, **TITLE:** AdaFS: Adaptive Feature Selection in Deep Recommender System

<https://dl.acm.org/doi/abs/10.1145/3534678.3539204>

**AUTHORS:** Weilin Lin, Xiangyu Zhao, Yejing Wang, Tong Xu, Xian Wu

- HIGHLIGHT:** In this paper, we propose an adaptive feature selection framework, AdaFS, for deep recommender systems.
- 321, **TITLE:** A Logic Aware Neural Generation Method for Explainable Data-to-text  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539082>  
**AUTHORS:** Xiexiong Lin, Huaisong Li, Tao Huang, Feng Wang, Linlin Chao, Fuzhen Zhuang, Taifeng Wang, Tianyi Zhang  
**HIGHLIGHT:** In this paper, we introduce a practical data-to-text method for the logic-critical scenario, specifically for anti-money laundering applications.
- 322, **TITLE:** Feature-aware Diversified Re-ranking with Disentangled Representations for Relevant Recommendation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539130>  
**AUTHORS:** Zihan Lin, Hui Wang, Jingshu Mao, Wayne Xin Zhao, Cheng Wang, Peng Jiang, Ji-Rong Wen  
**HIGHLIGHT:** Moreover, redundant or noisy item features might affect the performance of simple feature-aware recommendation approaches. Faced with these issues, we propose a Feature Disentanglement Self-Balancing Re-ranking framework (FDSB) to capture feature-aware diversity.
- 323, **TITLE:** Rapid Regression Detection in Software Deployments through Sequential Testing  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539099>  
**AUTHORS:** Michael Lindon, Chris Sanden, Vach&eacute; Shirikian  
**HIGHLIGHT:** We present a statistical framework for rapidly detecting regressions in software deployments.
- 324, **TITLE:** Task-optimized User Clustering based on Mobile App Usage for Cold-start Recommendations  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539105>  
**AUTHORS:** Bulou Liu, Bing Bai, Weibang Xie, Yiwen Guo, Hao Chen  
**HIGHLIGHT:** To address the challenges, we propose a tailored Dual Alignment User Clustering (DAUC) model, which applies a sample-wise contrastive alignment to eliminate the gap between active users' mobile app usage and article reading behavior, and a distribution-wise adversarial alignment to eliminate the gap between active users' and cold-start users' app usage behavior.
- 325, **TITLE:** User Behavior Pre-training for Online Fraud Detection  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539126>  
**AUTHORS:** Can Liu, Yuncong Gao, Li Sun, Jinghua Feng, Hao Yang, Xiang Ao  
**HIGHLIGHT:** To this end, in this paper, we propose to pre-train user behavior sequences, which consist of orderly arranged actions, from the large-scale unlabeled data sources for online fraud detection.
- 326, **TITLE:** Modeling Persuasion Factor of User Decision for Recommendation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539114>  
**AUTHORS:** Chang Liu, Chen Gao, Yuan Yuan, Chen Bai, Lingrui Luo, Xiaoyi Du, Xinlei Shi, Hengliang Luo, Depeng Jin, Yong Li  
**HIGHLIGHT:** Existing recommendation engines ignore the explicit modeling of these factors, leading to sub-optimal recommendation performance. In this paper, we focus on the real-world scenario where these factors can be explicitly captured (the users are exposed with decision factor-based persuasion texts, i.e., persuasion factors).
- 327, **TITLE:** HiPAL: A Deep Framework for Physician Burnout Prediction Using Activity Logs in Electronic Health Records  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539056>  
**AUTHORS:** Hanyang Liu, Sunny S. Lou, Benjamin C. Warner, Derek R. Harford, Thomas Kannampallil, Chenyang Lu  
**HIGHLIGHT:** To utilize the large amount of unlabeled activity logs, we propose a semi-supervised framework that learns to transfer knowledge extracted from unlabeled clinician activities to the HiPAL-based prediction model.
- 328, **TITLE:** Lion: A GPU-Accelerated Online Serving System for Web-Scale Recommendation at Baidu  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539058>  
**AUTHORS:** Hao Liu, Qian Gao, Xiaochao Liao, Guangxing Chen, Hao Xiong, Silin Ren, Guobao Yang, Zhiwei Zha  
**HIGHLIGHT:** In this paper, we present a GPU-accelerated online serving system, namely Lion, which consists of the staged event-driven heterogeneous pipeline, unified memory manager, and automatic execution optimizer to handle web-scale traffic in a real-time and cost-effective way.
- 329, **TITLE:** No One Left Behind: Inclusive Federated Learning over Heterogeneous Devices  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539086>  
**AUTHORS:** Ruixuan Liu, Fangzhao Wu, Chuhan Wu, Yanlin Wang, Lingjuan Lyu, Hong Chen, Xing Xie  
**HIGHLIGHT:** The straightforward solutions like removing the weak clients or using a small model to fit all clients will lead to some problems, such as under-representation of dropped clients and inferior accuracy due to data loss or limited model representation ability. In this work, we propose InclusiveFL, a client-inclusive federated learning method to handle this problem.
- 330, **TITLE:** Para-Pred: Addressing Heterogeneity for City-Wide Indoor Status Estimation in On-Demand Delivery  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539167>  
**AUTHORS:** Wei Liu, Yi Ding, Shuai Wang, Yu Yang, Desheng Zhang  
**HIGHLIGHT:** In this paper, we propose Para-Pred, an indoor status estimation framework based on the graph neural network, which directly Predicts the effective indoor status estimation model Parameters for unseen scenarios.
- 331, **TITLE:** OAG-BERT: Towards a Unified Backbone Language Model for Academic Knowledge Services

- <https://dl.acm.org/doi/abs/10.1145/3534678.3539210>  
AUTHORS: Xiao Liu, Da Yin, Jingnan Zheng, Xingjian Zhang, Peng Zhang, Hongxia Yang, Yuxiao Dong, Jie Tang  
HIGHLIGHT: To create a unified backbone language model for various knowledge-intensive academic knowledge mining challenges, based on the world's largest public academic graph Open Academic Graph (OAG), we pre-train an academic language model, namely OAG-BERT, to integrate massive heterogeneous entity knowledge beyond scientific corpora.
- 332, TITLE: Pretraining Representations of Multi-modal Multi-query E-commerce Search  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539200>  
AUTHORS: Xinyi Liu, Wanxian Guan, Lianyun Li, Hui Li, Chen Lin, Xubin Li, Si Chen, Jian Xu, Hongbo Deng, Bo Zheng  
HIGHLIGHT: This paper presents to represent MM search sessions by heterogeneous graph neural network (HGN).
- 333, TITLE: Multi-task Hierarchical Classification for Disk Failure Prediction in Online Service Systems  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539176>  
AUTHORS: Yudong Liu, Hailan Yang, Pu Zhao, Minghua Ma, Chengwu Wen, Hongyu Zhang, Chuan Luo, Qingwei Lin, Chang Yi, Jiaojian Wang, Chenjian Zhang, Paul Wang, Yingnong Dang, Saravan Rajmohan, Dongmei Zhang  
HIGHLIGHT: In this paper, we propose MTHC (Multi-Task Hierarchical Classification) to enhance the performance of disk failure prediction for each task via multi-task learning.
- 334, TITLE: Prometheus: An End-to-End Machine Learning Framework for Optimizing Markdown in Online Fashion E-commerce  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539148>  
AUTHORS: Eleanor Loh, Jalaj Khandelwal, Brian Regan, Duncan A. Little  
HIGHLIGHT: In this paper, we introduce two novel end-to-end markdown management systems for optimising markdown at different stages of a retailer's journey.
- 335, TITLE: Uncovering the Heterogeneous Effects of Preference Diversity on User Activeness: A Dynamic Mixture Model  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539033>  
AUTHORS: Yunfei Lu, Peng Cui, Linyun Yu, Lei Li, Wenwu Zhu  
HIGHLIGHT: Unlike existing qualitative studies, we propose a universal mixture model with the capability of accurately fitting dynamic activeness curves while reflecting the heterogeneous patterns of preference diversity.
- 336, TITLE: Retrieval-Based Gradient Boosting Decision Trees for Disease Risk Assessment  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539052>  
AUTHORS: Handong Ma, Jiahang Cao, Yuchen Fang, Weinan Zhang, Wenbo Sheng, Shaodian Zhang, Yong Yu  
HIGHLIGHT: In this work, we propose a novel retrieval-based gradient boosting decision trees (RB-GBDT) model with a cross-sample extractor to mine cross-sample information while exploiting the superiority of GBDT of robustness, generalization and interpretability.
- 337, TITLE: An Online Multi-task Learning Framework for Google Feed Ads Auction Models  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539055>  
AUTHORS: Ning Ma, Mustafa Ispir, Yuan Li, Yongpeng Yang, Zhe Chen, Derek Zhiyuan Cheng, Lan Nie, Kishor Barman  
HIGHLIGHT: In this paper, we introduce a large scale online multi-task deep learning framework for modeling multiple feed ads auction prediction tasks on an industry-scale feed ads recommendation platform.
- 338, TITLE: CS-RAD: Conditional Member Status Refinement and Ability Discovery for Social Network Applications  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539046>  
AUTHORS: Yiming Ma  
HIGHLIGHT: In this paper, we establish the consistency models among different member status and their abilities through analyzing member data and integrating domain knowledge.
- 339, TITLE: Semantic Retrieval at Walmart  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539164>  
AUTHORS: Alessandro Magnani, Feng Liu, Suthee Chaidaroon, Sachin Yadav, Praveen Reddy Suram, Ajit Puthenputhussery, Sijie Chen, Min Xie, Anirudh Kashi, Tony Lee, Ciya Liao  
HIGHLIGHT: We present a new technique to train the neural model at scale.
- 340, TITLE: BE3R: BERT based Early-Exit Using Expert Routing  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539132>  
AUTHORS: Sourab Mangrulkar, Ankith M S, Vivek Sembium  
HIGHLIGHT: In this work, we propose a novel routing based early exit model called BE3R (BERT based Early-Exit using Expert Routing), where we learn to dynamically exit in the earlier layers without needing to traverse through the entire model.
- 341, TITLE: Looper: An End-to-End ML Platform for Product Decisions  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539059>  
AUTHORS: Igor L. Markov, Hanson Wang, Nitya S. Kasturi, Shaun Singh, Mia R. Garrard, Yin Huang, Sze Wai Celeste Yuen, Sarah Tran, Zehui Wang, Igor Glotov, Tanvi Gupta, Peng Chen, Boshuang Huang, Xiaowen Xie, Michael Belkin, Sal Uryasev, Sam Howie, Eytan Bakshy, Norm Zhou  
HIGHLIGHT: To address shortcomings of prior platforms, we introduce general principles for and the architecture of an ML platform, Looper, with simple APIs for decision-making and feedback collection.



- 342, TITLE: Proactively Reducing the Hate Intensity of Online Posts via Hate Speech Normalization  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539161>  
AUTHORS: Sarah Masud, Manjot Bedi, Mohammad Aflah Khan, Md Shad Akhtar, Tanmoy Chakraborty  
HIGHLIGHT: We introduce NACL, a simple yet efficient hate speech normalization model that operates in three stages - first, it measures the hate intensity of the original sample; second, it identifies the hate span(s) within it; and finally, it reduces hate intensity by paraphrasing the hate spans.
- 343, TITLE: CERAM: Coverage Expansion for Recommendations by Associating Discarded Models  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539207>  
AUTHORS: Yoshiki Matsune, Kota Tsubouchi, Nobuhiko Nishio  
HIGHLIGHT: Here, our goal is to construct recommendation systems that expand the coverage of recommendations by effectively utilizing models which would otherwise be discarded. Another goal is to deploy such a recommendation system on real services and make practical use of it.
- 344, TITLE: Packet Representation Learning for Traffic Classification  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539085>  
AUTHORS: Xuying Meng, Yequan Wang, Runxin Ma, Haitong Luo, Xiang Li, Yujun Zhang  
HIGHLIGHT: In the real world, although a packet may have different class labels for different tasks, the packet representation learned from one task can also help understand its complex packet patterns in other tasks, while existing works omit to leverage them. Taking advantage of this potential, in this work, we propose a novel framework to tackle the problem of packet representation learning for various traffic classification tasks.
- 345, TITLE: Graph Neural Network Training and Data Tiering  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539038>  
AUTHORS: Seung Won Min, Kun Wu, Mert Hidayetoglu, Jinjun Xiong, Xiang Song, Wen-mei Hwu  
HIGHLIGHT: In this work, we provide a method to statistically analyze and identify more frequently accessed data ahead of GNN training.
- 346, TITLE: Towards Reliable Detection of Dielectric Hotspots in Thermal Images of the Underground Distribution Network  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539219>  
AUTHORS: Fran&ccedil;ois Mirall&egrave;s, Luc Cauchon, Marc-Andr&eacute; Magnan, Fran&ccedil;ois Gr&eacute;goire, Mouhamadou Makhtar Dione, Arnaud Zinflou  
HIGHLIGHT: This paper introduces a thermographic vision system to detect different types of hotspots on a variety of cable junctions commonly found in Hydro-Qu&eacute;bec underground electrical distribution network.
- 347, TITLE: Generating Examples from CLI Usage: Can Transformers Help?  
<https://dl.acm.org/doi/abs/10.1145/3534678.3549983>  
AUTHORS: Roshanak Zilouchian Moghaddam, Spandan Garg, Colin B. Clement, Yevhen Mohylevskyy, Neel Sundaresan  
HIGHLIGHT: In this paper, we present a practical system, which uses machine learning on large-scale telemetry data and documentation corpora, generating appropriate and complex examples that can be used to improve documentation.
- 348, TITLE: ASPIRE: Air Shipping Recommendation for E-commerce Products via Causal Inference Framework  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539197>  
AUTHORS: Abhirup Mondal, Anirban Majumder, Vineet Chaoji  
HIGHLIGHT: In this paper, we present a machine learning based framework to recommend air-shipping eligibility for products.
- 349, TITLE: DNA-Stabilized Silver Nanocluster Design via Regularized Variational Autoencoders  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539032>  
AUTHORS: Fariha Moomtaheen, Matthew Killeen, James Oswald, Anna Gonz&agrave;lez-Rosell, Peter Mastracco, Alexander Gorovits, Stacy M. Copp, Petko Bogdanov  
HIGHLIGHT: In this work, we present an approach to design AgN-DNAs by employing variational autoencoders (VAEs) as generative models.
- 350, TITLE: GradMask: Gradient-Guided Token Masking for Textual Adversarial Example Detection  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539206>  
AUTHORS: Han Cheol Moon, Shafiq Joty, Xu Chi  
HIGHLIGHT: We present GradMask, a simple adversarial example detection scheme for natural language processing (NLP) models.
- 351, TITLE: Solar: Science of Entity Loss Attribution  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539087>  
AUTHORS: Anshuman Mourya, Prateek Sircar, Anirban Majumder, Deepak Gupta  
HIGHLIGHT: In this paper, we present an Attention based neural architecture for entity localization to accurately pinpoint the location of package loss in delivery network and bugs in erroneous programs.
- 352, TITLE: Pricing the Long Tail by Explainable Product Aggregation and Monotonic Bandits  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539142>  
AUTHORS: Marco Mussi, Gianmarco Genalti, Francesco Trov&ograve;, Alessandro Nuara, Nicola Gatti, Marcello Restelli

**HIGHLIGHT:** In this paper, we provide a novel online learning algorithm for dynamic pricing that deals with non-stationary settings due to, e.g., the seasonality or adaptive competitors, and is very efficient in terms of the need for data thanks to assumptions such as, e.g., the monotonicity of the demand curve in the price that are customarily satisfied in long-tail markets.

353, **TITLE:** Counterfactual Phenotyping with Censored Time-to-Events

<https://dl.acm.org/doi/abs/10.1145/3534678.3539110>

**AUTHORS:** Chirag Nagpal, Mononito Goswami, Keith Dufendach, Artur Dubrawski

**HIGHLIGHT:** In this paper, we present a latent variable approach to model heterogeneous treatment effects by proposing that an individual can belong to one of latent clusters with distinct response characteristics.

354, **TITLE:** Crowdsourcing with Contextual Uncertainty

<https://dl.acm.org/doi/abs/10.1145/3534678.3539184>

**AUTHORS:** Viet-An Nguyen, Peibei Shi, Jagdish Ramakrishnan, Narjes Torabi, Nimar S. Arora, Udi Weinsberg, Michael Tingley

**HIGHLIGHT:** We present Theodon, a hierarchical non-parametric Bayesian model, developed and deployed at Meta, that captures both the prevalence of label categories and the accuracy of labelers as functions of the classifier score.

355, **TITLE:** Amazon SageMaker Model Monitor: A System for Real-Time Insights into Deployed Machine Learning Models

<https://dl.acm.org/doi/abs/10.1145/3534678.3539145>

**AUTHORS:** David Nigenda, Zohar Karnin, Muhammad Bilal Zafar, Raghu Ramesha, Alan Tan, Michele Donini, Krishnaram Kenthapadi

**HIGHLIGHT:** We present Amazon SageMaker Model Monitor, a fully managed service that continuously monitors the quality of machine learning models hosted on Amazon SageMaker.

356, **TITLE:** Human-in-the-Loop Large-Scale Predictive Maintenance of Workstations

<https://dl.acm.org/doi/abs/10.1145/3534678.3539196>

**AUTHORS:** Alexander Nikitin, Samuel Kaski

**HIGHLIGHT:** We propose a human-in-the-loop PdM approach in which a machine learning system predicts future problems in sets of workstations (computers, laptops, and servers).

357, **TITLE:** GraphWorld: Fake Graphs Bring Real Insights for GNNs

<https://dl.acm.org/doi/abs/10.1145/3534678.3539203>

**AUTHORS:** John Palowitch, Anton Tsitsulin, Brandon Mayer, Bryan Perozzi

**HIGHLIGHT:** In this work we introduce GraphWorld, a novel methodology and system for benchmarking GNN models on an arbitrarily-large population of synthetic graphs for any conceivable GNN task.

358, **TITLE:** PinnerFormer: Sequence Modeling for User Representation at Pinterest

<https://dl.acm.org/doi/abs/10.1145/3534678.3539156>

**AUTHORS:** Nikil Pancha, Andrew Zhai, Jure Leskovec, Charles Rosenberg

**HIGHLIGHT:** Here we introduce PinnerFormer, a user representation trained to predict a user's future long-term engagement using a sequential model of a user's recent actions.

359, **TITLE:** Improving Relevance Modeling via Heterogeneous Behavior Graph Learning in Bing Ads

<https://dl.acm.org/doi/abs/10.1145/3534678.3539128>

**AUTHORS:** Bochen Pang, Chaozhuo Li, Yuming Liu, Jianxun Lian, Jianan Zhao, Hao Sun, Weiwei Deng, Xing Xie, Qi Zhang

**HIGHLIGHT:** In this paper, we study the novel problem of heterogeneous behavior graph learning to facilitate relevance modeling task.

360, **TITLE:** Temporal Multimodal Multivariate Learning

<https://dl.acm.org/doi/abs/10.1145/3534678.3539159>

**AUTHORS:** Hyoshin Park, Justice Darko, Niharika Deshpande, Venkatesh Pandey, Hui Su, Masahiro Ono, Dedrick Barkley, Larkin Folsom, Derek Posselt, Steve Chien

**HIGHLIGHT:** We introduce temporal multimodal multivariate learning, a new family of decision making models that can indirectly learn and transfer online information from simultaneous observations of a probability distribution with more than one peak or more than one outcome variable from one time stage to another.

361, **TITLE:** Downscaling Earth System Models with Deep Learning

<https://dl.acm.org/doi/abs/10.1145/3534678.3539031>

**AUTHORS:** Sungwon Park, Karandeep Singh, Arjun Nellikkattil, Elke Zeller, Tung Duong Mai, Meeyoung Cha

**HIGHLIGHT:** We present a new method for downscaling climate simulations called GINE (Geospatial INFORMATION Encoded statistical downscaling).

362, **TITLE:** DocLayNet: A Large Human-Annotated Dataset for Document-Layout Segmentation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539043>

**AUTHORS:** Birgit Pfitzmann, Christoph Auer, Michele Dolfi, Ahmed S. Nassar, Peter Staar

**HIGHLIGHT:** In this paper, we present DocLayNet, a new, publicly available, document-layout annotation dataset in COCO format.

- 363, TITLE: Multi-objective Optimization of Notifications Using Offline Reinforcement Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539193>  
AUTHORS: Prakruthi Prabhakar, Yiping Yuan, Guangyu Yang, Wensheng Sun, Ajith Muralidharan  
HIGHLIGHT: In this paper, we formulate the near-real-time notification decision problem as a Markov Decision Process where we optimize for multiple objectives in the rewards.
- 364, TITLE: What Makes Good Contrastive Learning on Small-Scale Wearable-based Tasks?  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539134>  
AUTHORS: Hangwei Qian, Tian Tian, Chunyan Miao  
HIGHLIGHT: To fill the gap, we aim to study contrastive learning on the wearable-based activity recognition task.
- 365, TITLE: Intelligent Request Strategy Design in Recommender System  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539123>  
AUTHORS: Xufeng Qian, Yue Xu, Fuyu Lv, Shengyu Zhang, Ziwen Jiang, Qingwen Liu, Xiaoyi Zeng, Tat-Seng Chua, Fei Wu  
HIGHLIGHT: However, previous attempts, including only non-adaptive strategies (e.g., insert requests uniformly), would eventually lead to resource overconsumption. To this end, we envision a new learning task of edge intelligence named Intelligent Request Strategy Design (IRSD).
- 366, TITLE: Characterizing Covid Waves via Spatio-Temporal Decomposition  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539136>  
AUTHORS: Kevin Quinn, Evimaria Terzi, Mark Crovella  
HIGHLIGHT: In this paper we develop a framework for analyzing patterns of a disease or pandemic such as Covid.
- 367, TITLE: NxtPost: User To Post Recommendations In Facebook Groups  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539042>  
AUTHORS: Kaushik Rangadurai, Yiqun Liu, Siddarth Malreddy, Xiaoyi Liu, Piyush Maheshwari, Vishwanath Sangale, Fedor Borisyyuk  
HIGHLIGHT: In this paper, we present NxtPost, a deployed user-to-post content based sequential recommender system for Facebook Groups.
- 368, TITLE: Profiling Deep Learning Workloads at Scale using Amazon SageMaker  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539036>  
AUTHORS: Nathalie Rauschmayr, Sami Kama, Muhyun Kim, Miyoung Choi, Krishnaram Kenthapadi  
HIGHLIGHT: In this paper, we propose a new profiling tool that cross-correlates relevant system utilization metrics and framework operations.
- 369, TITLE: Generative Adversarial Networks Enhanced Pre-training for Insufficient Electronic Health Records Modeling  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539020>  
AUTHORS: Houxing Ren, Jingyuan Wang, Wayne Xin Zhao  
HIGHLIGHT: Directly using them to train sensitive medical models is very difficult to achieve satisfactory results. To overcome this problem, we propose a novel deep model learning method for insufficient EHR (Electronic Health Record) data modeling, namely GRACE, which stands GeneRative Adversarial networks enhanCed prE-training.
- 370, TITLE: ChemicalX: A Deep Learning Library for Drug Pair Scoring  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539023>  
AUTHORS: Benedek Rozemberczki, Charles Tapley Hoyt, Anna Gogoleva, Piotr Grabowski, Klas Karis, Andrej Lamov, Andriy Nikolov, Sebastian Nilsson, Michael Ughetto, Yu Wang, Tyler Derr, Benjamin M. Gyori  
HIGHLIGHT: In this paper, we introduce ChemicalX, a PyTorch-based deep learning library designed for providing a range of state of the art models to solve the drug pair scoring task.
- 371, TITLE: Service Time Prediction for Delivery Tasks via Spatial Meta-Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539027>  
AUTHORS: Sijie Ruan, Cheng Long, Zhipeng Ma, Jie Bao, Tianfu He, Ruiyuan Li, Yiheng Chen, Shengnan Wu, Yu Zheng  
HIGHLIGHT: In this paper, we propose MetaSTP, a meta-learning based neural network model to predict the service time.
- 372, TITLE: Reinforcement Learning in the Wild: Scalable RL Dispatching Algorithm Deployed in Ridehailing Marketplace  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539095>  
AUTHORS: Soheil Sadeghi Eshkevari, Xiaocheng Tang, Zhiwei Qin, Jinhan Mei, Cheng Zhang, Qianying Meng, Jia Xu  
HIGHLIGHT: In this study, a scalable and real-time dispatching algorithm based on reinforcement learning is proposed and for the first time, is deployed in large scale.
- 373, TITLE: Semantic Aware Answer Sentence Selection Using Self-Learning Based Domain Adaptation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539162>  
AUTHORS: Rajdeep Sarkar, Sourav Dutta, Haytham Assem, Mihael Arcan, John McCrae  
HIGHLIGHT: This paper proposes SEDAN, an effective self-learning framework to adapt AS2 models for domain-specific applications.
- 374, TITLE: Regional-Local Adversarially Learned One-Class Classifier Anomalous Sound Detection in Global Long-Term Space

- <https://dl.acm.org/doi/abs/10.1145/3534678.3539133>  
AUTHORS: Yu Sha, Shuiping Gou, Johannes Faber, Bo Liu, Wei Li, Stefan Schramm, Horst Stoecker, Thomas Steckenreiter, Domagoj Vnucce, Nadine Wetzstein, Andreas Widl, Kai Zhou  
HIGHLIGHT: In this paper, we propose a multi-pattern adversarial learning one-class classification framework, which allows us to use both the generator and the discriminator of an adversarial model for efficient ASD.
- 375, TITLE: Generalized Deep Mixed Models  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539103>  
AUTHORS: Jun Shi, Chengming Jiang, Aman Gupta, Mingzhou Zhou, Yunbo Ouyang, Qiang Charles Xiao, Qingquan Song, Yi (Alice) Wu, Haichao Wei, Huiji Gao  
HIGHLIGHT: We introduce generalized deep mixed model (GDMix), a class of machine learning models for large-scale recommender systems that combines the power of deep neural networks and the efficiency of logistic regression.
- 376, TITLE: Recommendation in Offline Stores: A Gamification Approach for Learning the Spatiotemporal Representation of Indoor Shopping  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539199>  
AUTHORS: Jongkyung Shin, Changhun Lee, Chiehyeon Lim, Yunmo Shin, Junseok Lim  
HIGHLIGHT: In this study, we propose a gamification approach wherein a real store is emulated in a pixel world and a recurrent convolutional network is trained to learn the spatiotemporal representation of offline shopping.
- 377, TITLE: Septor: Seismic Depth Estimation Using Hierarchical Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539166>  
AUTHORS: M Ashraf Siddiquee, Vinicius M. A. Souza, Glenn Eli Baker, Abdullah Mueen  
HIGHLIGHT: This paper focuses on developing a machine learning model to accurately estimate the depth of arbitrary seismic events directly from seismograms.
- 378, TITLE: Seq2Event: Learning the Language of Soccer Using Transformer-based Match Event Prediction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539138>  
AUTHORS: Ian Simpson, Ryan J. Beal, Duncan Locke, Timothy J. Norman  
HIGHLIGHT: We propose a more holistic approach, utilising Transformer or RNN components in the novel Seq2Event model, in which the next match event is predicted given prior match events and context.
- 379, TITLE: Friend Recommendations with Self-Rescaling Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539192>  
AUTHORS: Xiran Song, Jianxun Lian, Hong Huang, Mingqi Wu, Hai Jin, Xing Xie  
HIGHLIGHT: In this paper, we propose a simple but effective self-rescaling network (SSNet) to alleviate the scale distortion issue.
- 380, TITLE: Counseling Summarization Using Mental Health Knowledge Guided Utterance Filtering  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539187>  
AUTHORS: Aseem Srivastava, Tharun Suresh, Sarah P. Lord, Md Shad Akhtar, Tanmoy Chakraborty  
HIGHLIGHT: In this paper, the aim is mental health counseling summarization to build upon domain knowledge and to help clinicians quickly glean meaning.
- 381, TITLE: Type Linking for Query Understanding and Semantic Search  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539067>  
AUTHORS: Giorgos Stoilos, Nikos Papasasantopoulos, Pavlos Vougiouklis, Patrik Banský  
HIGHLIGHT: We present techniques that we designed in order to address challenges with the type dictionary, incompatibilities in scoring between the term-based and vector-based methods as well as over-segmentation issues in Thai, Chinese, and Japanese.
- 382, TITLE: Few-shot Learning for Trajectory-based Mobile Game Cheating Detection  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539157>  
AUTHORS: Yueyang Su, Di Yao, Xiaokai Chu, Wenbin Li, Jingping Bi, Shiwei Zhao, Runze Wu, Shize Zhang, Jianrong Tao, Hao Deng  
HIGHLIGHT: Even worse, in practice, the cheating programs are quickly updated, leading to the label scarcity for novel cheating patterns. To handle such issues, we in this paper introduce a mobile game cheating detection framework, namely FCDGame, to detect the cheats under the few-shot learning framework.
- 383, TITLE: Optimizing Long-Term Efficiency and Fairness in Ride-Hailing via Joint Order Dispatching and Driver Repositioning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539060>  
AUTHORS: Jiahui Sun, Haiming Jin, Zhaoxing Yang, Lu Su, Xinbing Wang  
HIGHLIGHT: Thus, in this paper, we aim to exploit joint order dispatching and driver repositioning to optimize both the long-term efficiency and fairness for ride-hailing platforms.
- 384, TITLE: CognitionNet: A Collaborative Neural Network for Play Style Discovery in Online Skill Gaming Platform  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539179>  
AUTHORS: Rukma Talwadder, Surajit Chakraborty, Aditya Pareek, Tridib Mukherjee, Deepak Saini

**HIGHLIGHT:** To this effect, we focus on discovery of the "game behaviours" as micro-patterns formed by continuous sequence of games and the persistent "play styles" of the players' as a sequence of such sequences on an online skill gaming platform for Rummy.

385, **TITLE:** 4SDrug: Symptom-based Set-to-set Small and Safe Drug Recommendation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539089>

**AUTHORS:** Yanchao Tan, Chengjun Kong, Leisheng Yu, Pan Li, Chaochao Chen, Xiaolin Zheng, Vicki S. Hertzberg, Carl Yang

**HIGHLIGHT:** To deal with the challenges above, in this paper, we propose a novel framework of Symptom-based Set-to-set Small and Safe drug recommendation (4SDrug).

386, **TITLE:** What is the Most Effective Intervention to Increase Job Retention for this Disabled Worker?

<https://dl.acm.org/doi/abs/10.1145/3534678.3539026>

**AUTHORS:** Ha Xuan Tran, Thuc Duy Le, Jiuyong Li, Lin Liu, Jixue Liu, Yanchang Zhao, Tony Waters

**HIGHLIGHT:** This paper proposes a representation learning method for recommending personalized interventions that can generate a maximum increase in job retention time for workers with disability.

387, **TITLE:** Reinforcement Learning-based Placement of Charging Stations in Urban Road Networks

<https://dl.acm.org/doi/abs/10.1145/3534678.3539154>

**AUTHORS:** Leonie von Wahl, Nicolas Tempelmeier, Ashutosh Sao, Elena Demidova

**HIGHLIGHT:** We design a novel Deep Reinforcement Learning approach to solve the charging station placement problem (PCRL).

388, **TITLE:** A Graph Learning Based Framework for Billion-Scale Offline User Identification

<https://dl.acm.org/doi/abs/10.1145/3534678.3539191>

**AUTHORS:** Daixin Wang, Zujian Weng, Zhengwei Wu, Zhiqiang Zhang, Peng Cui, Hongwei Zhao, Jun Zhou

**HIGHLIGHT:** In this paper, we elaborately design an offline identification framework considering two aspects.

389, **TITLE:** Learning Supplementary NLP Features for CTR Prediction in Sponsored Search

<https://dl.acm.org/doi/abs/10.1145/3534678.3539064>

**AUTHORS:** Dong Wang, Shaoguang Yan, Yunqing Xia, Kav&eacute; Salamatian, Weiwei Deng, Qi Zhang

**HIGHLIGHT:** For this purpose, we introduce a simple and general joint-training framework for fine-tuning of language models, combined with the already existing features in CTR prediction baseline, to extract supplementary knowledge for NLP feature.

390, **TITLE:** ROI-Constrained Bidding via Curriculum-Guided Bayesian Reinforcement Learning

<https://dl.acm.org/doi/abs/10.1145/3534678.3539211>

**AUTHORS:** Haozhe Wang, Chao Du, Panyan Fang, Shuo Yuan, Xuming He, Liang Wang, Bo Zheng

**HIGHLIGHT:** In this work, we specialize in ROI-Constrained Bidding in non-stationary markets.

391, **TITLE:** NENYA: Cascade Reinforcement Learning for Cost-Aware Failure Mitigation at Microsoft 365

<https://dl.acm.org/doi/abs/10.1145/3534678.3539127>

**AUTHORS:** Lu Wang, Pu Zhao, Chao Du, Chuan Luo, Mengna Su, Fangkai Yang, Yudong Liu, Qingwei Lin, Min Wang, Yingnong Dang, Hongyu Zhang, Saravan Rajmohan, Dongmei Zhang

**HIGHLIGHT:** As information is not fully shared across those two stages, important factors such as mitigation costs and states of instances are often ignored in one of those two stages. To address these issues, we propose NENYA, an end-to-end mitigation solution for a large-scale database system powered by a novel cascade reinforcement learning model.

392, **TITLE:** Learning to Discover Causes of Traffic Congestion with Limited Labeled Data

<https://dl.acm.org/doi/abs/10.1145/3534678.3539185>

**AUTHORS:** Mudan Wang, Huan Yan, Hongjie Sui, Fan Zuo, Yue Liu, Yong Li

**HIGHLIGHT:** Hence, we aim to discover the known and unknown causes of traffic congestion in a systematic way.

393, **TITLE:** RT-VeD: Real-Time VoI Detection on Edge Nodes with an Adaptive Model Selection Framework

<https://dl.acm.org/doi/abs/10.1145/3534678.3539183>

**AUTHORS:** Shuai Wang, Junke Lu, Baoshen Guo, Zheng Dong

**HIGHLIGHT:** However, resource-constrained edge devices are not competent for dynamic traffic loads with resource-intensive video analysis models. To address this challenge, we propose RT-VeD, a real-time VoI detection system based on the limited resources of edge nodes.

394, **TITLE:** Representative Routes Discovery from Massive Trajectories

<https://dl.acm.org/doi/abs/10.1145/3534678.3539079>

**AUTHORS:** Tingting Wang, Shixun Huang, Zhifeng Bao, J. Shane Culpepper, Reza Arablouei

**HIGHLIGHT:** In this work, we study how to find the k most representative routes over large scale trajectory data, which is a fundamental operation that benefits various real-world applications, such as traffic monitoring and public transportation planning.

395, **TITLE:** CONFLUX: A Request-level Fusion Framework for Impression Allocation via Cascade Distillation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539044>

**AUTHORS:** Xiao Yu Wang, Bin Tan, Yonghui Guo, Tao Yang, Dongbo Huang, Lan Xu, Nikolaos M. Freris, Hao Zhou, Xiang-Yang Li

- HIGHLIGHT:** This paper proposes CONFLUX, a fusion framework located at the confluence of the parallel GD and RTB markets.
- 396, **TITLE:** Fed-LTD: Towards Cross-Platform Ride Hailing via Federated Learning to Dispatch  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539047>  
**AUTHORS:** Yansheng Wang, Yongxin Tong, Zimu Zhou, Ziyao Ren, Yi Xu, Guobin Wu, Weifeng Lv  
**HIGHLIGHT:** In this paper, we advocate federated order dispatching for cross-platform ride hailing, where multiple platforms collaboratively make dispatching decisions without sharing their local data.
- 397, **TITLE:** CausalInt: Causal Inspired Intervention for Multi-Scenario Recommendation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539221>  
**AUTHORS:** Yichao Wang, Huifeng Guo, Bo Chen, Weiwen Liu, Zhirong Liu, Qi Zhang, Zhicheng He, Hongkun Zheng, Weiwei Yao, Muyu Zhang, Zhenhua Dong, Ruiming Tang  
**HIGHLIGHT:** In this paper, we show it is possible to selectively utilize the information from different scenarios to construct the scenario-aware estimators in a unified model.
- 398, **TITLE:** Surrogate for Long-Term User Experience in Recommender Systems  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539073>  
**AUTHORS:** Yuyan Wang, Mohit Sharma, Can Xu, Sriraj Badam, Qian Sun, Lee Richardson, Lisa Chung, Ed H. Chi, Minmin Chen  
**HIGHLIGHT:** These long term outcomes however are much harder to optimize due to the sparsity in observing these events and low signal-to-noise ratio (weak connection) between these long-term outcomes and a single recommendation. To address these challenges, we propose to establish the association between these long-term outcomes and a set of more immediate term user behavior signals that can serve as surrogates for optimization.
- 399, **TITLE:** FederatedScope-GNN: Towards a Unified, Comprehensive and Efficient Package for Federated Graph Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539112>  
**AUTHORS:** Zhen Wang, Weirui Kuang, Yuexiang Xie, Liuyi Yao, Yaliang Li, Bolin Ding, Jingren Zhou  
**HIGHLIGHT:** Motivated by such strong demand, in this paper, we first discuss the challenges in creating an easy-to-use FGL package and accordingly present our implemented package FederatedScope-GNN (FS-G), which provides (1) a unified view for modularizing and expressing FGL algorithms; (2) comprehensive DataZoo and ModelZoo for out-of-the-box FGL capability; (3) an efficient model auto-tuning component; and (4) off-the-shelf privacy attack and defense abilities.
- 400, **TITLE:** Connecting the Hosts: Street-Level IP Geolocation with Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539049>  
**AUTHORS:** Zhiyuan Wang, Fan Zhou, Wenxuan Zeng, Goce Trajcevski, Chunjing Xiao, Yong Wang, Kai Chen  
**HIGHLIGHT:** Motivated by the limitations in existing works, we propose a novel framework named GraphGeo, which provides a complete processing methodology for street-level IP geolocation with the application of graph neural networks.
- 401, **TITLE:** Interpretability, Then What? Editing Machine Learning Models to Reflect Human Knowledge and Values  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539074>  
**AUTHORS:** Zijie J. Wang, Alex Kale, Harsha Nori, Peter Stella, Mark E. Nunnally, Duen Horng Chau, Mihaela Vorvoreanu, Jennifer Wortman Vaughan, Rich Caruana  
**HIGHLIGHT:** In a collaboration between ML and human-computer interaction researchers, physicians, and data scientists, we develop GAM Changer, the first interactive system to help domain experts and data scientists easily and responsibly edit Generalized Additive Models (GAMs) and fix problematic patterns.
- 402, **TITLE:** Graph2Route: A Dynamic Spatial-Temporal Graph Neural Network for Pick-up and Delivery Route Prediction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539084>  
**AUTHORS:** Haomin Wen, Youfang Lin, Xiaowei Mao, Fan Wu, Yiji Zhao, Haochen Wang, Jianbin Zheng, Lixia Wu, Haoyuan Hu, Huaiyu Wan  
**HIGHLIGHT:** Therefore, to meet the rising calling for route prediction models that can capture workers' future routing behaviors, in this paper, we formulate the Pick-up and Delivery Route Prediction task (PDRP task for short) from the graph perspective for the first time, then propose a dynamic spatial-temporal graph-based model, named Graph2Route.
- 403, **TITLE:** Graph Neural Networks for Multimodal Single-Cell Data Integration  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539213>  
**AUTHORS:** Hongzhi Wen, Jiayuan Ding, Wei Jin, Yiqi Wang, Yuying Xie, Jiliang Tang  
**HIGHLIGHT:** To address these challenges and correspondingly facilitate multimodal single-cell data analyses, three key tasks have been introduced: Modality prediction, Modality matching and Joint embedding. In this work, we present a general Graph Neural Network framework scMoGNN to tackle these three tasks and show that scMoGNN demonstrates superior results in all three tasks compared with the state-of-the-art and conventional approaches.
- 404, **TITLE:** FedAttack: Effective and Covert Poisoning Attack on Federated Recommendation via Hard Sampling  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539119>  
**AUTHORS:** Chuhan Wu, Fangzhao Wu, Tao Qi, Yongfeng Huang, Xing Xie  
**HIGHLIGHT:** In this paper, we propose a simple yet effective and covert poisoning attack method on federated recommendation, named FedAttack.
- 405, **TITLE:** Interpretable Personalized Experimentation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539175>

AUTHORS: Han Wu, Sarah Tan, Weiwei Li, Mia Garrard, Adam Obeng, Drew Dimmery, Shaun Singh, Hanson Wang, Daniel Jiang, Eytan Bakshy  
HIGHLIGHT: In this paper, we present a scalable, interpretable personalized experimentation system, implemented and deployed in production at Meta.

406, TITLE: Learning Large-scale Subsurface Simulations with a Hybrid Graph Network Simulator

<https://dl.acm.org/doi/abs/10.1145/3534678.3539045>

AUTHORS: Tailin Wu, Qinchen Wang, Yinan Zhang, Rex Ying, Kaidi Cao, Rok Susic, Ridwan Jalali, Hassan Hamam, Marko Maucec, Jure Leskovec  
HIGHLIGHT: Here we introduce Hybrid Graph Network Simulator (HGNS), which is a data-driven surrogate model for learning reservoir simulations of 3D subsurface fluid flows.

407, TITLE: A Framework for Multi-stage Bonus Allocation in Meal Delivery Platform

<https://dl.acm.org/doi/abs/10.1145/3534678.3539202>

AUTHORS: Zhuolin Wu, Li Wang, Fangsheng Huang, Linjun Zhou, Yu Song, Chengpeng Ye, Pengyu Nie, Hao Ren, Jinghua Hao, Renqing He, Zhizhao Sun  
HIGHLIGHT: To make better use of the funds, in this work, we propose a framework to deal with the multi-stage bonus allocation problem for a meal delivery platform.

408, TITLE: Multi Armed Bandit vs. A/B Tests in E-commerce - Confidence Interval and Hypothesis Test Power Perspectives

<https://dl.acm.org/doi/abs/10.1145/3534678.3539144>

AUTHORS: Ding Xiang, Rebecca West, Jiaqi Wang, Xiquan Cui, Jinzhou Huang  
HIGHLIGHT: Based on the theoretical analysis, we propose two new MAB algorithms that combine the strengths of traditional MAB and A/B together, with higher (or equal) test power and higher (or equal) expected rewards than A/B testing under certain common conditions in e-commerce.

409, TITLE: Training Large-Scale News Recommenders with Pretrained Language Models in the Loop

<https://dl.acm.org/doi/abs/10.1145/3534678.3539120>

AUTHORS: Shitao Xiao, Zheng Liu, Yingxia Shao, Tao Di, Bhuvan Middha, Fangzhao Wu, Xing Xie  
HIGHLIGHT: In this paper, we propose a novel framework, SpeedyFeed, which efficiently trains PLMs-based news recommenders of superior quality.

410, TITLE: Contrastive Cross-domain Recommendation in Matching

<https://dl.acm.org/doi/abs/10.1145/3534678.3539125>

AUTHORS: Ruobing Xie, Qi Liu, Liangdong Wang, Shukai Liu, Bo Zhang, Leyu Lin  
HIGHLIGHT: In this work, we propose a novel Contrastive Cross-Domain Recommendation (CCDR) framework for CDR in matching.

411, TITLE: G2NET: A General Geography-Aware Representation Network for Hotel Search Ranking

<https://dl.acm.org/doi/abs/10.1145/3534678.3539025>

AUTHORS: Jia Xu, Fei Xiong, Zulong Chen, Mingyuan Tao, Liangyue Li, Quan Lu  
HIGHLIGHT: To this end, we propose a General Geography-aware representation NETWORK (G2NET for short) to better represent geography information of location entities so as to optimize the hotel search ranking.

412, TITLE: COSSUM: Towards Conversation-Oriented Structured Summarization for Automatic Medical Insurance Assessment

<https://dl.acm.org/doi/abs/10.1145/3534678.3539116>

AUTHORS: Sheng Xu, Xiaojun Wan, Sen Hu, Mengdi Zhou, Teng Xu, Hongbin Wang, Haitao Mi  
HIGHLIGHT: With the purpose of helping save human labor, we propose the task of conversation-oriented structured summarization which aims to automatically produce the desired structured summary from a conversation automatically.

413, TITLE: Mixture of Virtual-Kernel Experts for Multi-Objective User Profile Modeling

<https://dl.acm.org/doi/abs/10.1145/3534678.3539062>

AUTHORS: Zhenhui Xu, Meng Zhao, Liqun Liu, Lei Xiao, Xiaopeng Zhang, Bifeng Zhang  
HIGHLIGHT: This paper introduces a novel multi-task model called Mixture of Virtual-Kernel Experts (MVKE) to learn user preferences on various actions and topics unitedly.

414, TITLE: Perioperative Predictions with Interpretable Latent Representation

<https://dl.acm.org/doi/abs/10.1145/3534678.3539190>

AUTHORS: Bing Xue, York Jiao, Thomas Kannampallil, Bradley Fritz, Christopher King, Joanna Abraham, Michael Avidan, Chenyang Lu  
HIGHLIGHT: We propose clinical variational autoencoder (cVAE), a deep latent variable model that addresses the challenges of surgical applications through two salient features. (1) To overcome performance limitations of traditional VAE, it is prediction-guided with explicit expression of predicted outcome in the latent representation. (2) It disentangles the latent space so that it can be interpreted in a clinically meaningful fashion.

415, TITLE: Multiwave COVID-19 Prediction from Social Awareness Using Web Search and Mobility Data

<https://dl.acm.org/doi/abs/10.1145/3534678.3539172>

- AUTHORS:** Jiawei Xue, Takahiro Yabe, Kota Tsubouchi, Jianzhu Ma, Satish Ukkusuri  
**HIGHLIGHT:** Therefore, to predict the multiwave pandemic, we propose a Social Awareness-Based Graph Neural Network (SAB-GNN) that considers the decay of symptom-related web search frequency to capture the changes in public awareness across multiple waves.
- 416, **TITLE:** A Meta Reinforcement Learning Approach for Predictive Autoscaling in the Cloud  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539063>  
**AUTHORS:** Siqiao Xue, Chao Qu, Xiaoming Shi, Cong Liao, Shiyi Zhu, Xiaoyu Tan, Lintao Ma, Shiyu Wang, Shijun Wang, Yun Hu, Lei Lei, Yangfei Zheng, Jianguo Li, James Zhang  
**HIGHLIGHT:** To this end, we propose an end-to-end predictive meta model-based RL algorithm, aiming to optimally allocate resource to maintain a stable CPU utilization level, which incorporates a specially-designed deep periodic workload prediction model as the input and embeds the Neural Process [11, 16] to guide the learning of the optimal scaling actions over numerous application services in the Cloud.
- 417, **TITLE:** Scale Calibration of Deep Ranking Models  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539072>  
**AUTHORS:** Le Yan, Zhen Qin, Xuanhui Wang, Michael Bendersky, Marc Najork  
**HIGHLIGHT:** We rigorously show that, both theoretically and empirically, this property leads to training instability that may cause severe practical issues. In this paper, we study how to perform scale calibration of deep ranking models to address the above concerns.
- 418, **TITLE:** CMMD: Cross-Metric Multi-Dimensional Root Cause Analysis  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539109>  
**AUTHORS:** Shifu Yan, Caihua Shan, Wenyi Yang, Bixiong Xu, Dongsheng Li, Lili Qiu, Jie Tong, Qi Zhang  
**HIGHLIGHT:** To this end, we propose a cross-metric multi-dimensional root cause analysis method, named CMMD, which consists of two key components: 1) relationship modeling, which utilizes graph neural network (GNN) to model the unknown complex calculation among metrics and aggregation function among dimensions from historical data; 2) root cause localization, which adopts the genetic algorithm to efficiently and effectively dive into the raw data and localize the abnormal dimension(s) once the KPI anomalies are detected.
- 419, **TITLE:** DuARE: Automatic Road Extraction with Aerial Images and Trajectory Data at Baidu Maps  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539029>  
**AUTHORS:** Jianzhong Yang, Xiaoqing Ye, Bin Wu, Yanlei Gu, Ziyu Wang, Deguo Xia, Jizhou Huang  
**HIGHLIGHT:** In this paper, we present an automatic road extraction solution named DuARE, which is designed to exploit the multimodal knowledge for underlying road extraction in a fully automatic manner.
- 420, **TITLE:** TAG: Toward Accurate Social Media Content Tagging with a Concept Graph  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539077>  
**AUTHORS:** Jiuding Yang, Weidong Guo, Bang Liu, Yakun Yu, Chaoyue Wang, Jinwen Luo, Linglong Kong, Di Niu, Zhen Wen  
**HIGHLIGHT:** In this paper, we present TAG, a high-quality concept matching dataset consisting of 10,000 labeled pairs of fine-grained concepts and web-styled natural language sentences, mined from open-domain social media content.
- 421, **TITLE:** CausalMTA: Eliminating the User Confounding Bias for Causal Multi-touch Attribution  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539108>  
**AUTHORS:** Di Yao, Chang Gong, Lei Zhang, Sheng Chen, Jingping Bi  
**HIGHLIGHT:** In this paper, we define the causal MTA task and propose CausalMTA to solve this problem.
- 422, **TITLE:** Device-cloud Collaborative Recommendation via Meta Controller  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539181>  
**AUTHORS:** Jiangchao Yao, Feng Wang, Xichen Ding, Shaohu Chen, Bo Han, Jingren Zhou, Hongxia Yang  
**HIGHLIGHT:** However, such a design is inflexible when user interests dramatically change: the on-device model is stuck by the limited item cache while the cloud-based recommendation based on the large item pool do not respond without the new re-fresh feedback. To overcome this issue, we propose a meta controller to dynamically manage the collaboration between the on-device recommender and the cloud-based recommender, and introduce a novel efficient sample construction from the causal perspective to solve the dataset absence issue of meta controller.
- 423, **TITLE:** ReprBERT: Distilling BERT to an Efficient Representation-Based Relevance Model for E-Commerce  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539090>  
**AUTHORS:** Shaowei Yao, Jiwei Tan, Xi Chen, Juhao Zhang, Xiaoyi Zeng, Keping Yang  
**HIGHLIGHT:** Recently BERT has achieved significant progress on many NLP tasks including text matching, and it is of great value but also big challenge to deploy BERT to the e-commerce relevance task. To realize this goal, we propose ReprBERT, which has the advantages of both excellent performance and low latency, by distilling the interaction-based BERT model to a representation-based architecture.
- 424, **TITLE:** Multilingual Taxonomic Web Page Classification for Contextual Targeting at Yahoo  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539189>  
**AUTHORS:** Eric Ye, Xiao Bai, Neil O'Hare, Eliyar Asgari, Kapil Thadani, Francisco Perez-Sorrosal, Sujyothi Adiga  
**HIGHLIGHT:** In this paper, we use multilingual Transformer-based transfer learning models to classify web pages in five high-impact languages.



- 425, TITLE: A Stochastic Shortest Path Algorithm for Optimizing Spaced Repetition Scheduling  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539081>  
AUTHORS: Junyao Ye, Jingyong Su, Yilong Cao  
HIGHLIGHT: Based on the model, we design a spaced repetition scheduler guaranteed to minimize the review cost by a stochastic shortest path algorithm.
- 426, TITLE: Embedding Compression with Hashing for Efficient Representation Learning in Large-Scale Graph  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539068>  
AUTHORS: Chin-Chia Michael Yeh, Mengting Gu, Yan Zheng, Huiyuan Chen, Javid Ebrahimi, Zhongfang Zhuang, Junpeng Wang, Liang Wang, Wei Zhang  
HIGHLIGHT: Inspired by the embedding compression methods developed for natural language processing (NLP) tasks, we develop a node embedding compression method where each node is compactly represented with a bit vector instead of a floating-point vector.
- 427, TITLE: Predicting Age-Related Macular Degeneration Progression with Contrastive Attention and Time-Aware LSTM  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539163>  
AUTHORS: Changchang Yin, Sayoko E. Moroi, Ping Zhang  
HIGHLIGHT: In this work, we propose a Contrastive-Attention-based Time-aware Long Short-Term Memory network (CAT-LSTM) to predict AMD progression.
- 428, TITLE: Spatio-Temporal Vehicle Trajectory Recovery on Road Network Based on Traffic Camera Video Data  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539186>  
AUTHORS: Fudan Yu, Wenxuan Ao, Huan Yan, Guozhen Zhang, Wei Wu, Yong Li  
HIGHLIGHT: To deal with these challenges, we design a novel system to recover the vehicle trajectory with the granularity of the road intersection. In this system, we propose an iterative framework to jointly optimize the vehicle re-identification and trajectory recovery tasks.
- 429, TITLE: XDAI: A Tuning-free Framework for Exploiting Pre-trained Language Models in Knowledge Grounded Dialogue Generation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539135>  
AUTHORS: Jifan Yu, Xiaohan Zhang, Yifan Xu, Xuanyu Lei, Xinyu Guan, Jing Zhang, Lei Hou, Juanzi Li, Jie Tang  
HIGHLIGHT: However, there remain challenges for individual developers to create a knowledge-grounded dialogue system upon such big models because of the expensive cost of collecting the knowledge resources for supporting the system as well as tuning these large models for the task. To tackle these obstacles, we propose XDAI, a knowledge-grounded dialogue system that is equipped with the prompt-aware tuning-free PLM exploitation and supported by the ready-to-use open-domain external knowledge resources plus the easy-to-change domain-specific mechanism.
- 430, TITLE: CommerceMM: Large-Scale Commerce MultiModal Representation Learning with Omni Retrieval  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539151>  
AUTHORS: Licheng Yu, Jun Chen, Animesh Sinha, Mengjiao Wang, Yu Chen, Tamara L. Berg, Ning Zhang  
HIGHLIGHT: We introduce CommerceMM - a multimodal model capable of providing a diverse and granular understanding of commerce topics associated to the given piece of content (image, text, image+text), and having the capability to generalize to a wide range of tasks, including Multimodal Categorization, Image-Text Retrieval, Query-to-Product Retrieval, Image-to-Product Retrieval, etc.
- 431, TITLE: EGM: Enhanced Graph-based Model for Large-scale Video Advertisement Search  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539061>  
AUTHORS: Tan Yu, Jie Liu, Yi Yang, Yi Li, Hongliang Fei, Ping Li  
HIGHLIGHT: In this work, we enhance the graph-based model through sub-path embedding to differentiate similar videos.
- 432, TITLE: Multi-task Envisioning Transformer-based Autoencoder for Corporate Credit Rating Migration Early Prediction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539098>  
AUTHORS: Han Yue, Steve Xia, Hongfu Liu  
HIGHLIGHT: In this paper, we consider the corporate credit rating migration early prediction problem, which predicts the credit rating of an issuer will be upgraded, unchanged, or downgraded after 12 months based on its latest financial reporting information at the time.
- 433, TITLE: AutoShard: Automated Embedding Table Sharding for Recommender Systems  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539034>  
AUTHORS: Daochen Zha, Louis Feng, Bhargav Bhushanam, Dhruv Choudhary, Jade Nie, Yuandong Tian, Jay Chae, Yinbin Ma, Arun Kejariwal, Xia Hu  
HIGHLIGHT: In this work, we introduce our novel practice in Meta, namely AutoShard, which uses a neural cost model to directly predict the multi-table costs and leverages deep reinforcement learning to solve the partition problem.
- 434, TITLE: Deconfounding Duration Bias in Watch-time Prediction for Video Recommendation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539092>  
AUTHORS: Ruohan Zhan, Changhua Pei, Qiang Su, Jianfeng Wen, Xueliang Wang, Guanyu Mu, Dong Zheng, Peng Jiang, Kun Gai

**HIGHLIGHT:** To remove the undesired bias but leverage the natural effect, we propose a Duration-Deconfounded Quantile-based (D2Q) watch-time prediction framework, which allows for scalability to perform on industry production systems.

435, **TITLE:** Data-Driven Oracle Bone Rejoining: A Dataset and Practical Self-Supervised Learning Scheme  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539050>  
**AUTHORS:** Chongsheng Zhang, Bin Wang, Ke Chen, Ruixing Zong, Bo-feng Mo, Yi Men, George Alpanidis, Shanxiang Chen, Xiangliang Zhang

**HIGHLIGHT:** To this end, we collect a real-world dataset for rejoining Oracle Bone fragments, namely OB-Rejoin, which consists of 998 OB rubbing images that suffer from low quality image problems, due to intrinsic underground eroding over time and extrinsic imaging conditions in the past.

436, **TITLE:** Uni-Retriever: Towards Learning the Unified Embedding Based Retriever in Bing Sponsored Search  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539212>  
**AUTHORS:** Jianjin Zhang, Zheng Liu, Weihao Han, Shitao Xiao, Ruicheng Zheng, Yingxia Shao, Hao Sun, Hanqing Zhu, Premkumar Srinivasan, Weiwei Deng, Qi Zhang, Xing Xie

**HIGHLIGHT:** In this paper, we present a novel representation learning framework Uni-Retriever developed for Bing Search, which unifies two different training modes knowledge distillation and contrastive learning to realize both required objectives.

437, **TITLE:** Felicitas: Federated Learning in Distributed Cross Device Collaborative Frameworks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539039>  
**AUTHORS:** Qi Zhang, Tiancheng Wu, Peichen Zhou, Shan Zhou, Yuan Yang, Xiulang Jin  
**HIGHLIGHT:** Felicitas is a distributed cross-device Federated Learning (FL) framework to solve the industrial difficulties of FL in large-scale device deployment scenarios.

438, **TITLE:** Multi-Task Fusion via Reinforcement Learning for Long-Term User Satisfaction in Recommender Systems  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539040>  
**AUTHORS:** Qihua Zhang, Junning Liu, Yuzhuo Dai, Yiyan Qi, Yifan Yuan, Kunlun Zheng, Fan Huang, Xianfeng Tan  
**HIGHLIGHT:** We propose a conservative offline policy estimator (Conservative-OPEstimator) to test our model offline.

439, **TITLE:** Adaptive Multi-view Rule Discovery for Weakly-Supervised Compatible Products Prediction  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539208>  
**AUTHORS:** Rongzhi Zhang, Rebecca West, Xiquan Cui, Chao Zhang  
**HIGHLIGHT:** We study the problem of discovering effective labeling rules that can enable weakly-supervised product compatibility prediction.

440, **TITLE:** Sparx: Distributed Outlier Detection at Scale  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539076>  
**AUTHORS:** Sean Zhang, Varun Ursekar, Leman Akoglu  
**HIGHLIGHT:** This area, however, is not only understudied but also short of public-domain implementations for practical use. This paper aims to fill this gap: We design Sparx, a data-parallel OD algorithm suitable for shared-nothing infrastructures, which we specifically implement in Apache Spark.

441, **TITLE:** CAT: Beyond Efficient Transformer for Content-Aware Anomaly Detection in Event Sequences  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539155>  
**AUTHORS:** Shengming Zhang, Yanchi Liu, Xuchao Zhang, Wei Cheng, Haifeng Chen, Hui Xiong  
**HIGHLIGHT:** To this end, in this paper, we propose a self-attentive encoder-decoder transformer framework, Content-Aware Transformer CAT, for anomaly detection in event sequences.

442, **TITLE:** Medical Symptom Detection in Intelligent Pre-Consultation Using Bi-directional Hard-Negative Noise Contrastive Estimation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539124>  
**AUTHORS:** Shiwei Zhang, Jichao Sun, Yu Huang, Xueqi Ding, Yefeng Zheng  
**HIGHLIGHT:** In this work, we formulate symptom detection as a retrieval problem and propose a bi-directional hard-negative enforced noise contrastive estimation method (Bi-hardNCE) to tackle the symptom detection problem.

443, **TITLE:** Graph Attention Multi-Layer Perceptron  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539121>  
**AUTHORS:** Wentao Zhang, Ziqi Yin, Zeang Sheng, Yang Li, Wen Ouyang, Xiaosen Li, Yangyu Tao, Zhi Yang, Bin Cui  
**HIGHLIGHT:** Although some scalable GNNs are proposed for large-scale graphs, they adopt a fixed K-hop neighborhood for each node, thus facing the over-smoothing issue when adopting large propagation depths for nodes within sparse regions. To tackle the above issue, we propose a new GNN architecture --- Graph Attention Multi-Layer Perceptron (GAMLN), which can capture the underlying correlations between different scales of graph knowledge.

444, **TITLE:** JiuZhang: A Chinese Pre-trained Language Model for Mathematical Problem Understanding  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539131>  
**AUTHORS:** Wayne Xin Zhao, Kun Zhou, Zheng Gong, Beichen Zhang, Yuanhang Zhou, Jing Sha, Zhigang Chen, Shijin Wang, Cong Liu, Ji-Rong Wen  
**HIGHLIGHT:** This paper aims to advance the mathematical intelligence of machines by presenting the first Chinese mathematical pre-trained language model (PLM) for effectively understanding and representing mathematical problems.

- 445, TITLE: Distributed Hybrid CPU and GPU training for Graph Neural Networks on Billion-Scale Heterogeneous Graphs  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539177>  
AUTHORS: Da Zheng, Xiang Song, Chengru Yang, Dominique LaSalle, George Karypis  
HIGHLIGHT: In these domains, the graphs are typically large and heterogeneous, containing many millions or billions of vertices and edges of different types. To tackle this challenge, we develop DistDGLv2, a system that extends DistDGL for training GNNs on massive heterogeneous graphs in a mini-batch fashion, using distributed hybrid CPU/GPU training.
- 446, TITLE: DDR: Dialogue Based Doctor Recommendation for Online Medical Service  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539201>  
AUTHORS: Zhi Zheng, Zhaopeng Qiu, Hui Xiong, Xian Wu, Tong Xu, Enhong Chen, Xiangyu Zhao  
HIGHLIGHT: Intuitively, it is a crucial step to recommend suitable doctor candidates for patients, especially with suffering the severe cold-start challenge of patients due to the limited historical records and insufficient description of patient condition. Along this line, in this paper, we propose a novel Dialogue based Doctor Recommendation (DDR) model, which comprehensively integrates three types of information in modeling, including the profile and chief complaint from patients, the historical records of doctors and the patient-doctor dialogue.
- 447, TITLE: Dynamic Graph Segmentation for Deep Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539111>  
AUTHORS: Johan Kok Zhi Kang, Suwei Yang, Suriya Venkatesan, Sien Yi Tan, Feng Cheng, Bingsheng He  
HIGHLIGHT: We present Deep network Dynamic Graph Partitioning (DDGP), a novel algorithm for optimizing the division of large graphs for mixture of expert graph neural networks.
- 448, TITLE: DESCN: Deep Entire Space Cross Networks for Individual Treatment Effect Estimation  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539198>  
AUTHORS: Kailiang Zhong, Fengtong Xiao, Yan Ren, Yaorong Liang, Wenqing Yao, Xiaofeng Yang, Ling Cen  
HIGHLIGHT: This paper proposes Deep Entire Space Cross Networks (DESCN) to model treatment effects from an end-to-end perspective.
- 449, TITLE: Combo-Fashion: Fashion Clothes Matching CTR Prediction with Item History  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539101>  
AUTHORS: Chenxu Zhu, Peng Du, Weinan Zhang, Yong Yu, Yang Cao  
HIGHLIGHT: In this work, we tackle this problem by designing a novel algorithm called Combo-Fashion, which extracts the matching effect by introducing the matching history of the combo item with two cascaded modules: (i) Matching Search Module (MSM) seeks the popular combo items and undesirable ones as a positive set and a negative set, respectively; (ii) Matching Prediction Module (MPM) models the precise relationship between the candidate combo item and the positive/negative set by an attention-based deep model.
- 450, TITLE: User-tag Profile Modeling in Recommendation System via Contrast Weighted Tag Masking  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539102>  
AUTHORS: Chenxu Zhu, Peng Du, Xianghui Zhu, Weinan Zhang, Yong Yu, Yang Cao  
HIGHLIGHT: This leads to data discrepancy between the training and testing samples. To address such an issue, we attempt a novel Random Masking Model (RMM) to remain only one tag at the training time by masking.
- 451, TITLE: Uncertainty Quantification of Sparse Travel Demand Prediction with Spatial-Temporal Graph Neural Networks  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539093>  
AUTHORS: Dingyi Zhuang, Shenhao Wang, Haris Koutsopoulos, Jinhua Zhao  
HIGHLIGHT: This presents a serious problem, because a vast number of zeros deviate from the Gaussian assumption underlying the deterministic deep learning models. To address this issue, we design a Spatial-Temporal Zero-Inflated Negative Binomial Graph Neural Network (STZINB-GNN) to quantify the uncertainty of the sparse travel demand.
- 452, TITLE: RBG: Hierarchically Solving Large-Scale Routing Problems in Logistic Systems via Reinforcement Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3539037>  
AUTHORS: Zefang Zong, Hansen Wang, Jingwei Wang, Meng Zheng, Yong Li  
HIGHLIGHT: In this paper we present a novel Rewriting-by-Generating (RBG) framework which solves large-scale VRPs hierarchically.
- 453, TITLE: Effective Social Network-Based Allocation of COVID-19 Vaccines  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542673>  
AUTHORS: Jianghuo Chen, Stefan Hoops, Achla Marathe, Henning Mortveit, Bryan Lewis, Srinivasan Venkatramanan, Arash Haddadan, Parantapa Bhattacharya, Abhijin Adiga, Anil Vullikanti, Aravind Srinivasan, Mandy L. Wilson, Gal Ehrlich, Maier Fenster, Stephen Eubank, Christopher Barrett, Madhav Marathe  
HIGHLIGHT: We study allocation of COVID-19 vaccines to individuals based on the structural properties of their underlying social contact network.
- 454, TITLE: Reinforcement Learning Enhances the Experts: Large-scale COVID-19 Vaccine Allocation with Multi-factor Contact Network  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542679>  
AUTHORS: Qianyue Hao, Wenzhen Huang, Fengli Xu, Kun Tang, Yong Li  
HIGHLIGHT: In this paper, we propose a reinforcement learning enhanced experts method.

- 455, TITLE: Scalable Online Disease Diagnosis via Multi-Model-Fused Actor-Critic Reinforcement Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542672>  
AUTHORS: Weijie He, Ting Chen  
HIGHLIGHT: They perform well when the feature space is small, that is, the number of symptoms and diagnosable disease categories is limited, but they frequently fail in assignments with a large number of features. To address this challenge, we propose a Multi-Model-Fused Actor-Critic (MMF-AC) RL framework that consists of a generative actor network and a diagnostic critic network.
- 456, TITLE: User Engagement in Mobile Health Applications  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542681>  
AUTHORS: Babaniyi Yusuf Olaniyi, Ana Fernandez del Rio, & Aacutefrica Peri&aacute;ez, Lauren Bellhouse  
HIGHLIGHT: We propose a framework to study user engagement with mobile health, focusing on healthcare workers and digital health apps designed to support them in resource-poor settings.
- 457, TITLE: Automatic Phenotyping by a Seed-guided Topic Model  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542675>  
AUTHORS: Ziyang Song, Yuanyi Hu, Aman Verma, David L. Buckeridge, Yue Li  
HIGHLIGHT: We present a seed-guided Bayesian topic model called MixEHR-Seed with 3 contributions: (1) for each phenotype, we infer a dual-form of topic distribution: a seed-topic distribution over a small set of key EHR codes and a regular topic distribution over the entire EHR vocabulary; (2) we model age-dependent disease progression as Markovian dynamic topic priors; (3) we infer seed-guided multi-modal topics over distinct EHR data types.
- 458, TITLE: MolSearch: Search-based Multi-objective Molecular Generation and Property Optimization  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542676>  
AUTHORS: Mengying Sun, Jing Xing, Han Meng, Huijun Wang, Bin Chen, Jiayu Zhou  
HIGHLIGHT: Towards real-world applications, however, efficient generation of molecules that satisfy multiple property requirements simultaneously remains a key challenge. In this paper, we tackle this challenge using a search-based approach and propose a simple yet effective framework called MolSearch for multi-objective molecular generation (optimization).
- 459, TITLE: Dynamic Network Anomaly Modeling of Cell-Phone Call Detail Records for Infectious Disease Surveillance  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542678>  
AUTHORS: Carl Yang, Hongwen Song, Mingyue Tang, Leon Danon, Ymir Vigfusson  
HIGHLIGHT: In this paper, we develop the necessary models to conduct population-level infectious disease surveillance by using cell-phone metadata individually linked with health outcomes.
- 460, TITLE: Data-Efficient Brain Connectome Analysis via Multi-Task Meta-Learning  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542680>  
AUTHORS: Yi Yang, Yanqiao Zhu, Hejie Cui, Xuan Kan, Lifang He, Ying Guo, Carl Yang  
HIGHLIGHT: Specifically, we propose to meta-train the model on datasets of large sample sizes and transfer the knowledge to small datasets.
- 461, TITLE: Activity Trajectory Generation via Modeling Spatiotemporal Dynamics  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542671>  
AUTHORS: Yuan Yuan, Jingtao Ding, Huandong Wang, Depeng Jin, Yong Li  
HIGHLIGHT: In this paper, we present a novel framework based on generative adversarial imitation learning, to generate artificial activity trajectories that retain both the fidelity and utility of the real-world data.
- 462, TITLE: Medical Dialogue Response Generation with Pivotal Information Recalling  
<https://dl.acm.org/doi/abs/10.1145/3534678.3542674>  
AUTHORS: Yu Zhao, Yunxin Li, Yuxiang Wu, Baotian Hu, Qingcai Chen, Xiaolong Wang, Yuxin Ding, Min Zhang  
HIGHLIGHT: To mitigate this problem, we propose a medical response generation model with Pivotal Information Recalling (MedPIR), which is built on two components, i.e., knowledge-aware dialogue graph encoder and recall-enhanced generator.