

40th Conference on Uncertainty in Artificial Intelligence (UAI 2024)

Proceedings of Machine Learning Research Volume 244

Barcelona, Spain
15 - 19 July 2024

Part 1 of 6

Editors:

Negar Kiyavash
Joris M. Mooij

ISBN: 979-8-3313-0682-3

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2024) by Association For Uncertainty in Artificial Intelligence (AUAI)
All rights reserved.

Printed by Curran Associates, Inc. (2025)

For permission requests, please contact Association For Uncertainty in Artificial Intelligence (AUAI)
at the address below.

Association For Uncertainty in Artificial Intelligence (AUAI)
Department of Computer Science
University of British Columbia
Vancouver BC Canada V6T 1Z4

Phone: (703) 787-8044
Fax: (703) 478-0829

www.auai.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

PREFACE

Proceedings of the Fortieth Conference on Uncertainty in Artificial Intelligence – Preface
Negar Kiyavash, Joris M. Mooij

PAPERS

Convergence Behavior of an Adversarial Weak Supervision Method	1
<i>Steven An, Sanjoy Dasgupta</i>	
Iterated INLA for State and Parameter Estimation in Nonlinear Dynamical Systems	50
<i>Rafael Anderka, Marc Peter Deisenroth, So Takao</i>	
CSS: Contrastive Semantic Similarities for Uncertainty Quantification of LLMs	77
<i>Shuang Ao, Stefan Rueger, Advaith Siddharthan</i>	
Unified PAC-Bayesian Study of Pessimism for Offline Policy Learning with Regularized Importance Sampling	88
<i>Imad Aouali, Victor-Emmanuel Brunel, David Rohde, Anna Korba</i>	
Latent Representation Entropy Density for Distribution Shift Detection	110
<i>Fabio Arnez, Daniel Alfonso Montoya Vasquez, Ansgar Radermacher, François Terrier</i>	
FedAST: Federated Asynchronous Simultaneous Training	138
<i>Baris Askin, Pranay Sharma, Carlee Joe-Wong, Gauri Joshi</i>	
Identifiability of Total Effects from Abstractions of Time Series Causal Graphs	173
<i>Charles K. Assaad, Emilie Devijver, Eric Gaussier, Gregor Goessler, Anouar Meynaoui</i>	
On the Capacitated Facility Location Problem with Scarce Resources	186
<i>Gennaro Auricchio, Harry J. Clough, Jie Zhang</i>	
Mitigating Overconfidence in Out-Of-Distribution Detection by Capturing Extreme Activations	203
<i>Mohammad Azizmalayeri, Ameen Abu-Hanna, Giovanni Cinà</i>	
Inference in Probabilistic Answer Set Programs with Imprecise Probabilities Via Optimization	225
<i>Damiano Azzolini, Fabrizio Riguzzi</i>	
Differentially Private No-Regret Exploration in Adversarial Markov Decision Processes	235
<i>Shaojie Bai, Lanting Zeng, Chengcheng Zhao, Xiaoming Duan, Mohammad Sadegh Talebi, Peng Cheng, Jiming Chen</i>	
Walking the Values in Bayesian Inverse Reinforcement Learning	273
<i>Ondrej Bajgar, Alessandro Abate, Konstantinos Gatsis, Michael Osborne</i>	
Learning Accurate and Interpretable Decision Trees	288
<i>Maria-Florina Balcan, Dravyansh Sharma</i>	

Towards Bounding Causal Effects Under Markov Equivalence.....	308
<i>Alexis Bellot</i>	
Linearly Constrained Gaussian Processes Are SkewGPs: Application to Monotonic Preference Learning and Desirability	333
<i>Alessio Benavoli, Dario Azzimonti</i>	
MetaCOG: A Heirarchical Probabilistic Model for Learning Meta-Cognitive Visual Representations	349
<i>Marlene Berke, Zhangir Azerbayev, Mario Belledonne, Zenna Tavares, Julian Jara-Ettinger</i>	
Shedding Light on Large Generative Networks: Estimating Epistemic Uncertainty in Diffusion Models	360
<i>Lucas Berry, Axel Brando, David Meger</i>	
Publishing Number of Walks and Katz Centrality Under Local Differential Privacy	377
<i>Louis Betzer, Vorapong Supakitpaisarn, Quentin Hillebrand</i>	
Using Autodiff to Estimate Posterior Moments, Marginals and Samples.....	394
<i>Sam Bowyer, Thomas Heap, Laurence Aitchison</i>	
Polynomial Semantics of Tractable Probabilistic Circuits.....	418
<i>Oliver Broadrick, Honghua Zhang, Guy Van den Broeck</i>	
Products, Abstractions and Inclusions of Causal Spaces	430
<i>Simon Buchholz, Junhyung Park, Bernhard Schölkopf</i>	
Revisiting Kernel Attention with Correlated Gaussian Process Representation.....	450
<i>Long Minh Bui, Tho Tran Huu, Duy Dinh, Tan Minh Nguyen, Trong Nghia Hoang</i>	
Sample Average Approximation for Black-Box Variational Inference.....	471
<i>Javier Burroni, Justin Domke, Daniel Sheldon</i>	
Privacy-Aware Randomized Quantization Via Linear Programming	499
<i>Zhongteng Cai, Xueru Zhang, Mohammad Mahdi Khalili</i>	
Fair Active Learning in Low-Data Regimes.....	517
<i>Romain Camilleri, Andrew Wagenmaker, Jamie Morgenstern, Lalit Jain, Kevin Jamieson</i>	
Multi-Relational Structural Entropy	532
<i>Yuwei Cao, Hao Peng, Angsheng Li, Chenyu You, Zhifeng Hao, Philip S. Yu</i>	
How to Fix a Broken Confidence Estimator: Evaluating Post-Hoc Methods for Selective Classification with Deep Neural Networks	547
<i>Luís Felipe Cattelan, Danilo Silva</i>	
QuantProb: Generalizing Probabilities Along with Predictions for a Pre-Trained Classifier	585
<i>Aditya Challa, Soma Dhavala, Snehanshu Saha</i>	
Generalization and Learnability in Multiple Instance Regression.....	603
<i>Kushal Chauhan, Rishi Saket, Lorne Applebaum, Ashwinkumar Badanidiyuru, Chandan Giri, Aravindan Raghuvier</i>	
Gradient Descent in Matrix Factorization: Understanding Large Initialization	619
<i>Hengchao Chen, Xin Chen, Mohamad Elmasri, Qiang Sun</i>	
Conditional Bayesian Quadrature.....	648
<i>Zonghao Chen, Masha Naslidnyk, Arthur Gretton, Francois-Xavier Briol</i>	

Adaptive Time-Stepping Schedules for Diffusion Models	685
<i>Yuzhu Chen, Fengxiang He, Shi Fu, Xinmei Tian, Dacheng Tao</i>	

VOLUME 2

SMuCo: Reinforcement Learning for Visual Control Via Sequential Multi-View Total Correlation	698
<i>Tong Cheng, Hang Dong, Lu Wang, Bo Qiao, Qingwei Lin, Saravan Rajmohan, Thomas Moscibroda</i>	
Inference for Optimal Linear Treatment Regimes in Personalized Decision-Making.....	718
<i>Yuwen Cheng, Shu Yang</i>	
End-To-End Conditional Robust Optimization	736
<i>Abhilash Reddy Chenreddy, Erick Delage</i>	
Differentiable Pareto-Smoothed Weighting for High-Dimensional Heterogeneous Treatment Effect Estimation.....	749
<i>Yoichi Chikahara, Kansei Ushiyama</i>	
Fast Interactive Search Under a Scale-Free Comparison Oracle	763
<i>Daniyar Chumbalov, Lars Klein, Lucas Maystre, Matthias Grossglauser</i>	
Analysis of Bootstrap and Subsampling in High-Dimensional Regularized Regression	787
<i>Lucas Clarté, Adrien Vandenbroucq, Guillaume Dalle, Bruno Loureiro, Florent Krzakala, Lenka Zdeborová</i>	
Towards Minimax Optimality of Model-Based Robust Reinforcement Learning.....	820
<i>Pierre Clavier, Erwan Le Pennec, Matthieu Geist</i>	
Towards Representation Learning for Weighting Problems in Design-Based Causal Inference	856
<i>Oscar Clivio, Avi Feller, Chris Holmes</i>	
Normalizing Flows for Conformal Regression.....	881
<i>Nicolò Colombo</i>	
Power Mean Estimation in Stochastic Monte-Carlo Tree Search.....	894
<i>Tuan Dam, Odalric-Ambrym Maillard, Emilie Kaufmann</i>	
Linear Opinion Pooling for Uncertainty Quantification on Graphs	919
<i>Clemens Damke, Eyke Hüllermeier</i>	
Can We Defend Against the Unknown? an Empirical Study About Threshold Selection for Neural Network Monitoring.....	930
<i>Khoi Tran Dang, Kevin Delmas, Jérémie Guiochet, Joris Guérin</i>	
Detecting Critical Treatment Effect Bias in Small Subgroups	943
<i>Piersilvio De Bartolomeis, Javier Abad, Konstantin Donhauser, Fanny Yang</i>	
The Real Deal Behind the Artificial Appeal: Inferential Utility of Tabular Synthetic Data	966
<i>Alexander Decruyenaere, Heidelinde Dehaene, Paloma Rabaey, Christiaan Polet, Johan Decruyenaere, Stijn Vansteelandt, Thomas Demeester</i>	
Discrete Probabilistic Inference as Control in Multi-Path Environments.....	997
<i>Tristan Deleu, Padideh Nouri, Nikolay Malkin, Doina Precup, Yoshua Bengio</i>	

On Convergence of Federated Averaging Langevin Dynamics	1022
<i>Wei Deng, Qian Zhang, Yian Ma, Zhao Song, Guang Lin</i>	
Reflected Schrödinger Bridge for Constrained Generative Modeling	1055
<i>Wei Deng, Yu Chen, Nicole Tianjiao Yang, Hengrong Du, Qi Feng, Ricky Tian Qi Chen</i>	
Calibrated and Conformal Propensity Scores for Causal Effect Estimation.....	1083
<i>Shachi Deshpande, Volodymyr Kuleshov</i>	
Learning to Rank for Active Learning Via Multi-Task Bilevel Optimization	1112
<i>Zixin Ding, Si Chen, Ruoxi Jia, Yuxin Chen</i>	
End-To-End Learning for Fair Multiobjective Optimization Under Uncertainty	1129
<i>My H. Dinh, James Kotary, Ferdinando Fioretto</i>	
Online Policy Optimization for Robust Markov Decision Process	1146
<i>Jing Dong, Jingwei Li, Baoxiang Wang, Jingzhao Zhang</i>	
Learning Distributionally Robust Tractable Probabilistic Models in Continuous Domains.....	1176
<i>Hailiang Dong, James Amato, Vibhav Gogate, Nicholas Ruozzi</i>	
Bandits with Knapsacks and Predictions	1189
<i>Davide Drago, Andrea Celli, Marek Elias</i>	
Approximate Bayesian Computation with Path Signatures.....	1207
<i>Joel Dyer, Patrick Cannon, Sebastian M. Schmon</i>	
Vertical Validation: Evaluating Implicit Generative Models for Graphs on Thin Support Regions	1232
<i>Mai Elkady, Thu Bui, Bruno Ribeiro, David Inouye</i>	
EntProp: High Entropy Propagation for Improving Accuracy and Robustness.....	1257
<i>Shohei Enomoto</i>	
Multi-Fidelity Bayesian Optimization with Multiple Information Sources of Input-Dependent Fidelity	1271
<i>Mingzhou Fan, Byung-Jun Yoon, Edward Dougherty, Nathan Urban, Francis Alexander, Raymundo Arróyave, Xiaoning Qian</i>	
Center-Based Relaxed Learning Against Membership Inference Attacks	1294
<i>Xingli Fang, Jung-Eun Kim</i>	
Enhancing Patient Recruitment Response in Clinical Trials: An Adaptive Learning Framework.....	1307
<i>Xinying Fang, Shouhao Zhou</i>	
Generalized Expected Utility as a Universal Decision Rule – a Step Forward	1323
<i>Hélène Fargier, Pierre Pomeret-Coquot</i>	
Last-Iterate Convergence Separation Between Extra-Gradient and Optimism in Constrained Periodic Games.....	1339
<i>Yi Feng, Ping Li, Ioannis Panageas, Xiao Wang</i>	
Guaranteeing Robustness Against Real-World Perturbations in Time Series Classification Using Conformalized Randomized Smoothing.....	1371
<i>Nicola Franco, Jakob Spiegelberg, Jeanette Miriam Lorenz, Stephan Günnemann</i>	

Consistency Regularization for Domain Generalization with Logit Attribution Matching	1389
<i>Han Gao, Kaican Li, Weiyan Xie, Zhi Lin, Yongxiang Huang, Luning Wang, Caleb Cao, Nevin Zhang</i>	

VOLUME 3

Uncertainty Estimation with Recursive Feature Machines.....	1408
<i>Daniel Gedon, Amirhesam Abedsoltan, Thomas B. Schön, Mikhail Belkin</i>	
Bootstrap Your Conversions: Thompson Sampling for Partially Observable Delayed Rewards.....	1438
<i>Marco Gigli, Fabio Stella</i>	
GeONet: A Neural Operator for Learning the Wasserstein Geodesic	1453
<i>Andrew Gracyk, Xiaohui Chen</i>	
ContextFlow++: Generalist-Specialist Flow-Based Generative Models with Mixed-Variable Context Encoding	1479
<i>Denis Gudovskiy, Tomoyuki Okuno, Yohei Nakata</i>	
One Shot Inverse Reinforcement Learning for Stochastic Linear Bandits	1491
<i>Etash Guha, Jim James, Krishna Acharya, Vidya Muthukumar, Ashwin Pananjady</i>	
Characterizing Data Point Vulnerability as Average-Case Robustness	1513
<i>Tessa Han, Suraj Srinivas, Himabindu Lakkaraju</i>	
No-Regret Learning of Nash Equilibrium for Black-Box Games Via Gaussian Processes.....	1541
<i>Minbiao Han, Fengxue Zhang, Yuxin Chen</i>	
Faster Perfect Sampling of Bayesian Network Structures.....	1558
<i>Juha Harviainen, Mikko Koivisto</i>	
Adjustment Identification Distance: A Gadgid for Causal Structure Learning	1569
<i>Leonard Henckel, Theo Würtzen, Sebastian Weichwald</i>	
On Overcoming Miscalibrated Conversational Priors in LLM-Based ChatBots.....	1599
<i>Christine Herlihy, Jennifer Neville, Tobias Schnabel, Adith Swaminathan</i>	
Neural Active Learning Meets the Partial Monitoring Framework	1621
<i>Maxime Heuillet, Ola Ahmad, Audrey Durand</i>	
Quantum Kernelized Bandits.....	1640
<i>Yasunari Hikima, Kazunori Murao, Sho Takemori, Yuhei Umeda</i>	
Recursively-Constrained Partially Observable Markov Decision Processes.....	1658
<i>Qi Heng Ho, Tyler Becker, Benjamin Kraske, Zakariya Laouar, Martin Feather, Federico Rossi, Morteza Lahijanian, Zachary Sunberg</i>	
Sound Heuristic Search Value Iteration for Undiscounted POMDPs with Reachability Objectives	1681
<i>Qi Heng Ho, Martin Feather, Federico Rossi, Zachary Sunberg, Morteza Lahijanian</i>	
A Global Markov Property for Solutions of Stochastic Difference Equations and the Corresponding Full Time Graphs.....	1698
<i>Tom Hochsprung, Jakob Runge, Andreas Gerhardus</i>	
Revisiting Convergence of AdaGrad with Relaxed Assumptions	1727
<i>Yusu Hong, Junhong Lin</i>	

Equilibrium Computation in Multidimensional Congestion Games: CSP and Learning Dynamics Approaches	1751
<i>Mohammad T. Irfan, Hau Chan, Jared Soundy</i>	
Early-Exit Neural Networks with Nested Prediction Sets	1780
<i>Metod Jazbec, Patrick Forré, Stephan Mandt, Dan Zhang, Eric Nalisnick</i>	
On the Convergence of Hierarchical Federated Learning with Partial Worker Participation	1797
<i>Xiaohan Jiang, Hongbin Zhu</i>	
Adaptive Softmax Trees for Many-Class Classification.....	1825
<i>Rasul Kairgeldin, Magzhan Gabidolla, Miguel Carreira-Perpiñán</i>	
Towards Scalable Bayesian Transformers: Investigating Stochastic Subset Selection for NLP.....	1842
<i>Peter Johannes Tejlgaard Kampen, Gustav Ragnar Stoettrup Als, Michael Riis Andersen</i>	
Low-Rank Matrix Bandits with Heavy-Tailed Rewards	1863
<i>Yue Kang, Cho-Jui Hsieh, Thomas Chun Man Lee</i>	
Cost-Sensitive Uncertainty-Based Failure Recognition for Object Detection.....	1890
<i>Moussa Kassem-Sbeyti, Michelle Karg, Christian Wirth, Nadja Klein, Sahin Albayrak</i>	
Probabilities of Causation for Continuous and Vector Variables	1901
<i>Yuta Kawakami, Manabu Kuroki, Jin Tian</i>	
Identification and Estimation of Conditional Average Partial Causal Effects Via Instrumental Variable.....	1922
<i>Yuta Kawakami, Manabu Kuroki, Jin Tian</i>	
Targeted Reduction of Causal Models.....	1953
<i>Armin Kekić, Bernhard Schölkopf, Michel Besserve</i>	
Active Learning Framework for Incomplete Networks.....	1981
<i>Tung Khong, Cong Tran, Cuong Pham</i>	
Causal Discovery with Deductive Reasoning: One Less Problem	1999
<i>Jonghwan Kim, Inwoo Hwang, Sanghack Lee</i>	
ILP-FORMER: Solving Integer Linear Programming with Sequence to Multi-Label Learning.....	2018
<i>Shufeng Kong, Caihua Liu, Carla Gomes</i>	
How Inverse Conditional Flows Can Serve as a Substitute for Distributional Regression	2029
<i>Lucas Kook, Chris Kolb, Philipp Schiele, Daniel Dold, Marcel Arpogaus, Cornelius Fritz, Philipp Baumann, Philipp Kopper, Tobias Pielok, Emilio Dorigatti, David Rügamer</i>	
Distributionally Robust Optimization as a Scalable Framework to Characterize Extreme Value Distributions	2047
<i>Patrick Kuiper, Ali Hasan, Wenhao Yang, Yuting Ng, Hoda Bidkhori, Jose Blanchet, Vahid Tarokh</i>	
Optimization Framework for Semi-Supervised Attributed Graph Coarsening.....	2064
<i>Manoj Kumar, Subhanu Halder, Archit Kane, Ruchir Gupta, Sandeep Kumar</i>	
Efficient Monte Carlo Tree Search Via On-The-Fly State-Conditioned Action Abstraction.....	2076
<i>Yunhyeok Kwak, Inwoo Hwang, Dooyoung Kim, Sanghack Lee, Byoung-Tak Zhang</i>	

DataSP: A Differential All-To-All Shortest Path Algorithm for Learning Costs and Predicting Paths with Context	2094
<i>Alan Lahoud, Erik Schaffernicht, Johannes Stork</i>	

VOLUME 4

Quantifying Local Model Validity Using Active Learning.....	2113
<i>Sven Lämmle, Can Bogoclu, Robert Voss hall, Anselm Haselhoff, Dirk Roos</i>	
Common Event Tethering to Improve Prediction of Rare Clinical Events.....	2136
<i>Quinn Lanners, Qin Weng, Marie-Louise Meng, Matthew M. Engelhard</i>	
Support Recovery in Sparse PCA with General Missing Data	2163
<i>Hanbyul Lee, Qifan Song, Jean Honorio</i>	
A General Identification Algorithm for Data Fusion Problems Under Systematic Selection	2188
<i>Jaron Jia Rong Lee, AmirEmad Ghassami, Ilya Shpitser</i>	
On the Inductive Biases of Demographic Parity-Based Fair Learning Algorithms.....	2205
<i>Haoyu Lei, Amin Gohari, Farzan Farnia</i>	
Label Consistency-Based Worker Filtering for Crowdsourcing.....	2226
<i>Jiao Li, Liangxiao Jiang, Chaoqun Li, Wenjun Zhang</i>	
Learning from Crowds with Dual-View K-Nearest Neighbor.....	2238
<i>Jiao Li, Liangxiao Jiang, Xue Wu, Wenjun Zhang</i>	
Optimizing Language Models for Human Preferences is a Causal Inference Problem.....	2250
<i>Victoria Lin, Eli Ben-Michael, Louis-Philippe Morency</i>	
Transductive and Inductive Outlier Detection with Robust Autoencoders.....	2271
<i>Ofir Lindenbaum, Yariv Aizenbud, Yuval Kluger</i>	
Hybrid CtrlFormer: Learning Adaptive Search Space Partition for Hybrid Action Control Via Transformer-Based Monte Carlo Tree Search	2294
<i>Jiashun Liu, Xiaotian Hao, Jianye Hao, Yan Zheng, Yujing Hu, Changjie Fan, Tangjie Lv, Zhipeng Hu</i>	
Patch-Prompt Aligned Bayesian Prompt Tuning for Vision-Language Models	2309
<i>Xinyang Liu, Dongsheng Wang, Bowei Fang, Miaoge Li, Yishi Xu, Zhibin Duan, Bo Chen, Mingyuan Zhou</i>	
Posterior Inference on Shallow Infinitely Wide Bayesian Neural Networks Under Weights with Unbounded Variance	2331
<i>Jorge Loria, Anindya Bhadra</i>	
Local Discovery by Partitioning: Polynomial-Time Causal Discovery Around Exposure-Outcome Pairs.....	2350
<i>Jacqueline Maasch, Weishen Pan, Shantanu Gupta, Volodymyr Kuleshov, Kyra Gan, Fei Wang</i>	
Identifying Causal Changes Between Linear Structural Equation Models.....	2383
<i>Vineet Malik, Kevin Bello, Asish Ghoshal, Jean Honorio</i>	

BEARS Make Neuro-Symbolic Models Aware of Their Reasoning Shortcuts	2399
<i>Emanuele Marconato, Samuele Bortolotti, Emile van Krieken, Antonio Vergari, Andrea Passerini, Stefano Teso</i>	
Amortized Variational Inference: When and Why?	2434
<i>Charles C. Margossian, David M. Blei</i>	
Learning Relevant Contextual Variables Within Bayesian Optimization	2450
<i>Julien Martinelli, Ayush Bharti, Armi Tiihonen, S. T. John, Louis Filstroff, Sabina J. Sloman, Patrick Rinke, Samuel Kaski</i>	
Identifying Homogeneous and Interpretable Groups for Conformal Prediction	2471
<i>Natalia Martinez Gil, Dhaval Patel, Chandra Reddy, Giri Ganapavarapu, Roman Vaculin, Jayant Kalagnanam</i>	
Learning Causal Abstractions of Linear Structural Causal Models.....	2486
<i>Riccardo Massidda, Sara Magliacane, Davide Bacciu</i>	
Knowledge Intensive Learning of Credal Networks	2516
<i>Saurabh Mathur, Alessandro Antonucci, Sriraam Natarajan</i>	
Quantization of Large Language Models with an Overdetermined Basis	2527
<i>Daniil Merkulov, Daria Cherniuk, Alexander Rudikov, Ivan Oseledets, Ekaterina Muravleva, Aleksandr Mikhalev, Boris Kashin</i>	
Invariant Causal Prediction with Local Models	2537
<i>Alexander Mey, Rui M. Castro</i>	
Characterising Interventions in Causal Games.....	2560
<i>Manuj Mishra, James Fox, Michael Wooldridge</i>	
Approximation Algorithms for Observer Aware MDPs	2573
<i>Shuwa Miura, Olivier Buffet, Shlomo Zilberstein</i>	
Evaluating Bayesian Deep Learning for Radio Galaxy Classification.....	2587
<i>Devina Mohan, Anna M. M. Scaife</i>	
Optimistic Regret Bounds for Online Learning in Adversarial Markov Decision Processes	2598
<i>Sang Bin Moon, Abolfazl Hashemi</i>	
Partial Identification of the Maximum Mean Discrepancy with Mismeasured Data.....	2623
<i>Ron Nafshi, Maggie Makar</i>	
General Markov Model for Solving Patrolling Games.....	2646
<i>Andrzej Nagórko, Marcin Waniek, Małgorzata Róg, Michał Godziszewski, Barbara Rosiak, Tomasz Paweł Michalak</i>	
Efficient Interactive Maximization of BP and Weakly Submodular Objectives.....	2670
<i>Adhyayan Narang, Omid Sadeghi, Lillian Ratliff, Maryam Fazel, Jeff Bilmes</i>	
Neural Architecture Search Finds Robust Models by Knowledge Distillation.....	2700
<i>Utkarsh Nath, Yancheng Wang, Yingzhen Yang</i>	
Extremely Greedy Equivalence Search	2716
<i>Achille Nazaret, David Blei</i>	

A Generalized Bayesian Approach to Distribution-On-Distribution Regression	2746
<i>Tin Lok James Ng</i>	
Cold-Start Recommendation by Personalized Embedding Region Elicitation.....	2766
<i>Hieu Trung Nguyen, Duy Nguyen, Khoa Doan, Viet Anh Nguyen</i>	
Finite-Time Analysis of Three-Timescale Constrained Actor-Critic and Constrained Natural Actor-Critic Algorithms.....	2787
<i>Prashansa Panda, Shalabh Bhatnagar</i>	

VOLUME 5

Quantifying Representation Reliability in Self-Supervised Learning Models	2835
<i>Young-Jin Park, Hao Wang, Shervin Ardeshtir, Navid Azizan</i>	
Value-Based Abstraction Functions for Abstraction Sampling.....	2861
<i>Bobak Pezeshki, Kalev Kask, Alexander Ihler, Rina Dechter</i>	
Non-Stationary Domain Generalization: Theory and Algorithm.....	2902
<i>Thai-Hoang Pham, Xueru Zhang, Ping Zhang</i>	
Zero Inflation as a Missing Data Problem: A Proxy-Based Approach	2928
<i>Trung Phung, Jaron Lee, Opeyemi Oladapo-Shittu, Eili Klein, Ayse Gurses, Susan Hannum, Kimberly Weems, Jill Marsteller, Sara Cosgrove, Sara Keller, Ilya Shpitser</i>	
DistriBlock: Identifying Adversarial Audio Samples by Leveraging Characteristics of the Output Distribution.....	2956
<i>Matias Pizarro, Dorothea Kolossa, Asja Fisher</i>	
Neural Optimal Transport with Lagrangian Costs.....	2989
<i>Aram-Alexandre Pooladian, Carles Domingo-Enrich, Ricky T. Q. Chen, Brandon Amos</i>	
SPN: Characteristic Interventional Sum-Product Networks for Causal Inference in Hybrid Domains.....	3004
<i>Harsh Poonia, Moritz Willig, Zhongjie Yu, Matej Zeljcević, Kristian Kersting, Devendra Singh Dhami</i>	
Graph Feedback Bandits with Similar Arms	3021
<i>Han Qi, Guo Fei, Li Zhu</i>	
Performative Reinforcement Learning in Gradually Shifting Environments	3041
<i>Ben Rank, Stelios Triantafyllou, Debmalya Mandal, Goran Radanovic</i>	
Decision-Focused Evaluation of Worst-Case Distribution Shift	3076
<i>Kevin Ren, Yewon Byun, Bryan Wilder</i>	
To Smooth a Cloud Or to Pin it Down: Expressiveness Guarantees and Insights on Score Matching in Denoising Diffusion Models	3094
<i>Teodora Reu, Francisco Vargas, Anna Kerekes, Michael Bronstein</i>	
Anomaly Detection with Variance Stabilized Density Estimation	3121
<i>Amit Rozner, Barak Battash, Henry Li, Lior Wolf, Ofir Lindenbaum</i>	
A Graph Theoretic Approach for Preference Learning with Feature Information.....	3138
<i>Aadirupa Saha, Arun Rajkumar</i>	

Label-Wise Aleatoric and Epistemic Uncertainty Quantification.....	3159
<i>Yusuf Sale, Paul Hofman, Timo Löhr, Lisa Wimmer, Thomas Nagler, Eyke Hüllermeier</i>	
Unsupervised Feature Selection Towards Pattern Discrimination Power.....	3180
<i>Wangduk Seo, Jaesung Lee</i>	
Cooperative Meta-Learning with Gradient Augmentation	3198
<i>Jongyun Shin, Seungjin Han, Jangho Kim</i>	
Response Time Improves Gaussian Process Models for Perception and Preferences	3211
<i>Michael Shvartsman, Benjamin Letham, Eytan Bakshy, Stephen Keeley</i>	
BanditQ: Fair Bandits with Guaranteed Rewards.....	3227
<i>Abhishek Sinha</i>	
Bayesian Active Learning in the Presence of Nuisance Parameters	3245
<i>Sabina J. Sloman, Ayush Bharti, Julien Martinelli, Samuel Kaski</i>	
Memorization Capacity for Additive Fine-Tuning with Small ReLU Networks	3264
<i>Jy-yong Sohn, Dohyun Kwon, Seoyeon An, Kangwook Lee</i>	
Computing Low-Entropy Couplings for Large-Support Distributions.....	3279
<i>Samuel Sokota, Dylan Sam, Christian Schroeder de Witt, Spencer Compton, Jakob Foerster, J. Zico Kolter</i>	
Multi-Layer Random Features and the Approximation Power of Neural Networks	3299
<i>Rustem Takhanov</i>	
A Homogenization Approach for Gradient-Dominated Stochastic Optimization.....	3323
<i>Jiyuan Tan, Chenyu Xue, Chuwen Zhang, Qi Deng, Dongdong Ge, Yinyu Ye</i>	
Localised Natural Causal Learning Algorithms for Weak Consistency Conditions	3345
<i>Kai Teh, Kayvan Sadeghi, Terry Soo</i>	
Fast Reliability Estimation for Neural Networks with Adversarial Attack-Driven Importance Sampling.....	3356
<i>Karim Tit, Teddy Furon</i>	
Bayesian Pseudo-Coresets Via Contrastive Divergence.....	3368
<i>Piyush Tiwary, Kumar Shubham, Vivek V. Kashyap, A. P. Prathosh</i>	
Offline Bayesian Aleatoric and Epistemic Uncertainty Quantification and Posterior Value Optimisation in Finite-State MDPs	3391
<i>Filippo ValdeTTaro, Aldo Faisal</i>	
Efficiently Deciding Algebraic Equivalence of Bow-Free Acyclic Path Diagrams.....	3410
<i>Thijs van Ommen</i>	
Random Linear Projections Loss for Hyperplane-Based Optimization in Neural Networks	3425
<i>Shyam Venkatasubramanian, Ahmed Aloui, Vahid Tarokh</i>	
Group Fairness in Predict-Then-Optimize Settings for Restless Bandits	3448
<i>Shresth Verma, Yunfan Zhao, Sanket Shah, Niclas Boehmer, Aparna Taneja, Milind Tambe</i>	
Model-Free Robust Reinforcement Learning with Sample Complexity Analysis.....	3470
<i>Yudan Wang, Shaofeng Zou, Yue Wang</i>	

Two Facets of SDE Under an Information-Theoretic Lens: Generalization of SGD Via Training Trajectories and Via Terminal States	3514
<i>Ziqiao Wang, Yongyi Mao</i>	

VOLUME 6

Pure Exploration in Asynchronous Federated Bandits	3540
<i>Zichen Wang, Chuanhao Li, Chenyu Song, Lianghai Wang, Quanquan Gu, Huazheng Wang</i>	
Metric Learning from Limited Pairwise Preference Comparisons	3571
<i>Zhi Wang, Geelon So, Ramya Korlakai Vinayak</i>	
AutoDrop: Training Deep Learning Models with Automatic Learning Rate Drop	3603
<i>Jing Wang, Yunfei Teng, Anna Choromanska</i>	
Bias-Aware Boolean Matrix Factorization Using Disentangled Representation Learning.....	3630
<i>Xiao Wang, Jia Wang, Tong Zhao, Yijie Wang, Nan Zhang, Yong Zang, Sha Cao, Chi Zhang</i>	
Beyond Dirichlet-Based Models: When Bayesian Neural Networks Meet Evidential Deep Learning	3643
<i>Hanjing Wang, Qiang Ji</i>	
Stein Random Feature Regression.....	3666
<i>Houston Warren, Rafael Oliveira, Fabio Ramos</i>	
Bounding Causal Effects with Leaky Instruments.....	3689
<i>David Watson, Jordan Penn, Lee Gunderson, Gecia Bravo-Hermsdorff, Afsaneh Mastouri, Ricardo Silva</i>	
Robust Entropy Search for Safe Efficient Bayesian Optimization	3711
<i>Dorina Weichert, Alexander Kister, Sebastian Houben, Patrick Link, Gunar Ernis</i>	
Hidden Population Estimation with Indirect Inference and Auxiliary Information.....	3730
<i>Justin Weltz, Eric Laber, Alexander Volfovsky</i>	
GCVR: Reconstruction from Cross-View Enable Sufficient and Robust Graph Contrastive Learning	3747
<i>Qianlong Wen, Zhongyu Ouyang, Chunhui Zhang, Yiyue Qian, Chuxu Zhang, Yanfang Ye</i>	
Understanding Pathologies of Deep Heteroskedastic Regression	3765
<i>Eliot Wong-Toi, Alex Boyd, Vincent Fortuin, Stephan Mandt</i>	
Functional Wasserstein Bridge Inference for Bayesian Deep Learning	3791
<i>Mengjing Wu, Junyu Xuan, Jie Lu</i>	
RE-SORT: Removing Spurious Correlation in Multilevel Interaction for CTR Prediction.....	3816
<i>Songli Wu, Liang Du, Jiaqi Yang, Yuai Wang, Dechuan Zhan, Shuang Zhao, Zixun Sun</i>	
Pix2Code: Learning to Compose Neural Visual Concepts as Programs.....	3829
<i>Antonia Wüst, Wolfgang Stammer, Quentin Delfosse, Devendra Singh Dhami, Kristian Kersting</i>	
Base Models for Parabolic Partial Differential Equations.....	3853
<i>Xingzi Xu, Ali Hasan, Jie Ding, Vahid Tarokh</i>	
\ensuremath{\alpha}-Former: Local-Feature-Aware (L-FA) Transformer.....	3879
<i>Zhi Xu, Bin Sun, Yue Bai, Yun Fu</i>	

Functional Wasserstein Variational Policy Optimization.....	3893
<i>Junyu Xuan, Mengjing Wu, Zihe Liu, Jie Lu</i>	
Investigating the Impact of Model Width and Density on Generalization in Presence of Label Noise.....	3912
<i>Yihao Xue, Kyle Whitecross, Baharan Mirzasoleiman</i>	
Graph Contrastive Learning Under Heterophily Via Graph Filters.....	3936
<i>Wenhan Yang, Baharan Mirzasoleiman</i>	
Statistical and Causal Robustness for Causal Null Hypothesis Tests	3956
<i>Junhui Yang, Rohit Bhattacharya, Youjin Lee, Ted Westling</i>	
On Hardware-Efficient Inference in Probabilistic Circuits.....	3979
<i>Lingyun Yao, Martin Trapp, Jelin Leslin, Gaurav Singh, Peng Zhang, Karthekeyan Periasamy, Martin Andraud</i>	
Masking the Unknown: Leveraging Masked Samples for Enhanced Data Augmentation	3997
<i>Xun Yao, Zijian Huang, Xinrong Hu, Jie Yang, Yi Guo</i>	
Domain Adaptation with Cauchy-Schwarz Divergence	4011
<i>Wenzhe Yin, Shujian Yu, Yicong Lin, Jie Liu, Jan-Jakob Sonke, Efstratios Gavves</i>	
Offline Reward Perturbation Boosts Distributional Shift in Online RL	4041
<i>Zishun Yu, Siteng Kang, Xinhua Zhang</i>	
Decentralized Online Learning in General-Sum Stackelberg Games.....	4056
<i>Yaolong Yu, Haipeng Chen</i>	
Probabilistic Reconciliation of Mixed-Type Hierarchical Time Series	4078
<i>Lorenzo Zambon, Dario Azzimonti, Nicolò Rubattu, Giorgio Corani</i>	
Dirichlet Continual Learning: Tackling Catastrophic Forgetting in NLP	4096
<i>Min Zeng, Haiqin Yang, Wei Xue, Qifeng Liu, Yike Guo</i>	
Causally Abstracted Multi-Armed Bandits.....	4109
<i>Fabio Massimo Zennaro, Nicholas Bishop, Joel Dyer, Yorgos Felekis, Anisoara Calinescu, Michael Wooldridge, Theodoros Damoulas</i>	
Partial Identification with Proxy of Latent Confoundings Via Sum-Of-Ratios Fractional Programming.....	4140
<i>Zhiheng Zhang, Xinyan Su</i>	
Decentralized Two-Sided Bandit Learning in Matching Market.....	4173
<i>Yirui Zhang, Zhixuan Fang</i>	
Learning Topological Representations with Bidirectional Graph Attention Network for Solving Job Shop Scheduling Problem	4192
<i>Cong Zhang, Zhiguang Cao, Yaoxin Wu, Wen Song, Jing Sun</i>	
Neighbor Similarity and Multimodal Alignment Based Product Recommendation Study	4209
<i>Zhiqiang Zhang, Yongqiang Jiang, Qian Gao, Zhipeng Wang</i>	
Exploring High-Dimensional Search Space Via Voronoi Graph Traversing	4219
<i>Aidong Zhao, Xuyang Zhao, Tianchen Gu, Zhaori Bi, Xinwei Sun, Changhao Yan, Fan Yang, Dian Zhou, Xuan Zeng</i>	

Trusted Re-Weighting for Label Distribution Learning.....	4237
<i>Zhuoran Zheng, Chen Wu, Yeying Jin, Xiuyi Jia</i>	
Approximate Kernel Density Estimation Under Metric-Based Local Differential Privacy	4250
<i>Yi Zhou, Yanhao Wang, Long Teng, Qiang Huang, Cen Chen</i>	

Author Index