1, TITLE: Reverse-engineering deep ReLU networks
https://proceedings.icml.cc/static/paper_files/icml/2020/1-Paper.pdf
AUTHORS:	David Rolnick, Konrad Kording
HIGHLIGHT:	Here, we prove that in fact it is often possible to identify the architecture, weights, and biases of an unknown deep ReLU network by observing only its output.

2, TITLE: My Fair Bandit: Distributed Learning of Max-Min Fairness with Multi-player Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/11-Paper.pdf
AUTHORS:	Ilai Bistritz, Tavor Baharav, Amir Leshem, Nicholas Bambos
HIGHLIGHT:	We present an algorithm and prove that it is regret optimal up to a log(log T) factor.

3, TITLE: Scalable Differentiable Physics for Learning and Control
https://proceedings.icml.cc/static/paper_files/icml/2020/15-Paper.pdf
AUTHORS:	Yi-Ling Qiao, Junbang Liang, Vladlen Koltun, Ming Lin
HIGHLIGHT:	We develop a scalable framework for differentiable physics that can support a large number of objects and their interactions.

4, TITLE: Generalization to New Actions in Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/29-Paper.pdf
AUTHORS:	Ayush Jain, Andrew Szot, Joseph Lim
HIGHLIGHT:	To approach this problem, we propose a two-stage framework where the agent first infers action representations from acquired action observations and then learns to use these in reinforcement learning with added generalization objectives.

5, TITLE: Randomized Block-Diagonal Preconditioning for Parallel Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/53-Paper.pdf
AUTHORS:	Celestine Mendler-Dünner, Aurelien Lucchi
HIGHLIGHT:	Our main contribution is to demonstrate that the convergence of these methods can significantly be improved by a randomization technique which corresponds to repartitioning coordinates across tasks during the optimization procedure.

6, TITLE: Stochastic Flows and Geometric Optimization on the Orthogonal Group
https://proceedings.icml.cc/static/paper_files/icml/2020/57-Paper.pdf
AUTHORS:	Krzysztof Choromanski, David Cheikhi, Jared Davis, Valerii Likhosherstov, Achille Nazaret, Achraf Bahamou, Xingyou Song, Mrugank Akarte, Jack Parker-Holder, Jacob Bergquist, YUAN GAO, Aldo Pacchiano, Tamas Sarlos, Adrian Weller, Vikas Sindhwani
HIGHLIGHT:	We present a new class of stochastic, geometrically-driven optimization algorithms on the orthogonal group O(d) and naturally reductive homogeneous manifolds obtained from the action of the rotation group SO(d).

7, TITLE: PackIt: A Virtual Environment for Geometric Planning
https://proceedings.icml.cc/static/paper_files/icml/2020/62-Paper.pdf
AUTHORS:	Ankit Goyal, Jia Deng
HIGHLIGHT:	We present PackIt, a virtual environment to evaluate and potentially learn the ability to do geometric planning. We also construct a set of challenging packing tasks using an evolutionary algorithm.

8, TITLE: Soft Threshold Weight Reparameterization for Learnable Sparsity
https://proceedings.icml.cc/static/paper_files/icml/2020/67-Paper.pdf
AUTHORS:	Aditya Kusupati, Vivek Ramanujan, Raghav Somani, Mitchell Wortsman, Prateek Jain, Sham Kakade, Ali Farhadi
HIGHLIGHT:	This work proposes Soft Threshold Reparameterization (STR), a novel use of the soft-threshold operator on DNN weights.

9, TITLE: Stochastic Latent Residual Video Prediction
https://proceedings.icml.cc/static/paper_files/icml/2020/78-Paper.pdf
AUTHORS:	Jean-Yves Franceschi, Edouard Delasalles, Mickael Chen, Sylvain Lamprier, Patrick Gallinari
HIGHLIGHT:	In this paper, we overcome these difficulties by introducing a novel stochastic temporal model whose dynamics are governed in a latent space by a residual update rule.

10, TITLE:	Fractional Underdamped Langevin Dynamics: Retargeting SGD with Momentum under Heavy-Tailed Gradient Noise
https://proceedings.icml.cc/static/paper_files/icml/2020/86-Paper.pdf
AUTHORS:	Umut Simsekli, Lingjiong Zhu, Yee Whye Teh, Mert Gurbuzbalaban

HIGHLIGHT:　　　　In this study, we consider a \emph{continuous-time} variant of SGDm, known as the underdamped Langevin dynamics (ULD), and investigate its asymptotic properties under heavy-tailed perturbations.

11, TITLE:　　　　Context Aware Local Differential Privacy
https://proceedings.icml.cc/static/paper_files/icml/2020/111-Paper.pdf
AUTHORS:　　　　Jayadev Acharya, Keith Bonawitz, Peter Kairouz, Daniel Ramage, Ziteng Sun
HIGHLIGHT:　　　　We propose a context-aware framework for LDP that allows the privacy level to vary across the data domain, enabling system designers to place privacy constraints where they matter without paying the cost where they do not.

12, TITLE:　　　　Privately Learning Markov Random Fields
https://proceedings.icml.cc/static/paper_files/icml/2020/112-Paper.pdf
AUTHORS:　　　　Gautam Kamath, Janardhan Kulkarni, Steven Wu, Huanyu Zhang
HIGHLIGHT:　　　　Our learning goals include both \emph{structure learning}, where we try to estimate the underlying graph structure of the model, as well as the harder goal of \emph{parameter learning}, in which we additionally estimate the parameter on each edge.

13, TITLE:　　　　A Mean Field Analysis Of Deep ResNet And Beyond: Towards Provably Optimization Via Overparameterization From Depth
https://proceedings.icml.cc/static/paper_files/icml/2020/115-Paper.pdf
AUTHORS:　　　　Yiping Lu, Chao Ma, Yulong Lu, Jianfeng Lu, Lexing Ying
HIGHLIGHT:　　　　To understand the success of SGD for training deep neural networks, this work presents a mean-field analysis of deep residual networks, based on a line of works which interpret the continuum limit of the deep residual network as an ordinary differential equation as the the network capacity tends to infinity.

14, TITLE:　　　　Provable Smoothness Guarantees for Black-Box Variational Inference
https://proceedings.icml.cc/static/paper_files/icml/2020/120-Paper.pdf
AUTHORS:　　　　Justin Domke
HIGHLIGHT:　　　　This paper shows that for location-scale family approximations, if the target is M-Lipschitz smooth, then so is the "energy" part of the variational objective.

15, TITLE:　　　　Enhancing Simple Models by Exploiting What They Already Know
https://proceedings.icml.cc/static/paper_files/icml/2020/126-Paper.pdf
AUTHORS:　　　　Amit Dhurandhar, Karthikeyan Shanmugam, Ronny Luss
HIGHLIGHT:　　　　In this paper, we propose a novel method SRatio that can utilize information from high performing complex models (viz. deep neural networks, boosted trees, random forests) to reweight a training dataset for a potentially low performing simple model of much lower complexity such as a decision tree or a shallow network enhancing its performance.

16, TITLE:　　　　Fiduciary Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/127-Paper.pdf
AUTHORS:　　　　Gal Bahar, Omer Ben-Porat, Kevin Leyton-Brown, Moshe Tennenholtz
HIGHLIGHT:　　　　More formally, we introduce a model in which a recommendation system faces an exploration-exploitation tradeoff under the constraint that it can never recommend any action that it knows yields lower reward in expectation than an agent would achieve if it acted alone.

17, TITLE:　　　　Training Deep Energy-Based Models with f-Divergence Minimization
https://proceedings.icml.cc/static/paper_files/icml/2020/130-Paper.pdf
AUTHORS:　　　　Lantao Yu, Yang Song, Jiaming Song, Stefano Ermon
HIGHLIGHT:　　　　In this paper, we propose a general variational framework termed f-EBM to train EBMs using any desired f-divergence.

18, TITLE:　　　　Progressive Graph Learning for Open-Set Domain Adaptation
https://proceedings.icml.cc/static/paper_files/icml/2020/136-Paper.pdf
AUTHORS:　　　　Yadan Luo, Zijian Wang, Zi Huang, Mahsa Baktashmotlagh
HIGHLIGHT:　　　　More specifically, we introduce an end-to-end Progressive Graph Learning (PGL) framework where a graph neural network with episodic training is integrated to suppress underlying conditional shift and adversarial learning is adopted to close the gap between the source and target distributions.

19, TITLE:　　　　Learning De-biased Representations with Biased Representations
https://proceedings.icml.cc/static/paper_files/icml/2020/138-Paper.pdf
AUTHORS:　　　　Hyojin Bahng, SANGHYUK CHUN, Sangdoo Yun, Jaegul Choo, Seong Joon Oh

HIGHLIGHT: In this work, we propose a novel framework to train a de-biased representation by encouraging it to be \textit{different} from a set of representations that are biased by design.

20, TITLE: Generalized Neural Policies for Relational MDPs
https://proceedings.icml.cc/static/paper_files/icml/2020/140-Paper.pdf
AUTHORS: Sankalp Garg, Aniket Bajpai, Mausam
HIGHLIGHT: We present the first neural approach for solving RMDPs, expressed in the probabilistic planning language of RDDL.

21, TITLE: Feature-map-level Online Adversarial Knowledge Distillation
https://proceedings.icml.cc/static/paper_files/icml/2020/143-Paper.pdf
AUTHORS: Inseop Chung, SeongUk Park, Kim Jangho, NOJUN KWAK
HIGHLIGHT: Thus in this paper, we propose an online knowledge distillation method that transfers not only the knowledge of the class probabilities but also that of the feature map using the adversarial training framework.

22, TITLE: DRWR: A Differentiable Renderer without Rendering for Unsupervised 3D Structure Learning from Silhouette Images
https://proceedings.icml.cc/static/paper_files/icml/2020/145-Paper.pdf
AUTHORS: Zhizhong Han, Chao Chen, Yu-Shen Liu, Matthias Zwicker
HIGHLIGHT: In contrast, here we propose a Differentiable Renderer Without Rendering (DRWR) that omits these steps.

23, TITLE: Towards Accurate Post-training Network Quantization via Bit-Split and Stitching
https://proceedings.icml.cc/static/paper_files/icml/2020/147-Paper.pdf
AUTHORS: Peisong Wang, Qiang Chen, Xiangyu He, Jian Cheng
HIGHLIGHT: In this paper, we propose a Bit-Split and Stitching framework for lower-bit post-training quantization with minimal accuracy degradation.

24, TITLE: Hybrid Stochastic-Deterministic Minibatch Proximal Gradient: Less-Than-Single-Pass Optimization with Nearly Optimal Generalization
https://proceedings.icml.cc/static/paper_files/icml/2020/150-Paper.pdf
AUTHORS: Pan Zhou, Xiao-Tong Yuan
HIGHLIGHT: To address this deficiency, we propose a hybrid stochastic-deterministic minibatch proximal gradient (HSDMPG) algorithm for strongly-convex problems that enjoys provably improved data-size-independent complexity guarantees.

25, TITLE: Reserve Pricing in Repeated Second-Price Auctions with Strategic Bidders
https://proceedings.icml.cc/static/paper_files/icml/2020/151-Paper.pdf
AUTHORS: Alexey Drutsa
HIGHLIGHT: We propose a novel algorithm that has strategic regret upper bound of $O(\log\log T)$ for worst-case valuations.

26, TITLE: On Gradient Descent Ascent for Nonconvex-Concave Minimax Problems
https://proceedings.icml.cc/static/paper_files/icml/2020/179-Paper.pdf
AUTHORS: Tianyi Lin, Chi Jin, Michael Jordan
HIGHLIGHT: In this paper, we present the complexity results on two-time-scale GDA for solving nonconvex-concave minimax problems, showing that the algorithm can find a stationary point of the function $\Phi(\cdot) := \max_{\mathbf{y} \in \mathcal{Y}} f(\cdot, \mathbf{y})$ efficiently.

27, TITLE: Training Binary Neural Networks through Learning with Noisy Supervision
https://proceedings.icml.cc/static/paper_files/icml/2020/181-Paper.pdf
AUTHORS: Kai Han, Yunhe Wang, Yixing Xu, Chunjing Xu, Enhua Wu, Chang Xu
HIGHLIGHT: In contrast to classical hand crafted rules (\eg hard thresholding) to binarize full-precision neurons, we propose to learn a mapping from full-precision neurons to the target binary ones.

28, TITLE: Stochastic Frank-Wolfe for Constrained Finite-Sum Minimization
https://proceedings.icml.cc/static/paper_files/icml/2020/186-Paper.pdf
AUTHORS: Geoffrey Negiar, Gideon Dresdner, Alicia Yi-Ting Tsai, Laurent El Ghaoui, Francesco Locatello, Fabian Pedregosa
HIGHLIGHT: We propose a novel Stochastic Frank-Wolfe ($\equiv$ Conditional Gradient) algorithm with fixed batch size tailored to the constrained optimization of a finite sum of smooth objectives.

29, TITLE:	Do We Really Need to Access the Source Data? Source Hypothesis Transfer for Unsupervised Domain Adaptation
https://proceedings.icml.cc/static/paper_files/icml/2020/194-Paper.pdf
AUTHORS:	Jian Liang, Dapeng Hu, Jiashi Feng
HIGHLIGHT:	In this work we tackle a novel setting where only a trained source model is available and investigate how we can effectively utilize such a model without source data to solve UDA problems.

30, TITLE:	Acceleration through spectral density estimation
https://proceedings.icml.cc/static/paper_files/icml/2020/195-Paper.pdf
AUTHORS:	Fabian Pedregosa, Damien Scieur
HIGHLIGHT:	We develop a framework for designing optimal optimization methods in terms of their average-case runtime.

31, TITLE:	Graph Structure of Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/201-Paper.pdf
AUTHORS:	Jiaxuan You, Kaiming He, Jure Leskovec, Saining Xie
HIGHLIGHT:	Here we systematically investigate this relationship, via developing a novel graph-based representation of neural networks called relational graph, where computation is specified by rounds of message exchange along the graph structure.

32, TITLE:	Optimal Continual Learning has Perfect Memory and is NP-hard
https://proceedings.icml.cc/static/paper_files/icml/2020/204-Paper.pdf
AUTHORS:	Jeremias Knoblauch, Hisham Husain, Tom Diethe
HIGHLIGHT:	Designing CL algorithms that perform reliably and avoidso-calledcatastrophic forgettinghas proven a per-sistent challenge. The current paper develops a theoretical approach that explains why.

33, TITLE:	Clinician-in-the-Loop Decision Making: Reinforcement Learning with Near-Optimal Set-Valued Policies
https://proceedings.icml.cc/static/paper_files/icml/2020/205-Paper.pdf
AUTHORS:	Shengpu Tang, Aditya Modi, Michael Sjoding, Jenna Wiens
HIGHLIGHT:	We propose a model-free, off-policy algorithm based on temporal difference learning and a near-greedy action selection heuristic.

34, TITLE:	Computational and Statistical Tradeoffs in Inferring Combinatorial Structures of Ising Model
https://proceedings.icml.cc/static/paper_files/icml/2020/208-Paper.pdf
AUTHORS:	Ying Jin, Zhaoran Wang, Junwei Lu
HIGHLIGHT:	Under the framework of oracle computational model where an algorithm interacts with an oracle that discourses a randomized version of truth, we characterize the computational lower bounds of learning combinatorial structures in polynomial time, under which no algorithms within polynomial-time can distinguish between graphs with and without certain structures.

35, TITLE:	On the Number of Linear Regions of Convolutional Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/228-Paper.pdf
AUTHORS:	Huan Xiong, Lei Huang, Mengyang Yu, Li Liu, Fan Zhu, Ling Shao
HIGHLIGHT:	In this paper, we provide several mathematical results needed for studying the linear regions of CNNs, and use them to derive the maximal and average numbers of linear regions for one-layer ReLU CNNs.

36, TITLE:	Deep Streaming Label Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/230-Paper.pdf
AUTHORS:	Zhen Wang, Liu Liu, Dacheng Tao
HIGHLIGHT:	In order to fill in these research gaps, we propose a novel deep neural network (DNN) based framework, Deep Streaming Label Learning (DSLL), to classify instances with newly emerged labels effectively.

37, TITLE:	From Importance Sampling to Doubly Robust Policy Gradient
https://proceedings.icml.cc/static/paper_files/icml/2020/236-Paper.pdf
AUTHORS:	Jiawei Huang, Nan Jiang
HIGHLIGHT:	Starting from the doubly robust (DR) estimator (Jiang & Li, 2016), we provide a simple derivation of a very general and flexible form of PG, which subsumes the state-of-the-art variance reduction technique (Cheng et al., 2019) as its special case and immediately hints at further variance reduction opportunities overlooked by existing literature.

38, TITLE:	Loss Function Search for Face Recognition
https://proceedings.icml.cc/static/paper_files/icml/2020/245-Paper.pdf
AUTHORS:	Xiaobo Wang, Shuo Wang, Shifeng Zhang, Cheng Chi, Tao Mei
HIGHLIGHT:	In this paper, we first analyze that the key to enhance the feature discrimination is actually how to reduce the softmax probability. We then design a unified formulation for the current margin-based softmax losses.

39, TITLE:	Breaking the Curse of Space Explosion: Towards Efficient NAS with Curriculum Search
https://proceedings.icml.cc/static/paper_files/icml/2020/248-Paper.pdf
AUTHORS:	Yong Guo, Yaofo Chen, Yin Zheng, Peilin Zhao, Jian Chen, Junzhou Huang, Mingkui Tan
HIGHLIGHT:	To alleviate this issue, we propose a curriculum search method that starts from a small search space and gradually incorporates the learned knowledge to guide the search in a large space.

40, TITLE:	Automatic Reparameterisation of Probabilistic Programs
https://proceedings.icml.cc/static/paper_files/icml/2020/271-Paper.pdf
AUTHORS:	Maria Gorinova, Dave Moore, Matthew Hoffman
HIGHLIGHT:	This enables new inference algorithms, and we propose two: a simple approach using interleaved sampling and a novel variational formulation that searches over a continuous space of parameterisations.

41, TITLE:	Kernel Methods for Cooperative Multi-Agent Learning with Delays
https://proceedings.icml.cc/static/paper_files/icml/2020/281-Paper.pdf
AUTHORS:	Abhimanyu Dubey, Alex `Sandy' Pentland
HIGHLIGHT:	In this paper, we consider the kernelised contextual bandit problem, where the reward obtained by an agent is an arbitrary linear function of the contexts' images in the related reproducing kernel Hilbert space (RKHS), and a group of agents must cooperate to collectively solve their unique decision problems.

42, TITLE:	Robust Multi-Agent Decision-Making with Heavy-Tailed Payoffs
https://proceedings.icml.cc/static/paper_files/icml/2020/282-Paper.pdf
AUTHORS:	Abhimanyu Dubey, Alex `Sandy' Pentland
HIGHLIGHT:	We propose \textsc{MP-UCB}, a decentralized multi-agent algorithm for the cooperative stochastic bandit that incorporates robust estimation with a message-passing protocol.

43, TITLE:	Learning the Valuations of a k-demand Agent
https://proceedings.icml.cc/static/paper_files/icml/2020/285-Paper.pdf
AUTHORS:	Hanrui Zhang, Vincent Conitzer
HIGHLIGHT:	We study problems where a learner aims to learn the valuations of an agent by observing which goods he buys under varying price vectors.

44, TITLE:	Rigging the Lottery: Making All Tickets Winners
https://proceedings.icml.cc/static/paper_files/icml/2020/287-Paper.pdf
AUTHORS:	Utku Evci, Trevor Gale, Jacob Menick, Pablo Samuel Castro, Erich Elsen
HIGHLIGHT:	In this paper we introduce a method to train sparse neural networks with a fixed parameter count and a fixed computational cost throughout training, without sacrificing accuracy relative to existing dense-to-sparse training methods.

45, TITLE:	Active Learning on Attributed Graphs via Graph Cognizant Logistic Regression and Preemptive Query Generation
https://proceedings.icml.cc/static/paper_files/icml/2020/321-Paper.pdf
AUTHORS:	Florence Regol, Soumyasundar Pal, Yingxue Zhang, Mark Coates
HIGHLIGHT:	We propose a novel graph-based active learning algorithm for the task of node classification in attributed graphs.

46, TITLE:	Performative Prediction
https://proceedings.icml.cc/static/paper_files/icml/2020/325-Paper.pdf
AUTHORS:	Juan Perdomo, Tijana Zrnic, Celestine Mendler-Dünner, University of California Moritz Hardt
HIGHLIGHT:	We develop a risk minimization framework for performative prediction bringing together concepts from statistics, game theory, and causality.

47, TITLE:	On Layer Normalization in the Transformer Architecture
https://proceedings.icml.cc/static/paper_files/icml/2020/328-Paper.pdf
AUTHORS:	Ruibin Xiong, Yunchang Yang, Di He, Kai Zheng, Shuxin Zheng, Chen Xing, Huishuai Zhang, Yanyan Lan, Liwei Wang, Tie-Yan Liu
HIGHLIGHT:	Specifically, we prove with mean field theory that at initialization, for the original-designed Post-LN Transformer, which places the layer normalization between the residual blocks, the expected gradients of the parameters near the output layer are large.

48, TITLE:	The many Shapley values for model explanation

https://proceedings.icml.cc/static/paper_files/icml/2020/334-Paper.pdf
AUTHORS: Mukund Sundararajan, Amir Najmi
HIGHLIGHT: In this paper, we use the axiomatic approach to study the differences between some of the many operationalizations of the Shapley value for attribution, and propose a technique called Baseline Shapley (BShap) that is backed by a proper uniqueness result.

49, TITLE: Linear Convergence of Randomized Primal-Dual Coordinate Method for Large-scale Linear Constrained Convex Programming
https://proceedings.icml.cc/static/paper_files/icml/2020/339-Paper.pdf
AUTHORS: Daoli Zhu, Lei Zhao
HIGHLIGHT: We propose the randomized primal-dual coordinate (RPDC) method, a randomized coordinate extension of the first-order primal-dual method by Cohen and Zhu, 1984 and Zhao and Zhu, 2019, to solve LCCP.

50, TITLE: New Oracle-Efficient Algorithms for Private Synthetic Data Release
https://proceedings.icml.cc/static/paper_files/icml/2020/352-Paper.pdf
AUTHORS: Giuseppe Vietri, Steven Wu, Mark Bun, Thomas Steinke, Grace Tian
HIGHLIGHT: We present three new algorithms for constructing differentially private synthetic data---a sanitized version of a sensitive dataset that approximately preserves the answers to a large collection of statistical queries.

51, TITLE: Oracle Efficient Private Non-Convex Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/354-Paper.pdf
AUTHORS: Seth Neel, Aaron Roth, Giuseppe Vietri, Steven Wu
HIGHLIGHT: This technique augments a given optimization problem (e.g. deriving from an ERM problem) with a random linear term, and then exactly solves it. However, to date, analyses of this approach crucially rely on the convexity and smoothness of the objective function. We give two algorithms that extend this approach substantially.

52, TITLE: Universal Asymptotic Optimality of Polyak Momentum
https://proceedings.icml.cc/static/paper_files/icml/2020/360-Paper.pdf
AUTHORS: Damien Scieur, Fabian Pedregosa
HIGHLIGHT: We consider the average-case runtime analysis of algorithms for minimizing quadratic objectives.

53, TITLE: Adversarial Robustness via Runtime Masking and Cleansing
https://proceedings.icml.cc/static/paper_files/icml/2020/377-Paper.pdf
AUTHORS: Yi-Hsuan Wu, Chia-Hung Yuan, Shan-Hung (Brandon) Wu
HIGHLIGHT: In this paper, we propose improving the adversarial robustness of a network by leveraging the potentially large test data seen at runtime.

54, TITLE: Implicit Euler Skip Connections: Enhancing Adversarial Robustness via Numerical Stability
https://proceedings.icml.cc/static/paper_files/icml/2020/381-Paper.pdf
AUTHORS: Mingjie Li, Lingshen He, Zhouchen Lin
HIGHLIGHT: On this account, we try to address such an issue from the perspective of dynamic system in this work.

55, TITLE: Best Arm Identification for Cascading Bandits in the Fixed Confidence Setting
https://proceedings.icml.cc/static/paper_files/icml/2020/393-Paper.pdf
AUTHORS: Zixin Zhong, Wang Chi Cheung, Vincent Tan
HIGHLIGHT: We design and analyze CascadeBAI, an algorithm for finding the best set of K items, also called an arm, within the framework of cascading bandits.

56, TITLE: Robustness to Programmable String Transformations via Augmented Abstract Training
https://proceedings.icml.cc/static/paper_files/icml/2020/398-Paper.pdf
AUTHORS: Yuhao Zhang, Aws Albarghouthi, Loris D'Antoni
HIGHLIGHT: To fill this gap, we present a technique to train models that are robust to user-defined string transformations.

57, TITLE: The Complexity of Finding Stationary Points with Stochastic Gradient Descent
https://proceedings.icml.cc/static/paper_files/icml/2020/413-Paper.pdf
AUTHORS: Yoel Drori, Ohad Shamir
HIGHLIGHT: We study the iteration complexity of stochastic gradient descent (SGD) for minimizing the gradient norm of smooth, possibly nonconvex functions.

58, TITLE: Sample Complexity Bounds for 1-bit Compressive Sensing and Binary Stable Embeddings with Generative Priors
https://proceedings.icml.cc/static/paper_files/icml/2020/423-Paper.pdf
AUTHORS: Zhaoqiang Liu, Selwyn Gomes, Avtansh Tiwari, Jonathan Scarlett
HIGHLIGHT: Motivated by recent advances in compressive sensing with generative models, where a generative modeling assumption replaces the usual sparsity assumption, we study the problem of 1-bit compressive sensing with generative models.

59, TITLE: Class-Weighted Classification: Trade-offs and Robust Approaches
https://proceedings.icml.cc/static/paper_files/icml/2020/434-Paper.pdf
AUTHORS: Ziyu Xu, Chen Dan, Justin Khim, Pradeep Ravikumar
HIGHLIGHT: We consider imbalanced classification, the problem in which a label may have low marginal probability relative to other labels, by weighting losses according to the correct class.

60, TITLE: Neural Architecture Search in a Proxy Validation Loss Landscape
https://proceedings.icml.cc/static/paper_files/icml/2020/439-Paper.pdf
AUTHORS: Yanxi Li, Minjing Dong, Yunhe Wang, Chang Xu
HIGHLIGHT: In this paper, we propose to approximate the validation loss landscape by learning a mapping from neural architectures to their corresponding validate losses.

61, TITLE: Almost Tune-Free Variance Reduction
https://proceedings.icml.cc/static/paper_files/icml/2020/453-Paper.pdf
AUTHORS: Bingcong Li, Lingda Wang, Georgios B. Giannakis
HIGHLIGHT: This work introduces 'almost tune-free' SVRG and SARAH schemes equipped with i) Barzilai-Borwein (BB) step sizes; ii) averaging; and, iii) the inner loop length adjusted to the BB step sizes.

62, TITLE: Uniform Convergence of Rank-weighted Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/454-Paper.pdf
AUTHORS: Liu Leqi, Justin Khim, Adarsh Prasad, Pradeep Ravikumar
HIGHLIGHT: In this work, we study a novel notion of L-Risk based on the classical idea of rank-weighted learning.

63, TITLE: Non-autoregressive Translation with Disentangled Context Transformer
https://proceedings.icml.cc/static/paper_files/icml/2020/477-Paper.pdf
AUTHORS: Jungo Kasai, James Cross, Marjan Ghazvininejad, Jiatao Gu
HIGHLIGHT: We propose an attention-masking based model, called Disentangled Context (DisCo) transformer, that simultaneously generates all tokens given different contexts.

64, TITLE: More Information Supervised Probabilistic Deep Face Embedding Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/478-Paper.pdf
AUTHORS: Ying Huang, Shangfeng Qiu, Wenwei Zhang, Xianghui Luo, Jinzhuo Wang
HIGHLIGHT: In this paper, we analyse margin based softmax loss in probability view.

65, TITLE: Reinforcement Learning for Non-Stationary Markov Decision Processes: The Blessing of (More) Optimism
https://proceedings.icml.cc/static/paper_files/icml/2020/488-Paper.pdf
AUTHORS: Wang Chi Cheung, David Simchi-Levi, Ruihao Zhu
HIGHLIGHT: We overcome the challenge by a novel confidence widening technique that incorporates additional optimism.

66, TITLE: Improved Sleeping Bandits with Stochastic Action Sets and Adversarial Rewards
https://proceedings.icml.cc/static/paper_files/icml/2020/490-Paper.pdf
AUTHORS: Aadirupa Saha, Pierre Gaillard, Michal Valko
HIGHLIGHT: In this paper, we consider the problem of sleeping bandits with stochastic action sets and adversarial rewards.

67, TITLE: From PAC to Instance-Optimal Sample Complexity in the Plackett-Luce Model
https://proceedings.icml.cc/static/paper_files/icml/2020/491-Paper.pdf
AUTHORS: Aadirupa Saha, Aditya Gopalan
HIGHLIGHT: We consider PAC learning a good item from k-subsetwise feedback sampled from a Plackett-Luce probability model, with instance-dependent sample complexity performance.

68, TITLE: Reliable Fidelity and Diversity Metrics for Generative Models
https://proceedings.icml.cc/static/paper_files/icml/2020/503-Paper.pdf
AUTHORS: Muhammad Ferjad Naeem, Seong Joon Oh, Yunjey Choi, Youngjung Uh, Jaejun Yoo

HIGHLIGHT:　　　　In this paper, we show that even the latest version of the precision and recall metrics are not reliable yet.

69, TITLE:　　　　Learning Factorized Weight Matrix for Joint Image Filtering
https://proceedings.icml.cc/static/paper_files/icml/2020/506-Paper.pdf
AUTHORS:　　　　Xiangyu Xu, Yongrui Ma, Wenxiu Sun
HIGHLIGHT:　　　　In this work, we propose to learn the weight matrix for joint image filtering.

70, TITLE:　　　　Likelihood-free MCMC with Amortized Approximate Ratio Estimators
https://proceedings.icml.cc/static/paper_files/icml/2020/518-Paper.pdf
AUTHORS:　　　　Joeri Hermans, Volodimir Begy, Gilles Louppe
HIGHLIGHT:　　　　This work introduces a novel approach to address the intractability of the likelihood and the marginal model.

71, TITLE:　　　　Attacks Which Do Not Kill Training Make Adversarial Learning Stronger
https://proceedings.icml.cc/static/paper_files/icml/2020/520-Paper.pdf
AUTHORS:　　　　Jingfeng Zhang, Xilie Xu, Bo Han, Gang Niu, Lizhen Cui, Masashi Sugiyama, Mohan Kankanhalli
HIGHLIGHT:　　　　In this paper, we raise a fundamental question---do we have to trade off natural generalization for adversarial robustness?

72, TITLE:　　　　GradientDICE: Rethinking Generalized Offline Estimation of Stationary Values
https://proceedings.icml.cc/static/paper_files/icml/2020/522-Paper.pdf
AUTHORS:　　　　Shangtong Zhang, Bo Liu, Shimon Whiteson
HIGHLIGHT:　　　　We present GradientDICE for estimating the density ratio between the state distribution of the target policy and the sampling distribution in off-policy reinforcement learning.

73, TITLE:　　　　Provably Convergent Two-Timescale Off-Policy Actor-Critic with Function Approximation
https://proceedings.icml.cc/static/paper_files/icml/2020/523-Paper.pdf
AUTHORS:　　　　Shangtong Zhang, Bo Liu, Hengshuai Yao, Shimon Whiteson
HIGHLIGHT:　　　　We present the first provably convergent two-timescale off-policy actor-critic algorithm (COF-PAC) with function approximation.

74, TITLE:　　　　Adversarial Attacks on Probabilistic Autoregressive Forecasting Models
https://proceedings.icml.cc/static/paper_files/icml/2020/526-Paper.pdf
AUTHORS:　　　　Raphaël Dang-Nhu, Gagandeep Singh, Pavol Bielik, Martin Vechev
HIGHLIGHT:　　　　The key technical challenge we address is how to effectively differentiate through the Monte-Carlo estimation of statistics of the output sequence joint distribution.

75, TITLE:　　　　Informative Dropout for Robust Representation Learning: A Shape-bias Perspective
https://proceedings.icml.cc/static/paper_files/icml/2020/528-Paper.pdf
AUTHORS:　　　　Baifeng Shi, Dinghuai Zhang, Qi Dai, Jingdong Wang, Zhanxing Zhu, Yadong Mu
HIGHLIGHT:　　　　In this work, we attempt at improving various kinds of robustness universally by alleviating CNN's texture bias.

76, TITLE:　　　　Graph Convolutional Network for Recommendation with Low-pass Collaborative Filters
https://proceedings.icml.cc/static/paper_files/icml/2020/530-Paper.pdf
AUTHORS:　　　　Wenhui Yu, Zheng Qin
HIGHLIGHT:　　　　To address this gap, we leverage the original graph convolution in GCN and propose a Low-pass Collaborative Filter (LCF) to make it applicable to the large graph.

77, TITLE:　　　　SoftSort: A Differantiable Continuous Relaxation of the argsort Operator
https://proceedings.icml.cc/static/paper_files/icml/2020/535-Paper.pdf
AUTHORS:　　　　Sebastian Prillo, Julian Eisenschlos
HIGHLIGHT:　　　　In this work we propose a simple continuous relaxation for the argsort operator.

78, TITLE:　　　　Too Relaxed to Be Fair
https://proceedings.icml.cc/static/paper_files/icml/2020/544-Paper.pdf
AUTHORS:　　　　Michael Lohaus, Michaël Perrot, Ulrike von Luxburg
HIGHLIGHT:　　　　We address the problem of classification under fairness constraints. Given a notion of fairness, the goal is to learn a classifier that is not discriminatory against a group of individuals.

79, TITLE:　　　　Lorentz Group Equivariant Neural Network for Particle Physics

https://proceedings.icml.cc/static/paper_files/icml/2020/561-Paper.pdf
AUTHORS: Alexander Bogatskiy, Brandon Anderson, Jan Offermann, Marwah Roussi, David Miller, Risi Kondor
HIGHLIGHT: We present a neural network architecture that is fully equivariant with respect to transformations under the Lorentz group, a fundamental symmetry of space and time in physics.

80, TITLE: One-shot Distributed Ridge Regression in High Dimensions
https://proceedings.icml.cc/static/paper_files/icml/2020/566-Paper.pdf
AUTHORS: Yue Sheng, Edgar Dobriban
HIGHLIGHT: Here we study a fundamental problem in this area: How to do ridge regression in a distributed computing environment?

81, TITLE: Streaming k-Submodular Maximization under Noise subject to Size Constraint
https://proceedings.icml.cc/static/paper_files/icml/2020/571-Paper.pdf
AUTHORS: Lan N. Nguyen, My T. Thai
HIGHLIGHT: In this paper, we investigate a more realistic scenario of this problem that (1) obtaining exact evaluation of an objective function is impractical, instead, its noisy version is acquired; and (2) algorithms are required to take only one single pass over dataset, producing solutions in a timely manner.

82, TITLE: Variational Imitation Learning with Diverse-quality Demonstrations
https://proceedings.icml.cc/static/paper_files/icml/2020/577-Paper.pdf
AUTHORS: Voot Tangkaratt, Bo Han, Mohammad Emtiyaz Khan, Masashi Sugiyama
HIGHLIGHT: We propose a new method for imitation learning in such scenarios.

83, TITLE: Task Understanding from Confusing Multi-task Data
https://proceedings.icml.cc/static/paper_files/icml/2020/578-Paper.pdf
AUTHORS: Xin Su, Yizhou Jiang, Shangqi Guo, Feng Chen
HIGHLIGHT: We propose Confusing Supervised Learning (CSL) that takes these confusing samples and extracts task concepts by differentiating between these samples.

84, TITLE: Cost-effective Interactive Attention Learning with Neural Attention Process
https://proceedings.icml.cc/static/paper_files/icml/2020/579-Paper.pdf
AUTHORS: Jay Heo, Junhyeon Park, Hyewon Jeong, Kwang Joon Kim, Juho Lee, Eunho Yang, Sung Ju Hwang
HIGHLIGHT: We propose a novel interactive learning framework which we refer to as Interactive Attention Learning (IAL), in which the human supervisors interactively manipulate the allocated attentions, to correct the model's behavior by updating the attention-generating network.

85, TITLE: Channel Equilibrium Networks for Learning Deep Representation
https://proceedings.icml.cc/static/paper_files/icml/2020/590-Paper.pdf
AUTHORS: Wenqi Shao, Shitao Tang, Xingang Pan, Ping Tan, Xiaogang Wang, Ping Luo
HIGHLIGHT: Unlike prior arts that simply removed the inhibited channels, we propose to ``wake them up'' during training by designing a novel neural building block, termed Channel Equilibrium (CE) block, which enables channels at the same layer to contribute equally to the learned representation.

86, TITLE: Optimal Non-parametric Learning in Repeated Contextual Auctions with Strategic Buyer
https://proceedings.icml.cc/static/paper_files/icml/2020/602-Paper.pdf
AUTHORS: Alexey Drutsa
HIGHLIGHT: We introduce a novel non-parametric learning algorithm that is horizon-independent and has tight strategic regret upper bound of $\Theta(T^{d/(d+1)})$.

87, TITLE: Topological Autoencoders
https://proceedings.icml.cc/static/paper_files/icml/2020/613-Paper.pdf
AUTHORS: Michael Moor, Max Horn, Bastian Rieck, Karsten Borgwardt
HIGHLIGHT: We propose a novel approach for preserving topological structures of the input space in latent representations of autoencoders.

88, TITLE: An Accelerated DFO Algorithm for Finite-sum Convex Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/623-Paper.pdf
AUTHORS: Yuwen Chen, Antonio Orvieto, Aurelien Lucchi
HIGHLIGHT: In this work, we exploit the finite-sum structure of the objective to design a variance-reduced DFO algorithm that probably yields an accelerated rate of convergence.

89, TITLE: The Shapley Taylor Interaction Index
https://proceedings.icml.cc/static/paper_files/icml/2020/625-Paper.pdf
AUTHORS: Mukund Sundararajan, Kedar Dhamdhere, Ashish Agarwal
HIGHLIGHT: We propose a generalization of the Shapley value called Shapley-Taylor index that attributes the model's prediction to interactions of subsets of features up to some size k.

90, TITLE: Privately detecting changes in unknown distributions
https://proceedings.icml.cc/static/paper_files/icml/2020/632-Paper.pdf
AUTHORS: Rachel Cummings, Sara Krehbiel, Yuliia Lut, Wanrong Zhang
HIGHLIGHT: This work develops differentially private algorithms for solving the change-point problem when the data distributions are unknown.

91, TITLE: CAUSE: Learning Granger Causality from Event Sequences using Attribution Methods
https://proceedings.icml.cc/static/paper_files/icml/2020/637-Paper.pdf
AUTHORS: Wei Zhang, Thomas Panum, Somesh Jha, Prasad Chalasani, David Page
HIGHLIGHT: To address these weaknesses, we propose CAUSE (Causality from AttribUtions on Sequence of Events), a novel framework for the studied task.

92, TITLE: Efficient Continuous Pareto Exploration in Multi-Task Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/640-Paper.pdf
AUTHORS: Pingchuan Ma, Tao Du, Wojciech Matusik
HIGHLIGHT: We present a novel, efficient method that generates locally continuous Pareto sets and Pareto fronts, which opens up the possibility of continuous analysis of Pareto optimal solutions in machine learning problems.

93, TITLE: WaveFlow: A Compact Flow-based Model for Raw Audio
https://proceedings.icml.cc/static/paper_files/icml/2020/647-Paper.pdf
AUTHORS: Wei Ping, Kainan Peng, Kexin Zhao, Zhao Song
HIGHLIGHT: In this work, we propose WaveFlow, a small-footprint generative flow for raw audio, which is directly trained with maximum likelihood.

94, TITLE: Multi-Agent Determinantal Q-Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/651-Paper.pdf
AUTHORS: Yaodong Yang, Ying Wen, Jun Wang, Liheng Chen, Kun Shao, David Mguni, Weinan Zhang
HIGHLIGHT: Though practical, current methods rely on restrictive assumptions to decompose the centralized value function across agents for execution. In this paper, we eliminate this restriction by proposing multi-agent determinantal Q-learning.

95, TITLE: Revisiting Spatial Invariance with Low-Rank Local Connectivity
https://proceedings.icml.cc/static/paper_files/icml/2020/652-Paper.pdf
AUTHORS: Gamaleldin Elsayed, Prajit Ramachandran, Jon Shlens, Simon Kornblith
HIGHLIGHT: To test this hypothesis, we design a method to relax the spatial invariance of a network layer in a controlled manner.

96, TITLE: Minimax Weight and Q-Function Learning for Off-Policy Evaluation
https://proceedings.icml.cc/static/paper_files/icml/2020/658-Paper.pdf
AUTHORS: Masatoshi Uehara, Jiawei Huang, Nan Jiang
HIGHLIGHT: Our contributions include: (1) A new estimator, MWL, that directly estimates importance ratios over the state-action distributions, removing the reliance on knowledge of the behavior policy as in prior work (Liu et.al, 2018), (2) Another new estimator, MQL, obtained by swapping the roles of importance weights and value-functions in MWL.

97, TITLE: Tensor denoising and completion based on ordinal observations
https://proceedings.icml.cc/static/paper_files/icml/2020/663-Paper.pdf
AUTHORS: Chanwoo Lee, Miaoyan Wang
HIGHLIGHT: We propose a multi-linear cumulative link model, develop a rank-constrained M-estimator, and obtain theoretical accuracy guarantees.

98, TITLE: Learning Human Objectives by Evaluating Hypothetical Behavior
https://proceedings.icml.cc/static/paper_files/icml/2020/664-Paper.pdf
AUTHORS: Siddharth Reddy, Anca Dragan, Sergey Levine, Shane Legg, Jan Leike
HIGHLIGHT: We propose an algorithm that safely and efficiently learns a model of the user's reward function by posing 'what if?'

99, TITLE: Counterfactual Cross-Validation: Stable Model Selection Procedure for Causal Inference Models
https://proceedings.icml.cc/static/paper_files/icml/2020/676-Paper.pdf
AUTHORS: Yuta Saito, Shota Yasui
HIGHLIGHT: We study the model selection problem in \textit{conditional average treatment effect} (CATE) prediction.

100, TITLE: Learning Efficient Multi-agent Communication: An Information Bottleneck Approach
https://proceedings.icml.cc/static/paper_files/icml/2020/695-Paper.pdf
AUTHORS: Rundong Wang, Xu He, Runsheng Yu, Wei Qiu, Bo An, Zinovi Rabinovich
HIGHLIGHT: In this paper, we develop an Informative Multi-Agent Communication (IMAC) method to learn efficient communication protocols as well as scheduling.

101, TITLE: MoNet3D: Towards Accurate Monocular 3D Object Localization in Real Time
https://proceedings.icml.cc/static/paper_files/icml/2020/696-Paper.pdf
AUTHORS: XICHUAN ZHOU, YiCong Peng, Chunqiao Long, Fengbo Ren, Cong Shi
HIGHLIGHT: The MoNet3D algorithm is a novel and effective framework that can predict the 3D position of each object in a monocular image and draw a 3D bounding box for each object.

102, TITLE: SIGUA: Forgetting May Make Learning with Noisy Labels More Robust
https://proceedings.icml.cc/static/paper_files/icml/2020/705-Paper.pdf
AUTHORS: Bo Han, Gang Niu, Xingrui Yu, QUANMING YAO, Miao Xu, Ivor Tsang, Masashi Sugiyama
HIGHLIGHT: In this paper, to relieve this issue, we propose stochastic integrated gradient underweighted ascent (SIGUA): in a mini-batch, we adopt gradient descent on good data as usual, and learning-rate-reduced gradient ascent} on bad data; the proposal is a versatile approach where data goodness or badness is w.r.t. desired or undesired memorization given a base learning method.

103, TITLE: Multinomial Logit Bandit with Low Switching Cost
https://proceedings.icml.cc/static/paper_files/icml/2020/707-Paper.pdf
AUTHORS: Kefan Dong, Yingkai Li, Qin Zhang, Yuan Zhou
HIGHLIGHT: We present an anytime algorithm (AT-DUCB) with $O(N \log T)$ assortment switches, almost matching the lower bound $\Omega(\frac{N \log T}{ \log \log T})$.

104, TITLE: Deep Reasoning Networks for Unsupervised Pattern De-mixing with Constraint Reasoning
https://proceedings.icml.cc/static/paper_files/icml/2020/717-Paper.pdf
AUTHORS: Di Chen, Yiwei Bai, Wenting Zhao, Sebastian Ament, John Gregoire, Carla Gomes
HIGHLIGHT: We introduce Deep Reasoning Networks (DRNets), an end-to-end framework that combines deep learning with constraint reasoning for solving pattern de-mixing problems, typically in an unsupervised or very-weakly-supervised setting.

105, TITLE: Uncertainty-Aware Lookahead Factor Models for Improved Quantitative Investing
https://proceedings.icml.cc/static/paper_files/icml/2020/721-Paper.pdf
AUTHORS: Lakshay Chauhan, John Alberg, Zachary Lipton
HIGHLIGHT: We propose lookahead factor models to act upon these predictions, plugging the predicted future fundamentals into traditional factors.

106, TITLE: On the Unreasonable Effectiveness of the Greedy Algorithm: Greedy Adapts to Sharpness
https://proceedings.icml.cc/static/paper_files/icml/2020/722-Paper.pdf
AUTHORS: Sebastian Pokutta, Mohit Singh, Alfredo Torrico
HIGHLIGHT: In this work, we define sharpness for submodular functions as a candidate explanation for this phenomenon.

107, TITLE: Stronger and Faster Wasserstein Adversarial Attacks
https://proceedings.icml.cc/static/paper_files/icml/2020/724-Paper.pdf
AUTHORS: Kaiwen Wu, Allen Wang, Yaoliang Yu
HIGHLIGHT: We address this gap in two ways: (a) we develop an exact yet efficient projection operator to enable a stronger projected gradient attack; (b) we show for the first time that conditional gradient method equipped with a suitable linear minimization oracle works extremely fast under Wasserstein constraints.

108, TITLE: Optimizing Multiagent Cooperation via Policy Evolution and Shared Experiences
https://proceedings.icml.cc/static/paper_files/icml/2020/730-Paper.pdf
AUTHORS: Somdeb Majumdar, Shauharda Khadka, Santiago Miret, Stephen Mcaleer, Kagan Tumer
HIGHLIGHT: We introduce Multiagent Evolutionary Reinforcement Learning (MERL), a split-level training platform that handles the two objectives separately through two optimization processes.

109, TITLE: Why Are Learned Indexes So Effective?
https://proceedings.icml.cc/static/paper_files/icml/2020/737-Paper.pdf
AUTHORS: Paolo Ferragina, Fabrizio Lillo, Giorgio Vinciguerra
HIGHLIGHT: In this paper, we present the first mathematically-grounded answer to this open problem.

110, TITLE: Fast OSCAR and OWL with Safe Screening Rules
https://proceedings.icml.cc/static/paper_files/icml/2020/738-Paper.pdf
AUTHORS: Runxue Bao, Bin Gu, Heng Huang
HIGHLIGHT: To address this challenge, we propose the first safe screening rule for the OWL regularized regression, which effectively avoids the updates of the parameters whose coefficients must be zeros.

111, TITLE: Which Tasks Should Be Learned Together in Multi-task Learning?
https://proceedings.icml.cc/static/paper_files/icml/2020/758-Paper.pdf
AUTHORS: Trevor Standley, Amir Zamir, Dawn Chen, Leonidas Guibas, Jitendra Malik, Silvio Savarese
HIGHLIGHT: We systematically study task cooperation and competition and propose a framework for assigning tasks to a few neural networks such that cooperating tasks are computed by the same neural network, while competing tasks are computed by different networks.

112, TITLE: Inertial Block Proximal Methods for Non-Convex Non-Smooth Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/766-Paper.pdf
AUTHORS: Hien Le, Nicolas Gillis, Panagiotis Patrinos
HIGHLIGHT: We propose inertial versions of block coordinate descent methods for solving non-convex non-smooth composite optimization problems.

113, TITLE: Adversarial Neural Pruning with Latent Vulnerability Suppression
https://proceedings.icml.cc/static/paper_files/icml/2020/770-Paper.pdf
AUTHORS: Divyam Madaan, Jinwoo Shin, Sung Ju Hwang
HIGHLIGHT: In this paper, we conjecture that the leading cause of this adversarial vulnerability is the distortion in the latent feature space, and provide methods to suppress them effectively.

114, TITLE: Lifted Disjoint Paths with Application in Multiple Object Tracking
https://proceedings.icml.cc/static/paper_files/icml/2020/771-Paper.pdf
AUTHORS: Andrea Hornakova, Roberto Henschel, Bodo Rosenhahn, Paul Swoboda
HIGHLIGHT: We present an extension to the disjoint paths problem in which additional lifted edges are introduced to provide path connectivity priors.

115, TITLE: Being Bayesian, Even Just a Bit, Fixes Overconfidence in ReLU Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/780-Paper.pdf
AUTHORS: Agustinus Kristiadi, Matthias Hein, Philipp Hennig
HIGHLIGHT: We theoretically analyze approximate Gaussian posterior distributions on the weights of ReLU networks and show that they fix the overconfidence problem.

116, TITLE: SCAFFOLD: Stochastic Controlled Averaging for Federated Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/788-Paper.pdf
AUTHORS: Sai Praneeth Reddy Karimireddy, Satyen Kale, Mehryar Mohri, Sashank Jakkam Reddi, Sebastian Stich, Ananda Theertha Suresh
HIGHLIGHT: As a solution, we propose a new algorithm (SCAFFOLD) which uses control variates (variance reduction) to correct for the `client drift'.

117, TITLE: Statistically Preconditioned Accelerated Gradient Method for Distributed Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/803-Paper.pdf
AUTHORS: Hadrien Hendrikx, Lin Xiao, Sebastien Bubeck, Francis Bach, Laurent Massoulié
HIGHLIGHT: In order to reduce the number of communications required to reach a given accuracy, we propose a preconditioned accelerated gradient method where the preconditioning is done by solving a local optimization problem over a subsampled dataset at the server.

118, TITLE: Pretrained Generalized Autoregressive Model with Adaptive Probabilistic Label Cluster for Extreme Multi-label Text Classification
https://proceedings.icml.cc/static/paper_files/icml/2020/807-Paper.pdf

AUTHORS: Hui Ye, Zhiyu Chen, Da-Han Wang, Brian Davison
HIGHLIGHT: Our approach fine-tunes the recently released generalized autoregressive pretraining model (XLNet) to learn the dense representation for the input text. We propose the Adaptive Probabilistic Label Cluster (APLC) to approximate the cross entropy loss by exploiting the unbalanced label distribution to form clusters that explicitly reduce the computational time.

119, TITLE: Frequentist Uncertainty in Recurrent Neural Networks via Blockwise Influence Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/817-Paper.pdf
AUTHORS: Ahmed Alaa, Mihaela van der Schaar
HIGHLIGHT: Capitalizing on ideas from classical jackknife resampling, we develop a frequentist alternative that: (a) is computationally efficient, (b) does not interfere with model training or compromise its accuracy, (c) applies to any RNN architecture, and (d) provides theoretical coverage guarantees on the estimated uncertainty intervals.

120, TITLE: Disentangling Trainability and Generalization in Deep Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/827-Paper.pdf
AUTHORS: Lechao Xiao, Jeffrey Pennington, Samuel Schoenholz
HIGHLIGHT: In this work, we provide such a char-acterization in the limit of very wide and verydeep networks, for which the analysis simplifiesconsiderably.

121, TITLE: Moniqua: Modulo Quantized Communication in Decentralized SGD
https://proceedings.icml.cc/static/paper_files/icml/2020/831-Paper.pdf
AUTHORS: Yucheng Lu, Christopher De Sa
HIGHLIGHT: In this paper we propose Moniqua, a technique that allows decentralized SGD to use quantized communication.

122, TITLE: Expectation Maximization with Bias-Corrected Calibration is Hard-To-Beat at Label Shift Adaptation
https://proceedings.icml.cc/static/paper_files/icml/2020/835-Paper.pdf
AUTHORS: Amr Mohamed Alexandari, Anshul Kundaje, Avanti Shrikumar
HIGHLIGHT: We show that by combining EM with a type of calibration we call bias-corrected calibration, we outperform both BBSL and RLLS across diverse datasets and distribution shifts.

123, TITLE: Expert Learning through Generalized Inverse Multiobjective Optimization: Models, Insights and Algorithms
https://proceedings.icml.cc/static/paper_files/icml/2020/842-Paper.pdf
AUTHORS: Chaosheng Dong, Bo Zeng
HIGHLIGHT: Leveraging these critical insights and connections, we propose two algorithms to solve IMOP through manifold learning and clustering.

124, TITLE: Random Matrix Theory Proves that Deep Learning Representations of GAN-data Behave as Gaussian Mixtures
https://proceedings.icml.cc/static/paper_files/icml/2020/858-Paper.pdf
AUTHORS: Mohamed El Amine Seddik, Cosme Louart, Mohamed Tamaazousti, Romain COUILLET
HIGHLIGHT: This paper shows that deep learning (DL) representations of data produced by generative adversarial nets (GANs) are random vectors which fall within the class of so-called \textit{concentrated} random vectors.

125, TITLE: Optimizing Data Usage via Differentiable Rewards
https://proceedings.icml.cc/static/paper_files/icml/2020/860-Paper.pdf
AUTHORS: Xinyi Wang, Hieu Pham, Paul Michel, Antonios Anastasopoulos, Jaime Carbonell, Graham Neubig
HIGHLIGHT: To efficiently optimize data usage, we propose a reinforcement learning approach called Differentiable Data Selection (DDS).

126, TITLE: Optimistic Policy Optimization with Bandit Feedback
https://proceedings.icml.cc/static/paper_files/icml/2020/875-Paper.pdf
AUTHORS: Lior Shani, Yonathan Efroni, Aviv Rosenberg, Shie Mannor
HIGHLIGHT: In this paper we consider model-based RL in the tabular finite-horizon MDP setting with unknown transitions and bandit feedback.

127, TITLE: Maximum-and-Concatenation Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/876-Paper.pdf
AUTHORS: Xingyu Xie, Hao Kong, Jianlong Wu, Wayne Zhang, Guangcan Liu, Zhouchen Lin
HIGHLIGHT: In this work, we propose a novel architecture called Maximum-and-Concatenation Networks (MCN) to try eliminating bad local minima and improving generalization ability as well.

128, TITLE: Learning Adversarial Markov Decision Processes with Bandit Feedback and Unknown Transition

https://proceedings.icml.cc/static/paper_files/icml/2020/879-Paper.pdf
AUTHORS: Chi Jin, Tiancheng Jin, Haipeng Luo, Suvrit Sra, Tiancheng Yu
HIGHLIGHT: We propose an efficient algorithm that achieves $O(L|X|AT)$ regret with high probability, where L is the horizon, |X| the number of states, |A| the number of actions, and T the number of episodes.

129, TITLE: Kernelized Stein Discrepancy Tests of Goodness-of-fit for Time-to-Event Data
https://proceedings.icml.cc/static/paper_files/icml/2020/880-Paper.pdf
AUTHORS: Wenkai Xu, Tamara Fernandez, Nicolas Rivera, Arthur Gretton
HIGHLIGHT: In this paper, we focus on non-parametric Goodness-of-Fit testing procedures based on combining the Stein's method and kernelized discrepancies.

130, TITLE: Efficient Intervention Design for Causal Discovery with Latents
https://proceedings.icml.cc/static/paper_files/icml/2020/884-Paper.pdf
AUTHORS: Raghavendra Addanki, Shiva Kasiviswanathan, Andrew McGregor, Cameron Musco
HIGHLIGHT: In particular, we introduce the notion of p-colliders, that are colliders between pair of nodes arising from a specific type of conditioning in the causal graph, and provide an upper bound on the number of interventions as a function of the maximum number of p-colliders between any two nodes in the causal graph.

131, TITLE: Certified Data Removal from Machine Learning Models
https://proceedings.icml.cc/static/paper_files/icml/2020/894-Paper.pdf
AUTHORS: Chuan Guo, Tom Goldstein, Awni Hannun, Laurens van der Maaten
HIGHLIGHT: We study this problem by defining certified removal: a very strong theoretical guarantee that a model from which data is removed cannot be distinguished from a model that never observed the data to begin with.

132, TITLE: One Size Fits All: Can We Train One Denoiser for All Noise Levels?
https://proceedings.icml.cc/static/paper_files/icml/2020/895-Paper.pdf
AUTHORS: Abhiram Gnanasambandam, Stanley Chan
HIGHLIGHT: However, why should we allocate the samples uniformly? Can we have more training samples that are less noisy, and fewer samples that are more noisy? What is the optimal distribution? How do we obtain such optimal distribution? The goal of this paper is to address these questions.

133, TITLE: GNN-FiLM: Graph Neural Networks with Feature-wise Linear Modulation
https://proceedings.icml.cc/static/paper_files/icml/2020/904-Paper.pdf
AUTHORS: Marc Brockschmidt
HIGHLIGHT: This paper presents a new Graph Neural Network (GNN) type using feature-wise linear modulation (FiLM).

134, TITLE: Sparse Gaussian Processes with Spherical Harmonic Features
https://proceedings.icml.cc/static/paper_files/icml/2020/906-Paper.pdf
AUTHORS: Vincent Dutordoir, Nicolas Durrande, James Hensman
HIGHLIGHT: We introduce a new class of interdomain variational Gaussian processes (GP) where data is mapped onto the unit hypersphere in order to use spherical harmonic representations.

135, TITLE: Asynchronous Coagent Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/910-Paper.pdf
AUTHORS: James Kostas, Chris Nota, Philip Thomas
HIGHLIGHT: In this work, we prove that CPGAs converge to locally optimal policies.

136, TITLE: Adaptive Checkpoint Adjoint Method for Gradient Estimation in Neural ODE
https://proceedings.icml.cc/static/paper_files/icml/2020/917-Paper.pdf
AUTHORS: Juntang Zhuang, Nicha Dvornek, Xiaoxiao Li, Sekhar Tatikonda, Xenophon Papademetris, James Duncan
HIGHLIGHT: We propose the Adaptive Checkpoint Adjoint (ACA) method: ACA applies a trajectory checkpoint strategy which records the forward- mode trajectory as the reverse-mode trajectory to guarantee accuracy; ACA deletes redundant components for shallow computation graphs; and ACA supports adaptive solvers.

137, TITLE: Understanding the Curse of Horizon in Off-Policy Evaluation via Conditional Importance Sampling
https://proceedings.icml.cc/static/paper_files/icml/2020/924-Paper.pdf
AUTHORS: Yao Liu, Pierre-Luc Bacon, Emma Brunskill
HIGHLIGHT: We analyze the variance of the most popular approaches through the viewpoint of conditional Monte Carlo.

138, TITLE: Taylor Expansion Policy Optimization

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https://proceedings.icml.cc/static/paper_files/icml/2020/941-Paper.pdf
AUTHORS: Yunhao Tang, Michal Valko, Remi Munos
HIGHLIGHT: In this work, we investigate the application of Taylor expansions in reinforcement learning.

139, TITLE: Reinforcement Learning for Integer Programming: Learning to Cut
https://proceedings.icml.cc/static/paper_files/icml/2020/943-Paper.pdf
AUTHORS: Yunhao Tang, Shipra Agrawal, Yuri Faenza
HIGHLIGHT: The goal of this work is to show that the performance of those solvers can be greatly enhanced using reinforcement learning (RL).

140, TITLE: Safe Reinforcement Learning in Constrained Markov Decision Processes
https://proceedings.icml.cc/static/paper_files/icml/2020/951-Paper.pdf
AUTHORS: Akifumi Wachi, Yanan Sui
HIGHLIGHT: In this paper, we propose an algorithm, SNO-MDP, that explores and optimizes Markov decision processes under unknown safety constraints.

141, TITLE: Layered Sampling for Robust Optimization Problems
https://proceedings.icml.cc/static/paper_files/icml/2020/953-Paper.pdf
AUTHORS: Hu Ding, Zixiu Wang
HIGHLIGHT: In this paper, we propose a new variant of coreset technique, {\em layered sampling}, to deal with two fundamental robust optimization problems: {\em k-median/means clustering with outliers} and {\em linear regression with outliers}.

142, TITLE: Learning to Encode Position for Transformer with Continuous Dynamical Model
https://proceedings.icml.cc/static/paper_files/icml/2020/955-Paper.pdf
AUTHORS: Xuanqing Liu, Hsiang-Fu Yu, Inderjit Dhillon, Cho-Jui Hsieh
HIGHLIGHT: We introduce a new way of learning to encode position information for non-recurrent models, such as Transformer models.

143, TITLE: Do RNN and LSTM have Long Memory?
https://proceedings.icml.cc/static/paper_files/icml/2020/956-Paper.pdf
AUTHORS: Jingyu Zhao, Feiqing Huang, Jia Lv, Yanjie Duan, Zhen Qin, Guodong Li, Guangjian Tian
HIGHLIGHT: Since the term "long memory" is still not well-defined for a network, we propose a new definition for long memory network.

144, TITLE: Training Linear Neural Networks: Non-Local Convergence and Complexity Results
https://proceedings.icml.cc/static/paper_files/icml/2020/967-Paper.pdf
AUTHORS: Armin Eftekhari
HIGHLIGHT: In this paper, we improve the state of the art in (Bah et al., 2019) by identifying conditions under which gradient flow successfully trains a linear network, in spite of the non-strict saddle points present in the optimization landscape.

145, TITLE: On Validation and Planning of An Optimal Decision Rule with Application in Healthcare Studies
https://proceedings.icml.cc/static/paper_files/icml/2020/968-Paper.pdf
AUTHORS: Hengrui Cai, Wenbin Lu, Rui Song
HIGHLIGHT: In this paper, we propose a testing procedure for detecting the existence of an ODR that is better than the naive decision rule under the randomized trials.

146, TITLE: Graph Optimal Transport for Cross-Domain Alignment
https://proceedings.icml.cc/static/paper_files/icml/2020/971-Paper.pdf
AUTHORS: Liqun Chen, Zhe Gan, Yu Cheng, Linjie Li, Lawrence Carin, Jingjing Liu
HIGHLIGHT: We propose Graph Optimal Transport (GOT), a principled framework that builds upon recent advances in Optimal Transport (OT).

147, TITLE: Approximation Capabilities of Neural ODEs and Invertible Residual Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/979-Paper.pdf
AUTHORS: Han Zhang, Xi Gao, Jacob Unterman, Tomasz Arodz
HIGHLIGHT: We conclude by showing that capping a Neural ODE or an i-ResNet with a single linear layer is sufficient to turn the model into a universal approximator for non-invertible continuous functions.

148, TITLE: Refined bounds for algorithm configuration: The knife-edge of dual class approximability

https://proceedings.icml.cc/static/paper_files/icml/2020/984-Paper.pdf
AUTHORS: Nina Balcan, Tuomas Sandholm, Ellen Vitercik
HIGHLIGHT: We investigate a fundamental question about these techniques: how large should the training set be to ensure that a parameter's average empirical performance over the training set is close to its expected, future performance?

149, TITLE: Teaching with Limited Information on the Learner's Behaviour
https://proceedings.icml.cc/static/paper_files/icml/2020/991-Paper.pdf
AUTHORS: Ferdinando Cicalese, Francisco Sergio de Freitas Filho, Eduardo Laber, Marco Molinaro
HIGHLIGHT: Motivated by the realistic possibility that h^* is not available to the learner, we consider the case where the teacher can only aim at having the learner converge to a best available approximation of h^*.

150, TITLE: Interpretations are Useful: Penalizing Explanations to Align Neural Networks with Prior Knowledge
https://proceedings.icml.cc/static/paper_files/icml/2020/992-Paper.pdf
AUTHORS: Laura Rieger, Chandan Singh, William Murdoch, Bin Yu
HIGHLIGHT: In this paper, we propose contextual decomposition explanation penalization (CDEP), a method which enables practitioners to leverage existing explanation methods to increase the predictive accuracy of a deep learning model.

151, TITLE: DeltaGrad: Rapid retraining of machine learning models
https://proceedings.icml.cc/static/paper_files/icml/2020/1003-Paper.pdf
AUTHORS: Yinjun Wu, Edgar Dobriban, Susan Davidson
HIGHLIGHT: To address this problem, we propose the DeltaGrad algorithm for rapidly retraining machine learning models based on information cached during the training phase.

152, TITLE: The Cost-free Nature of Optimally Tuning Tikhonov Regularizers and Other Ordered Smoothers
https://proceedings.icml.cc/static/paper_files/icml/2020/1015-Paper.pdf
AUTHORS: Pierre Bellec, Dana Yang
HIGHLIGHT: We consider the problem of selecting the best estimator among a family of Tikhonov regularized estimators, or, alternatively, to select a linear combination of these regularizers that is as good as the best regularizer in the family.

153, TITLE: Approximation Guarantees of Local Search Algorithms via Localizability of Set Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/1027-Paper.pdf
AUTHORS: Kaito Fujii
HIGHLIGHT: This paper proposes a new framework for providing approximation guarantees of local search algorithms.

154, TITLE: Fine-Grained Analysis of Stability and Generalization for Stochastic Gradient Descent
https://proceedings.icml.cc/static/paper_files/icml/2020/1028-Paper.pdf
AUTHORS: Yunwen Lei, Yiming Ying
HIGHLIGHT: In this paper, we provide a fine-grained analysis of stability and generalization for SGD by substantially relaxing these assumptions.

155, TITLE: Online Dense Subgraph Discovery via Blurred-Graph Feedback
https://proceedings.icml.cc/static/paper_files/icml/2020/1029-Paper.pdf
AUTHORS: Yuko Kuroki, Atsushi Miyauchi, Junya Honda, Masashi Sugiyama
HIGHLIGHT: In this paper, we introduce a novel learning problem for dense subgraph discovery in which a learner queries edge subsets rather than only single edges and observes a noisy sum of edge weights in a queried subset.

156, TITLE: LazyIter: A Fast Algorithm for Counting Markov Equivalent DAGs and Designing Experiments
https://proceedings.icml.cc/static/paper_files/icml/2020/1030-Paper.pdf
AUTHORS: Ali AhmadiTeshnizi, Saber Salehkaleybar, Negar Kiyavash
HIGHLIGHT: We propose a method for efficient iteration over possible MECs given intervention results.

157, TITLE: Perceptual Generative Autoencoders
https://proceedings.icml.cc/static/paper_files/icml/2020/1042-Paper.pdf
AUTHORS: Zijun Zhang, Ruixiang ZHANG, Zongpeng Li, Yoshua Bengio, Liam Paull
HIGHLIGHT: We therefore propose to map both the generated and target distributions to the latent space using the encoder of a standard autoencoder, and train the generator (or decoder) to match the target distribution in the latent space.

158, TITLE: Towards Understanding the Regularization of Adversarial Robustness on Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/1057-Paper.pdf
AUTHORS: Yuxin Wen, Shuai Li, Kui Jia

HIGHLIGHT:		In this work, we study the degradation through the regularization perspective.

159, TITLE:		Stochastic Gradient and Langevin Processes
https://proceedings.icml.cc/static/paper_files/icml/2020/1074-Paper.pdf
AUTHORS:		Xiang Cheng, Dong Yin, Peter Bartlett, Michael Jordan
HIGHLIGHT:		We prove quantitative convergence rates at which discrete Langevin-like processes converge to the invariant distribution of a related stochastic differential equation.

160, TITLE:		ROMA: Multi-Agent Reinforcement Learning with Emergent Roles
https://proceedings.icml.cc/static/paper_files/icml/2020/1080-Paper.pdf
AUTHORS:		Tonghan Wang, Heng Dong, Victor Lesser, Chongjie Zhang
HIGHLIGHT:		In this paper, we synergize these two paradigms and propose a role-oriented MARL framework (ROMA).

161, TITLE:		Minimax Pareto Fairness: A Multi Objective Perspective
https://proceedings.icml.cc/static/paper_files/icml/2020/1084-Paper.pdf
AUTHORS:		Martin Bertran, Natalia Martinez, Guillermo Sapiro
HIGHLIGHT:		In this work we formulate and formally characterize group fairness as a multi-objective optimization problem, where each sensitive group risk is a separate objective.

162, TITLE:		Online Pricing with Offline Data: Phase Transition and Inverse Square Law
https://proceedings.icml.cc/static/paper_files/icml/2020/1090-Paper.pdf
AUTHORS:		Jinzhi Bu, David Simchi-Levi, Yunzong Xu
HIGHLIGHT:		We study a single-product dynamic pricing problem over a selling horizon of T periods.

163, TITLE:		Explicit Gradient Learning for Black-Box Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/1091-Paper.pdf
AUTHORS:		Elad Sarafian, Mor Sinay, yoram louzoun, Noa Agmon, Sarit Kraus
HIGHLIGHT:		Here we present a BBO method, termed Explicit Gradient Learning (EGL), that is designed to optimize high-dimensional ill-behaved functions.

164, TITLE:		Optimization and Analysis of the pAp@k Metric for Recommender Systems
https://proceedings.icml.cc/static/paper_files/icml/2020/1095-Paper.pdf
AUTHORS:		Gaurush Hiranandani, Warut Vijitbenjaronk, Sanmi Koyejo, Prateek Jain
HIGHLIGHT:		In this paper, we analyze the learning-theoretic properties of pAp@k and propose novel surrogates that are consistent under certain data regularity conditions.

165, TITLE:		When Explanations Lie: Why Many Modified BP Attributions Fail
https://proceedings.icml.cc/static/paper_files/icml/2020/1105-Paper.pdf
AUTHORS:		Leon Sixt, Maximilian Granz, Tim Landgraf
HIGHLIGHT:		We analyze an extensive set of modified BP methods: Deep Taylor Decomposition, Layer-wise Relevance Propagation (LRP), Excitation BP, PatternAttribution, DeepLIFT, Deconv, RectGrad, and Guided BP. We find empirically that the explanations of all mentioned methods, except for DeepLIFT, are independent of the parameters of later layers. We provide theoretical insights for this surprising behavior and also analyze why DeepLIFT does not suffer from this limitation.

166, TITLE:		Naive Exploration is Optimal for Online LQR
https://proceedings.icml.cc/static/paper_files/icml/2020/1107-Paper.pdf
AUTHORS:		Max Simchowitz, Dylan Foster
HIGHLIGHT:		We consider the problem of online adaptive control of the linear quadratic regulator, where the true system parameters are unknown.

167, TITLE:		Learning Structured Latent Factors from Dependent Data:A Generative Model Framework from Information-Theoretic Perspective
https://proceedings.icml.cc/static/paper_files/icml/2020/1111-Paper.pdf
AUTHORS:		Ruixiang ZHANG, Katsuhiko Ishiguro, Masanori Koyama
HIGHLIGHT:		In this paper, we present a novel framework for learning generative models with various underlying structures in the latent space.

168, TITLE:		Implicit Generative Modeling for Efficient Exploration
https://proceedings.icml.cc/static/paper_files/icml/2020/1113-Paper.pdf
AUTHORS:		Neale Ratzlaff, Qinxun Bai, Fuxin Li, Wei Xu

HIGHLIGHT:	In this work, we introduce an exploration approach based on a novel implicit generative modeling algorithm to estimate a Bayesian uncertainty of the agent's belief of the environment dynamics.

169, TITLE:	Prediction-Guided Multi-Objective Reinforcement Learning for Continuous Robot Control
https://proceedings.icml.cc/static/paper_files/icml/2020/1114-Paper.pdf
AUTHORS:	Jie Xu, Yunsheng Tian, Pingchuan Ma, Daniela Rus, Shinjiro Sueda, Wojciech Matusik
HIGHLIGHT:	In this work, we propose an efficient evolutionary learning algorithm to find the Pareto set approximation for continuous robot control problems, by extending a state-of-the-art RL algorithm and presenting a novel prediction model to guide the learning process.

170, TITLE:	Goodness-of-Fit Tests for Inhomogeneous Random Graphs
https://proceedings.icml.cc/static/paper_files/icml/2020/1119-Paper.pdf
AUTHORS:	Soham Dan, Bhaswar B. Bhattacharya
HIGHLIGHT:	In this paper we consider the goodness-of-fit testing problem for large inhomogeneous random (IER) graphs, where given a (known) reference symmetric matrix $Q \in [0, 1]^{n \times n}$ and m independent samples from an IER graph given by an unknown symmetric matrix $P \in [0, 1]^{n \times n}$, the goal is to test the hypothesis $P=Q$ versus $\|P-Q\| \geq \varepsilon$, where $\|\cdot\|$ is some specified norm on symmetric matrices.

171, TITLE:	Few-shot Domain Adaptation by Causal Mechanism Transfer
https://proceedings.icml.cc/static/paper_files/icml/2020/1121-Paper.pdf
AUTHORS:	Takeshi Teshima, Issei Sato, Masashi Sugiyama
HIGHLIGHT:	We take the structural equations in causal modeling as an example and propose a novel DA method, which is shown to be useful both theoretically and experimentally.

172, TITLE:	Adaptive Adversarial Multi-task Representation Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1125-Paper.pdf
AUTHORS:	YUREN MAO, Weiwei Liu, Xuemin Lin
HIGHLIGHT:	Based on the duality, we proposed an novel adaptive AMTRL algorithm which improves the performance of original AMTRL methods.

173, TITLE:	Streaming Submodular Maximization under a k-Set System Constraint
https://proceedings.icml.cc/static/paper_files/icml/2020/1126-Paper.pdf
AUTHORS:	Ran Haba, Ehsan Kazemi, Moran Feldman, Amin Karbasi
HIGHLIGHT:	In this paper, we propose a novel framework that converts streaming algorithms for monotone submodular maximization into streaming algorithms for non-monotone submodular maximization.

174, TITLE:	A Generic First-Order Algorithmic Framework for Bi-Level Programming Beyond Lower-Level Singleton
https://proceedings.icml.cc/static/paper_files/icml/2020/1129-Paper.pdf
AUTHORS:	Risheng Liu, Pan Mu, Xiaoming Yuan, Shangzhi Zeng, Jin Zhang
HIGHLIGHT:	To address this critical issue, a new method, named Bi-level Descent Aggregation (BDA) is proposed, aiming to broaden the application horizon of first-order schemes for BLPs.

175, TITLE:	Optimal approximation for unconstrained non-submodular minimization
https://proceedings.icml.cc/static/paper_files/icml/2020/1143-Paper.pdf
AUTHORS:	Marwa El Halabi, Stefanie Jegelka
HIGHLIGHT:	We show how these relations can be extended to obtain approximation guarantees for minimizing non-submodular functions, characterized by how close the function is to submodular.

176, TITLE:	Generating Programmatic Referring Expressions via Program Synthesis
https://proceedings.icml.cc/static/paper_files/icml/2020/1158-Paper.pdf
AUTHORS:	Jiani Huang, Calvin Smith, Osbert Bastani, Rishabh Singh, Aws Albarghouthi, Mayur Naik
HIGHLIGHT:	We propose a neurosymbolic program synthesis algorithm that combines a policy neural network with enumerative search to generate such relational programs.

177, TITLE:	Nearly Linear Row Sampling Algorithm for Quantile Regression
https://proceedings.icml.cc/static/paper_files/icml/2020/1160-Paper.pdf
AUTHORS:	Yi Li, Ruosong Wang, Lin Yang, Hanrui Zhang
HIGHLIGHT:	Our main technical contribution is to show that Lewis weights sampling, which has been used in row sampling algorithms for ℓ_p norms, can also be applied in row sampling algorithms for a variety of loss functions.

178, TITLE: On Leveraging Pretrained GANs for Generation with Limited Data
https://proceedings.icml.cc/static/paper_files/icml/2020/1164-Paper.pdf
AUTHORS: Miaoyun Zhao, Yulai Cong, Lawrence Carin
HIGHLIGHT: To facilitate this, we leverage existing GAN models pretrained on large-scale datasets (like ImageNet) to introduce additional knowledge (which may not exist within the limited data), following the concept of transfer learning.

179, TITLE: More Data Can Expand The Generalization Gap Between Adversarially Robust and Standard Models
https://proceedings.icml.cc/static/paper_files/icml/2020/1172-Paper.pdf
AUTHORS: Lin Chen, Yifei Min, Mingrui Zhang, Amin Karbasi
HIGHLIGHT: However, we study the training of robust classifiers for both Gaussian and Bernoulli models under ℓ_∞ attacks, and we prove that more data may actually increase this gap.

180, TITLE: Double Reinforcement Learning for Efficient and Robust Off-Policy Evaluation
https://proceedings.icml.cc/static/paper_files/icml/2020/1173-Paper.pdf
AUTHORS: Nathan Kallus, Masatoshi Uehara
HIGHLIGHT: We consider for the first time the semiparametric efficiency limits of OPE in Markov decision processes (MDPs), where actions, rewards, and states are memoryless.

181, TITLE: Statistically Efficient Off-Policy Policy Gradients
https://proceedings.icml.cc/static/paper_files/icml/2020/1176-Paper.pdf
AUTHORS: Nathan Kallus, Masatoshi Uehara
HIGHLIGHT: In this paper, we consider the efficient estimation of policy gradients from off-policy data, where the estimation is particularly non-trivial.

182, TITLE: Self-PU: Self Boosted and Calibrated Positive-Unlabeled Training
https://proceedings.icml.cc/static/paper_files/icml/2020/1182-Paper.pdf
AUTHORS: Xuxi Chen, Wuyang Chen, Tianlong Chen, Ye Yuan, Chen Gong, Kewei Chen, Zhangyang Wang
HIGHLIGHT: This motivates us to propose a novel Self-PU learning framework, which seamlessly integrates PU learning and self-training.

183, TITLE: When Does Self-Supervision Help Graph Convolutional Networks?
https://proceedings.icml.cc/static/paper_files/icml/2020/1185-Paper.pdf
AUTHORS: Yuning You, Tianlong Chen, Zhangyang Wang, Yang Shen
HIGHLIGHT: In this study, we report the first systematic exploration and assessment of incorporating self-supervision into GCNs.

184, TITLE: On Differentially Private Stochastic Convex Optimization with Heavy-tailed Data
https://proceedings.icml.cc/static/paper_files/icml/2020/1190-Paper.pdf
AUTHORS: Di Wang, Hanshen Xiao, Srinivas Devadas, Jinhui Xu
HIGHLIGHT: In this paper, we consider the problem of designing Differentially Private (DP) algorithms for Stochastic Convex Optimization (SCO) on heavy-tailed data.

185, TITLE: Variance Reduced Coordinate Descent with Acceleration: New Method With a Surprising Application to Finite-Sum Problems
https://proceedings.icml.cc/static/paper_files/icml/2020/1205-Paper.pdf
AUTHORS: Filip Hanzely, Dmitry Kovalev, Peter Richtarik
HIGHLIGHT: We propose an accelerated version of stochastic variance reduced coordinate descent -- ASVRCD.

186, TITLE: Stochastic Subspace Cubic Newton Method
https://proceedings.icml.cc/static/paper_files/icml/2020/1206-Paper.pdf
AUTHORS: Filip Hanzely, Nikita Doikov, Yurii Nesterov, Peter Richtarik
HIGHLIGHT: In this paper, we propose a new randomized second-order optimization algorithm---Stochastic Subspace Cubic Newton (SSCN)---for minimizing a high dimensional convex function f.

187, TITLE: Ready Policy One: World Building Through Active Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1214-Paper.pdf
AUTHORS: Philip Ball, Jack Parker-Holder, Aldo Pacchiano, Krzysztof Choromanski, Stephen Roberts
HIGHLIGHT: In this paper we introduce Ready Policy One (RP1), a framework that views MBRL as an active learning problem, where we aim to improve the world model in the fewest samples possible.

188, TITLE: Structural Language Models of Code
https://proceedings.icml.cc/static/paper_files/icml/2020/1218-Paper.pdf
AUTHORS: Uri Alon, Roy Sadaka, Omer Levy, Eran Yahav
HIGHLIGHT: We introduce a new approach to any-code completion that leverages the strict syntax of programming languages to model a code snippet as a tree - structural language modeling (SLM).

189, TITLE: PEGASUS: Pre-training with Extracted Gap-sentences for Abstractive Summarization
https://proceedings.icml.cc/static/paper_files/icml/2020/1219-Paper.pdf
AUTHORS: Jingqing Zhang, Yao Zhao, Mohammad Saleh, Peter Liu
HIGHLIGHT: In this work, we propose pre-training large Transformer-based encoder-decoder models on massive text corpora with a new self-supervised objective.

190, TITLE: Aggregation of Multiple Knockoffs
https://proceedings.icml.cc/static/paper_files/icml/2020/1222-Paper.pdf
AUTHORS: Tuan-Binh Nguyen, Jerome-Alexis Chevalier, Thirion Bertrand, Sylvain Arlot
HIGHLIGHT: We develop an extension of the knockoff inference procedure, introduced by Barber & Candes (2015).

191, TITLE: Off-Policy Actor-Critic with Shared Experience Replay
https://proceedings.icml.cc/static/paper_files/icml/2020/1228-Paper.pdf
AUTHORS: Simon Schmitt, Matteo Hessel, Karen Simonyan
HIGHLIGHT: We investigate the combination of actor-critic reinforcement learning algorithms with a uniform large-scale experience replay and propose solutions for two ensuing challenges: (a) efficient actor-critic learning with experience replay (b) the stability of off-policy learning where agents learn from other agents behaviour.

192, TITLE: Graph-based Nearest Neighbor Search: From Practice to Theory
https://proceedings.icml.cc/static/paper_files/icml/2020/1229-Paper.pdf
AUTHORS: Liudmila Prokhorenkova, Aleksandr Shekhovtsov
HIGHLIGHT: In this work, we fill this gap and rigorously analyze the performance of graph-based NNS algorithms, specifically focusing on the low-dimensional (d << log n) regime.

193, TITLE: Policy Teaching via Environment Poisoning: Training-time Adversarial Attacks against Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1231-Paper.pdf
AUTHORS: Amin Rakhsha, Goran Radanovic, Rati Devidze, Jerry Zhu, Adish Singla
HIGHLIGHT: We propose an optimization framework for finding an \emph{optimal stealthy attack} for different measures of attack cost.

194, TITLE: Semismooth Newton Algorithm for Efficient Projections onto $\ell_{1, \infty}$-norm Ball
https://proceedings.icml.cc/static/paper_files/icml/2020/1238-Paper.pdf
AUTHORS: Dejun Chu, Changshui Zhang, Shiliang Sun, Qing Tao
HIGHLIGHT: In this paper, we propose an efficient algorithm for Euclidean projection onto $\ell_{1, \infty}$-norm ball.

195, TITLE: Influenza Forecasting Framework based on Gaussian Processes
https://proceedings.icml.cc/static/paper_files/icml/2020/1239-Paper.pdf
AUTHORS: Christoph Zimmer, Reza Yaesoubi
HIGHLIGHT: Here, we propose a new framework based on Gaussian process (GP) for seasonal epidemics forecasting and demonstrate its capability on the CDC reference data on influenza like illness: our framework leads to accurate forecasts with small but reliable uncertainty estimation.

196, TITLE: Unique Properties of Wide Minima in Deep Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/1243-Paper.pdf
AUTHORS: Rotem Mulayoff, Tomer Michaeli
HIGHLIGHT: In this paper, we characterize the wide minima in linear neural networks trained with a quadratic loss.

197, TITLE: Does the Markov Decision Process Fit the Data: Testing for the Markov Property in Sequential Decision Making
https://proceedings.icml.cc/static/paper_files/icml/2020/1244-Paper.pdf
AUTHORS: Chengchun Shi, Runzhe Wan, Rui Song, Wenbin Lu, Ling Leng
HIGHLIGHT: In this paper, we propose a novel Forward-Backward Learning procedure to test MA in sequential decision making.

198, TITLE:	LTF: A Label Transformation Framework for Correcting Label Shift
https://proceedings.icml.cc/static/paper_files/icml/2020/1262-Paper.pdf
AUTHORS:	Jiaxian Guo, Mingming Gong, Tongliang Liu, Kun Zhang, Dacheng Tao
HIGHLIGHT:	In this paper, we propose an end-to-end Label Transformation Framework (LTF) for correcting label shift, which implicitly models the shift of P_Y and the conditional distribution $P\_{X|Y}$ using neural networks.

199, TITLE:	Divide, Conquer, and Combine: a New Inference Strategy for Probabilistic Programs with Stochastic Support
https://proceedings.icml.cc/static/paper_files/icml/2020/1272-Paper.pdf
AUTHORS:	Yuan Zhou, Hongseok Yang, Yee Whye Teh, Tom Rainforth
HIGHLIGHT:	To address this, we introduce a new inference framework: Divide, Conquer, and Combine, which remains efficient for such models, and show how it can be implemented as an automated and general-purpose PPS inference engine.

200, TITLE:	Duality in RKHSs with Infinite Dimensional Outputs: Application to Robust Losses
https://proceedings.icml.cc/static/paper_files/icml/2020/1279-Paper.pdf
AUTHORS:	Pierre Laforgue, Alex Lambert, Luc Brogat-Motte, Florence d'Alche-Buc
HIGHLIGHT:	To overcome this limitation, this paper develops a duality approach that allows to solve OVK machines for a wide range of loss functions.

201, TITLE:	Causal Effect Estimation and Optimal Dose Suggestions in Mobile Health
https://proceedings.icml.cc/static/paper_files/icml/2020/1297-Paper.pdf
AUTHORS:	Liangyu Zhu, Wenbin Lu, Rui Song
HIGHLIGHT:	In this article, we propose novel structural nested models to estimate causal effects of continuous treatments based on mobile health data.

202, TITLE:	Towards Understanding the Dynamics of the First-Order Adversaries
https://proceedings.icml.cc/static/paper_files/icml/2020/1310-Paper.pdf
AUTHORS:	Zhun Deng, Hangfeng He, Jiaoyang Huang, Weijie Su
HIGHLIGHT:	In this paper, we analyze the dynamics of the maximization step towards understanding the experimentally observed effectiveness of this defense mechanism.

203, TITLE:	Interpreting Robust Optimization via Adversarial Influence Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/1313-Paper.pdf
AUTHORS:	Zhun Deng, Cynthia Dwork, Jialiang Wang, Linjun Zhang
HIGHLIGHT:	In this paper, inspired by the influence function in robust statistics, we introduce the Adversarial Influence Function (AIF) as a tool to investigate the solution produced by robust optimization.

204, TITLE:	Multilinear Latent Conditioning for Generating Unseen Attribute Combinations
https://proceedings.icml.cc/static/paper_files/icml/2020/1314-Paper.pdf
AUTHORS:	Markos Georgopoulos, Grigorios Chrysos, Yannis Panagakis, Maja Pantic
HIGHLIGHT:	To this end, we extend the cVAE by introducing a multilinear latent conditioning framework.

205, TITLE:	No-Regret Exploration in Goal-Oriented Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1315-Paper.pdf
AUTHORS:	Jean Tarbouriech, Evrard Garcelon, Michal Valko, Matteo Pirotta, Alessandro Lazaric
HIGHLIGHT:	In this paper, we study the general SSP problem with no assumption on its dynamics (some policies may actually never reach the goal).

206, TITLE:	OPtions as REsponses: Grounding behavioural hierarchies in multi-agent reinforcement learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1319-Paper.pdf
AUTHORS:	Alexander Vezhnevets, Yuhuai Wu, Maria Eckstein, Rémi Leblond, Joel Z Leibo
HIGHLIGHT:	This paper investigates generalisation in multi-agent games, where the generality of the agent can be evaluated by playing against opponents it hasn't seen during training.

207, TITLE:	Feature Noise Induces Loss Discrepancy Across Groups
https://proceedings.icml.cc/static/paper_files/icml/2020/1320-Paper.pdf
AUTHORS:	Fereshte Khani, Percy Liang
HIGHLIGHT:	In this work, we point to a more subtle source of loss discrepancy---feature noise.

208, TITLE:	Reinforcement Learning for Molecular Design Guided by Quantum Mechanics

https://proceedings.icml.cc/static/paper_files/icml/2020/1323-Paper.pdf
AUTHORS: Gregor Simm, Robert Pinsler, Jose Miguel Hernandez-Lobato
HIGHLIGHT: To address this, we present a novel RL formulation for molecular design in 3D space, thereby extending the class of molecules that can be built.

209, TITLE: Small-GAN: Speeding up GAN Training using Core-Sets
https://proceedings.icml.cc/static/paper_files/icml/2020/1324-Paper.pdf
AUTHORS: Samrath Sinha, Han Zhang, Anirudh Goyal, Yoshua Bengio, Hugo Larochelle, Augustus Odena
HIGHLIGHT: Thus, it would be nice if there were some trick by which we could generate batches that were effectively big though small in practice. In this work, we propose such a trick, inspired by the use of Coreset-selection in active learning.

210, TITLE: Conditional gradient methods for stochastically constrained convex minimization
https://proceedings.icml.cc/static/paper_files/icml/2020/1343-Paper.pdf
AUTHORS: Maria-Luiza Vladarean, Ahmet Alacaoglu, Ya-Ping Hsieh, Volkan Cevher
HIGHLIGHT: We propose two novel conditional gradient-based methods for solving structured stochastic convex optimization problems with a large number of linear constraints.

211, TITLE: Undirected Graphical Models as Approximate Posteriors
https://proceedings.icml.cc/static/paper_files/icml/2020/1354-Paper.pdf
AUTHORS: Arash Vahdat, Evgeny Andriyash, William Macready
HIGHLIGHT: We develop an efficient method to train undirected approximate posteriors by showing that the gradient of the training objective with respect to the parameters of the undirected posterior can be computed by backpropagation through Markov chain Monte Carlo updates.

212, TITLE: Dynamics of Deep Neural Networks and Neural Tangent Hierarchy
https://proceedings.icml.cc/static/paper_files/icml/2020/1356-Paper.pdf
AUTHORS: Jiaoyang Huang, Horng-Tzer Yau
HIGHLIGHT: In the current paper, we study the dynamic of the NTK for finite width deep fully-connected neural networks.

213, TITLE: Measuring Non-Expert Comprehension of Machine Learning Fairness Metrics
https://proceedings.icml.cc/static/paper_files/icml/2020/1357-Paper.pdf
AUTHORS: Debjani Saha, Candice Schumann, Duncan McElfresh, John Dickerson, Michelle Mazurek, Michael Tschantz
HIGHLIGHT: We take initial steps toward bridging this gap between ML researchers and the public, by addressing the question: does a lay audience understand a basic definition of ML fairness?

214, TITLE: Encoding Musical Style with Transformer Autoencoders
https://proceedings.icml.cc/static/paper_files/icml/2020/1363-Paper.pdf
AUTHORS: Kristy Choi, Curtis Hawthorne, Ian Simon, Monica Dinculescu, Jesse Engel
HIGHLIGHT: In this work, we present the Transformer autoencoder, which aggregates encodings of the input data across time to obtain a global representation of style from a given performance.

215, TITLE: Min-Max Optimization without Gradients: Convergence and Applications to Black-Box Evasion and Poisoning Attacks
https://proceedings.icml.cc/static/paper_files/icml/2020/1365-Paper.pdf
AUTHORS: Sijia Liu, Songtao Lu, Xiangyi Chen, Yao Feng, Kaidi Xu, Abdullah Al-Dujaili, Mingyi Hong, Una-May O'Reilly
HIGHLIGHT: In this paper, we study the problem of constrained min-max optimization in a black-box setting, where the desired optimizer cannot access the gradients of the objective function but may query its values.

216, TITLE: ConQUR: Mitigating Delusional Bias in Deep Q-Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1373-Paper.pdf
AUTHORS: DiJia Su, Jayden Ooi, Tyler Lu, Dale Schuurmans, Craig Boutilier
HIGHLIGHT: In this paper, we develop efficient methods to mitigate delusional bias by training Q-approximators with labels that are "consistent" with the underlying greedy policy class.

217, TITLE: Self-Modulating Nonparametric Event-Tensor Factorization
https://proceedings.icml.cc/static/paper_files/icml/2020/1382-Paper.pdf
AUTHORS: Zheng Wang, Xinqi Chu, Shandian Zhe
HIGHLIGHT: To overcome these limitations, we propose a self-modulating nonparametric Bayesian factorization model.

218, TITLE: Extreme Multi-label Classification from Aggregated Labels
https://proceedings.icml.cc/static/paper_files/icml/2020/1388-Paper.pdf
AUTHORS: Yanyao Shen, Hsiang-Fu Yu, Sujay Sanghavi, Inderjit Dhillon
HIGHLIGHT: We develop a new and scalable algorithm to impute individual-sample labels from the group labels; this can be paired with any existing XMC method to solve the aggregated label problem.

219, TITLE: Full Law Identification In Graphical Models Of Missing Data: Completeness Results
https://proceedings.icml.cc/static/paper_files/icml/2020/1396-Paper.pdf
AUTHORS: Razieh Nabi, Rohit Bhattacharya, Ilya Shpitser
HIGHLIGHT: In this paper, we address the longstanding question of the characterization of models that are identifiable within this class of missing data distributions.

220, TITLE: Self-Attentive Associative Memory
https://proceedings.icml.cc/static/paper_files/icml/2020/1397-Paper.pdf
AUTHORS: Hung Le, Truyen Tran, Svetha Venkatesh
HIGHLIGHT: In this paper, we propose to separate the storage of individual experiences (item memory) and their occurring relationships (relational memory).

221, TITLE: Imputer: Sequence Modelling via Imputation and Dynamic Programming
https://proceedings.icml.cc/static/paper_files/icml/2020/1410-Paper.pdf
AUTHORS: William Chan, Chitwan Saharia, Geoffrey Hinton, Mohammad Norouzi, Navdeep Jaitly
HIGHLIGHT: This paper presents the Imputer, a neural sequence model that generates output sequences iteratively via imputations.

222, TITLE: Continuously Indexed Domain Adaptation
https://proceedings.icml.cc/static/paper_files/icml/2020/1417-Paper.pdf
AUTHORS: Hao Wang, Hao He, Dina Katabi
HIGHLIGHT: In this paper, we propose the first method for continuously indexed domain adaptation.

223, TITLE: Evolving Machine Learning Algorithms From Scratch
https://proceedings.icml.cc/static/paper_files/icml/2020/1418-Paper.pdf
AUTHORS: Esteban Real, Chen Liang, David So, Quoc Le
HIGHLIGHT: Our goal is to show that AutoML can go further: it is possible today to automatically discover complete machine learning algorithms just using basic mathematical operations as building blocks.

224, TITLE: Self-Attentive Hawkes Process
https://proceedings.icml.cc/static/paper_files/icml/2020/1421-Paper.pdf
AUTHORS: Qiang Zhang, Aldo Lipani, Omer Kirnap, Emine Yilmaz
HIGHLIGHT: This study attempts to fill the gap by designing a self-attentive Hawkes process (SAHP).

225, TITLE: On hyperparameter tuning in general clustering problemsm
https://proceedings.icml.cc/static/paper_files/icml/2020/1425-Paper.pdf
AUTHORS: Xinjie Fan, Yuguang Yue, Purnamrita Sarkar, Y. X. Rachel Wang
HIGHLIGHT: In this paper, we provide a overarching framework with provable guarantees for tuning hyperparameters in the above class of problems under two different models.

226, TITLE: Communication-Efficient Distributed Stochastic AUC Maximization with Deep Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/1428-Paper.pdf
AUTHORS: Zhishuai Guo, Mingrui Liu, Zhuoning Yuan, Li Shen, Wei Liu, Tianbao Yang
HIGHLIGHT: In this paper, we study distributed algorithms for large-scale AUC maximization with a deep neural network as a predictive model.

227, TITLE: Adaptive Region-Based Active Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1431-Paper.pdf
AUTHORS: Corinna Cortes, Giulia DeSalvo, Claudio Gentile, Mehryar Mohri, Ningshan Zhang
HIGHLIGHT: We present a new active learning algorithm that adaptively partitions the input space into a finite number of regions, and subsequently seeks a distinct predictor for each region, while actively requesting labels.

228, TITLE: Robust Outlier Arm Identification
https://proceedings.icml.cc/static/paper_files/icml/2020/1432-Paper.pdf

AUTHORS: Yinglun Zhu, Sumeet Katariya, Robert Nowak
HIGHLIGHT: We propose two computationally efficient delta-PAC algorithms for ROAI, which includes the first UCB-style algorithm for outlier detection, and derive upper bounds on their sample complexity.

229, TITLE: Provably Efficient Exploration in Policy Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/1438-Paper.pdf
AUTHORS: Qi Cai, Zhuoran Yang, Chi Jin, Zhaoran Wang
HIGHLIGHT: To bridge such a gap, this paper proposes an Optimistic variant of the Proximal Policy Optimization algorithm (OPPO), which follows an "optimistic version" of the policy gradient direction.

230, TITLE: Striving for simplicity and performance in off-policy DRL: Output Normalization and Non-Uniform Sampling
https://proceedings.icml.cc/static/paper_files/icml/2020/1451-Paper.pdf
AUTHORS: Che Wang, Yanqiu Wu, Quan Vuong, Keith Ross
HIGHLIGHT: With this insight, we propose a streamlined algorithm with a simple normalization scheme or with inverted gradients.

231, TITLE: Multidimensional Shape Constraints
https://proceedings.icml.cc/static/paper_files/icml/2020/1458-Paper.pdf
AUTHORS: Maya Gupta, Erez Louidor, Oleksandr Mangylov, Nobu Morioka, Tamann Narayan, Sen Zhao
HIGHLIGHT: We propose new multi-input shape constraints across four intuitive categories: complements, diminishers, dominance, and unimodality constraints.

232, TITLE: Fast Deterministic CUR Matrix Decomposition with Accuracy Assurance
https://proceedings.icml.cc/static/paper_files/icml/2020/1463-Paper.pdf
AUTHORS: Yasutoshi Ida, Sekitoshi Kanai, Yasuhiro Fujiwara, Tomoharu Iwata, Koh Takeuchi, Hisashi Kashima
HIGHLIGHT: This paper proposes a fast deterministic CUR matrix decomposition.

233, TITLE: Operation-Aware Soft Channel Pruning using Differentiable Masks
https://proceedings.icml.cc/static/paper_files/icml/2020/1485-Paper.pdf
AUTHORS: Minsoo Kang, Bohyung Han
HIGHLIGHT: We propose a simple but effective data-driven channel pruning algorithm, which compresses deep neural networks effectively by exploiting the characteristics of operations in a differentiable way.

234, TITLE: Normalized Loss Functions for Deep Learning with Noisy Labels
https://proceedings.icml.cc/static/paper_files/icml/2020/1502-Paper.pdf
AUTHORS: Xingjun Ma, Hanxun Huang, Yisen Wang, Simone Romano, Sarah Erfani, James Bailey
HIGHLIGHT: In this paper, we theoretically show by applying a simple normalization that: \emph{any loss can be made robust to noisy labels}.

235, TITLE: Learning Deep Kernels for Non-Parametric Two-Sample Tests
https://proceedings.icml.cc/static/paper_files/icml/2020/1503-Paper.pdf
AUTHORS: Feng Liu, Wenkai Xu, Jie Lu, Guangquan Zhang, Arthur Gretton, D.J. Sutherland
HIGHLIGHT: We propose a class of kernel-based two-sample tests, which aim to determine whether two sets of samples are drawn from the same distribution.

236, TITLE: DeBayes: a Bayesian method for debiasing network embeddings
https://proceedings.icml.cc/static/paper_files/icml/2020/1517-Paper.pdf
AUTHORS: Maarten Buyl, Tijl De Bie
HIGHLIGHT: We thus propose DeBayes: a conceptually elegant Bayesian method that is capable of learning debiased embeddings by using a biased prior.

237, TITLE: Principled learning method for Wasserstein distributionally robust optimization with local perturbations
https://proceedings.icml.cc/static/paper_files/icml/2020/1520-Paper.pdf
AUTHORS: Yongchan Kwon, Wonyoung Kim, Joong-Ho Won, Myunghee Cho Paik
HIGHLIGHT: In this paper, we propose a minimizer based on a novel approximation theorem and provide the corresponding risk consistency results.

238, TITLE: Low-Variance and Zero-Variance Baselines for Extensive-Form Games
https://proceedings.icml.cc/static/paper_files/icml/2020/1526-Paper.pdf
AUTHORS: Trevor Davis, Martin Schmid, Michael Bowling

HIGHLIGHT:　　　In this paper, we extend recent work that uses baseline estimates to reduce this variance.

239, TITLE:　　　Converging to Team-Maxmin Equilibria in Zero-Sum Multiplayer Games
https://proceedings.icml.cc/static/paper_files/icml/2020/1532-Paper.pdf
AUTHORS:　　　Youzhi Zhang, Bo An
HIGHLIGHT:　　　This paper focuses on computing Team-Maxmin Equilibria (TMEs), which is an important solution concept for zero-sum multiplayer games where players in a team having the same utility function play against an adversary independently.

240, TITLE:　　　Landscape Connectivity and Dropout Stability of SGD Solutions for Over-parameterized Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/1538-Paper.pdf
AUTHORS:　　　Alexander Shevchenko, Marco Mondelli
HIGHLIGHT:　　　In this paper, we shed light on this phenomenon: we show that the combination of stochastic gradient descent (SGD) and over-parameterization makes the landscape of multilayer neural networks approximately connected and thus more favorable to optimization.

241, TITLE:　　　Leveraging Frequency Analysis for Deep Fake Image Recognition
https://proceedings.icml.cc/static/paper_files/icml/2020/1539-Paper.pdf
AUTHORS:　　　Joel Frank, Thorsten Eisenhofer, Lea Schönherr, Dorothea Kolossa, Thorsten Holz, Asja Fischer
HIGHLIGHT:　　　This paper addresses this shortcoming and our results reveal, that in frequency space, GAN-generated images exhibit severe artifacts that can be easily identified.

242, TITLE:　　　Tails of Lipschitz Triangular Flows
https://proceedings.icml.cc/static/paper_files/icml/2020/1552-Paper.pdf
AUTHORS:　　　Priyank Jaini, Ivan Kobyzev, Yaoliang Yu, Marcus Brubaker
HIGHLIGHT:　　　We investigate the ability of popular flow models to capture tail-properties of a target density by studying the increasing triangular maps used in these flow methods acting on a tractable source density.

243, TITLE:　　　Deep Coordination Graphs
https://proceedings.icml.cc/static/paper_files/icml/2020/1557-Paper.pdf
AUTHORS:　　　Wendelin Boehmer, Vitaly Kurin, Shimon Whiteson
HIGHLIGHT:　　　This paper introduces the deep coordination graph (DCG) for collaborative multi-agent reinforcement learning.

244, TITLE:　　　Voice Separation with an Unknown Number of Multiple Speakers
https://proceedings.icml.cc/static/paper_files/icml/2020/1558-Paper.pdf
AUTHORS:　　　Eliya Nachmani, Yossi Adi, Lior Wolf
HIGHLIGHT:　　　We present a new method for separating a mixed audio sequence, in which multiple voices speak simultaneously.

245, TITLE:　　　Predicting Choice with Set-Dependent Aggregation
https://proceedings.icml.cc/static/paper_files/icml/2020/1559-Paper.pdf
AUTHORS:　　　Nir Rosenfeld, Kojin Oshiba, Yaron Singer
HIGHLIGHT:　　　Here we propose a learning framework for predicting choice that is accurate, versatile, and theoretically grounded.

246, TITLE:　　　Thompson Sampling Algorithms for Mean-Variance Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/1567-Paper.pdf
AUTHORS:　　　Qiuyu Zhu, Vincent Tan
HIGHLIGHT:　　　We develop Thompson Sampling-style algorithms for mean-variance MAB and provide comprehensive regret analyses for Gaussian and Bernoulli bandits with fewer assumptions.

247, TITLE:　　　Differentiable Likelihoods for Fast Inversion of 'Likelihood-Free' Dynamical Systems
https://proceedings.icml.cc/static/paper_files/icml/2020/1580-Paper.pdf
AUTHORS:　　　Hans Kersting, Nicholas Krämer, Martin Schiegg, Christian Daniel, Michael Schober, Philipp Hennig
HIGHLIGHT:　　　To address this shortcoming, we employ Gaussian ODE filtering (a probabilistic numerical method for ODEs) to construct a local Gaussian approximation to the likelihood.

248, TITLE:　　　Debiased Sinkhorn barycenters
https://proceedings.icml.cc/static/paper_files/icml/2020/1584-Paper.pdf
AUTHORS:　　　Hicham Janati, Marco Cuturi, Alexandre Gramfort

HIGHLIGHT: Here we show how this bias is tightly linked to the reference measure that defines the entropy regularizer and propose debiased Sinkhorn barycenters that preserve the best of worlds: fast Sinkhorn-like iterations without entropy smoothing.

249, TITLE: Double Trouble in Double Descent: Bias and Variance(s) in the Lazy Regime
https://proceedings.icml.cc/static/paper_files/icml/2020/1589-Paper.pdf
AUTHORS: Stéphane d'Ascoli, Maria Refinetti, Giulio Biroli, Florent Krzakala
HIGHLIGHT: In this work, we develop a quantitative theory for this phenomenon in the so-called lazy learning regime of neural networks, by considering the problem of learning a high-dimensional function with random features regression.

250, TITLE: Explore, Discover and Learn: Unsupervised Discovery of State-Covering Skills
https://proceedings.icml.cc/static/paper_files/icml/2020/1592-Paper.pdf
AUTHORS: Victor Campos, Alexander Trott, Caiming Xiong, Richard Socher, Xavier Giro-i-Nieto, Jordi Torres
HIGHLIGHT: In light of this, we propose \textit{Explore, Discover and Learn} (EDL), an alternative approach to information-theoretic skill discovery.

251, TITLE: Sparsified Linear Programming for Zero-Sum Equilibrium Finding
https://proceedings.icml.cc/static/paper_files/icml/2020/1597-Paper.pdf
AUTHORS: Brian Zhang, Tuomas Sandholm
HIGHLIGHT: In this paper we present a totally different approach to the problem, which is competitive and often orders of magnitude better than the prior state of the art.

252, TITLE: Extra-gradient with player sampling for faster convergence in n-player games
https://proceedings.icml.cc/static/paper_files/icml/2020/1599-Paper.pdf
AUTHORS: Samy Jelassi, Carles Domingo-Enrich, Damien Scieur, Arthur Mensch, Joan Bruna
HIGHLIGHT: In this paper, we analyse a new extra-gradient method for Nash equilibrium finding, that performs gradient extrapolations and updates on a random subset of players at each iteration.

253, TITLE: Entropy Minimization In Emergent Languages
https://proceedings.icml.cc/static/paper_files/icml/2020/1600-Paper.pdf
AUTHORS: Eugene Kharitonov, Rahma Chaabouni, Diane Bouchacourt, Marco Baroni
HIGHLIGHT: We investigate here the information-theoretic complexity of such languages, focusing on the basic two-agent, one-exchange setup.

254, TITLE: Spectral Clustering with Graph Neural Networks for Graph Pooling
https://proceedings.icml.cc/static/paper_files/icml/2020/1614-Paper.pdf
AUTHORS: Filippo Maria Bianchi, Daniele Grattarola, Cesare Alippi
HIGHLIGHT: In this paper, we propose a graph clustering approach that addresses these limitations of SC.

255, TITLE: VFlow: More Expressive Generative Flows with Variational Data Augmentation
https://proceedings.icml.cc/static/paper_files/icml/2020/1619-Paper.pdf
AUTHORS: Jianfei Chen, Cheng Lu, Biqi Chenli, Jun Zhu, Tian Tian
HIGHLIGHT: In this work, we study a previously overlooked constraint that all the intermediate representations must have the same dimensionality with the data due to invertibility, limiting the width of the network.

256, TITLE: Fully Parallel Hyperparameter Search: Reshaped Space-Filling
https://proceedings.icml.cc/static/paper_files/icml/2020/1620-Paper.pdf
AUTHORS: Marie-Liesse Cauwet, Camille Couprie, Julien Dehos, Pauline Luc, Jeremy Rapin, Morgane Riviere, Fabien Teytaud, Olivier Teytaud, Nicolas Usunier
HIGHLIGHT: Consequently, we introduce a new sampling approach based on the reshaping of the search distribution, and we show both theoretically and numerically that it leads to significant gains over random search.

257, TITLE: Discount Factor as a Regularizer in Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1623-Paper.pdf
AUTHORS: Ron Amit, Kamil Ciosek, Ron Meir
HIGHLIGHT: It is known that applying RL algorithms with a discount set lower than the evaluation discount factor can act as a regularizer, improving performance in the limited data regime. Yet the exact nature of this regularizer has not been investigated. In this work, we fill in this gap.

258, TITLE: On Learning Sets of Symmetric Elements
https://proceedings.icml.cc/static/paper_files/icml/2020/1625-Paper.pdf

AUTHORS: Haggai Maron, Or Litany, Gal Chechik, Ethan Fetaya
HIGHLIGHT: In this paper, we present a principled approach to learning sets of general symmetric elements.

259, TITLE: Non-convex Learning via Replica Exchange Stochastic Gradient MCMC
https://proceedings.icml.cc/static/paper_files/icml/2020/1632-Paper.pdf
AUTHORS: Wei Deng, Qi Feng, Liyao Gao, Faming Liang, Guang Lin
HIGHLIGHT: In this paper, we propose an adaptive replica exchange SG-MCMC (reSG-MCMC) to automatically correct the bias and study the corresponding properties.

260, TITLE: Learning Similarity Metrics for Numerical Simulations
https://proceedings.icml.cc/static/paper_files/icml/2020/1635-Paper.pdf
AUTHORS: Georg Kohl, Kiwon Um, Nils Thuerey
HIGHLIGHT: We propose a neural network-based approach that computes a stable and generalizing metric (LSiM) to compare data from a variety of numerical simulation sources.

261, TITLE: FR-Train: A mutual information-based approach to fair and robust training
https://proceedings.icml.cc/static/paper_files/icml/2020/1637-Paper.pdf
AUTHORS: Yuji Roh, Kangwook Lee, Steven Whang, Changho Suh
HIGHLIGHT: To fix this problem, we propose FR-Train, which holistically performs fair and robust model training.

262, TITLE: Real-Time Optimisation for Online Learning in Auctions
https://proceedings.icml.cc/static/paper_files/icml/2020/1640-Paper.pdf
AUTHORS: Lorenzo Croissant, Marc Abeille, Clément Calauzènes
HIGHLIGHT: In this paper, we provide the first algorithm for online learning of monopoly prices in online auctions whose update is constant in time and memory.

263, TITLE: Graph Random Neural Features for Distance-Preserving Graph Representations
https://proceedings.icml.cc/static/paper_files/icml/2020/1649-Paper.pdf
AUTHORS: Daniele Zambon, Cesare Alippi, Lorenzo Livi
HIGHLIGHT: We present Graph Random Neural Features (GRNF), a novel embedding method from graph-structured data to real vectors based on a family of graph neural networks.

264, TITLE: Modulating Surrogates for Bayesian Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/1651-Paper.pdf
AUTHORS: Erik Bodin, Markus Kaiser, Ieva Kazlauskaite, Zhenwen Dai, Neill Campbell, Carl Henrik Ek
HIGHLIGHT: We address this issue by proposing surrogate models that focus on the well-behaved structure in the objective function, which is informative for search, while ignoring detrimental structure that is challenging to model from few observations.

265, TITLE: Convolutional Kernel Networks for Graph-Structured Data
https://proceedings.icml.cc/static/paper_files/icml/2020/1656-Paper.pdf
AUTHORS: Dexiong Chen, Laurent Jacob, Julien Mairal
HIGHLIGHT: We introduce a family of multilayer graph kernels and establish new links between graph convolutional neural networks and kernel methods.

266, TITLE: Improving the Sample and Communication Complexity for Decentralized Non-Convex Optimization: Joint Gradient Estimation and Tracking
https://proceedings.icml.cc/static/paper_files/icml/2020/1657-Paper.pdf
AUTHORS: Haoran Sun, Songtao Lu, Mingyi Hong
HIGHLIGHT: In particular, we propose an algorithm named D-GET (decentralized gradient estimation and tracking), which jointly performs decentralized gradient estimation (which estimates the local gradient using a subset of local samples) {\it and} gradient tracking (which tracks the global full gradient using local estimates).

267, TITLE: Proper Network Interpretability Helps Adversarial Robustness in Classification
https://proceedings.icml.cc/static/paper_files/icml/2020/1661-Paper.pdf
AUTHORS: Akhilan Boopathy, Sijia Liu, Gaoyuan Zhang, Cynthia Liu, Pin-Yu Chen, Shiyu Chang, Luca Daniel
HIGHLIGHT: In this paper, we theoretically show that with a proper measurement of interpretation, it is actually difficult to prevent prediction-evasion adversarial attacks from causing interpretability discrepancy, as confirmed by experiments on MNIST, CIFAR-10 and Restricted ImageNet.

268, TITLE: Generalization Guarantees for Sparse Kernel Approximation with Entropic Optimal Features

https://proceedings.icml.cc/static/paper_files/icml/2020/1662-Paper.pdf
AUTHORS: Liang Ding, Rui Tuo, Shahin Shahrampour
HIGHLIGHT: In this paper, in lieu of commonly used kernel expansion with respect to N inputs, we develop a novel optimal design maximizing the entropy among kernel features.

269, TITLE: Understanding the Impact of Model Incoherence on Convergence of Incremental SGD with Random Reshuffle
https://proceedings.icml.cc/static/paper_files/icml/2020/1666-Paper.pdf
AUTHORS: Shaocong Ma, Yi Zhou
HIGHLIGHT: In this work, we introduce model incoherence to characterize the diversity of model characteristics and study its impact on convergence of SGD with random reshuffle \shaocong{under weak strong convexity}.

270, TITLE: Learning Opinions in Social Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/1670-Paper.pdf
AUTHORS: Vincent Conitzer, Debmalya Panigrahi, Hanrui Zhang
HIGHLIGHT: We study the problem of learning opinions in social networks.

271, TITLE: Latent Variable Modelling with Hyperbolic Normalizing Flows
https://proceedings.icml.cc/static/paper_files/icml/2020/1674-Paper.pdf
AUTHORS: Joey Bose, Ariella Smofsky, Renjie Liao, Prakash Panangaden, Will Hamilton
HIGHLIGHT: To address this fundamental limitation, we present the first extension of normalizing flows to hyperbolic spaces.

272, TITLE: StochasticRank: Global Optimization of Scale-Free Discrete Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/1680-Paper.pdf
AUTHORS: Aleksei Ustimenko, Liudmila Prokhorenkova
HIGHLIGHT: In this paper, we introduce a powerful and efficient framework for the direct optimization of ranking metrics.

273, TITLE: Working Memory Graphs
https://proceedings.icml.cc/static/paper_files/icml/2020/1696-Paper.pdf
AUTHORS: Ricky Loynd, Roland Fernandez, Asli Celikyilmaz, Adith Swaminathan, Matthew Hausknecht
HIGHLIGHT: We present the Working Memory Graph (WMG), an agent that employs multi-head self-attention to reason over a dynamic set of vectors representing observed and recurrent state.

274, TITLE: Learning to Combine Top-Down and Bottom-Up Signals in Recurrent Neural Networks with Attention over Modules
https://proceedings.icml.cc/static/paper_files/icml/2020/1698-Paper.pdf
AUTHORS: Sarthak Mittal, Alex Lamb, Anirudh Goyal, Vikram Voleti, Murray Shanahan, Guillaume Lajoie, Michael Mozer, Yoshua Bengio
HIGHLIGHT: We explore deep recurrent neural net architectures in which bottom-up and top-down signals are dynamically combined using attention.

275, TITLE: Spread Divergence
https://proceedings.icml.cc/static/paper_files/icml/2020/1716-Paper.pdf
AUTHORS: Mingtian Zhang, Peter Hayes, Thomas Bird, Raza Habib, David Barber
HIGHLIGHT: We define a spread divergence $\sdiv{p}{q}$ on modified p and q and describe sufficient conditions for the existence of such a divergence. We demonstrate how to maximize the discriminatory power of a given divergence by parameterizing and learning the spread.

276, TITLE: Optimizing Black-box Metrics with Adaptive Surrogates
https://proceedings.icml.cc/static/paper_files/icml/2020/1724-Paper.pdf
AUTHORS: Qijia Jiang, Olaoluwa Adigun, Harikrishna Narasimhan, Mahdi Milani Fard, Maya Gupta
HIGHLIGHT: We address the problem of training models with black-box and hard-to-optimize metrics by expressing the metric as a monotonic function of a small number of easy-to-optimize surrogates.

277, TITLE: Domain Adaptive Imitation Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1732-Paper.pdf
AUTHORS: Kuno Kim, Yihong Gu, Jiaming Song, Shengjia Zhao, Stefano Ermon
HIGHLIGHT: In this work, we formalize the Domain Adaptive Imitation Learning (DAIL) problem - a unified framework for imitation learning in the presence of viewpoint, embodiment, and/or dynamics mismatch.

278, TITLE: A general recurrent state space framework for modeling neural dynamics during decision-making

https://proceedings.icml.cc/static/paper_files/icml/2020/1733-Paper.pdf
AUTHORS: David Zoltowski, Jonathan Pillow, Scott Linderman
HIGHLIGHT: Here we propose a general framework for modeling neural activity during decision-making.

279, TITLE: An Imitation Learning Approach for Cache Replacement
https://proceedings.icml.cc/static/paper_files/icml/2020/1735-Paper.pdf
AUTHORS: Evan Liu, Milad Hashemi, Kevin Swersky, Parthasarathy Ranganathan, Junwhan Ahn
HIGHLIGHT: In contrast, we propose an imitation learning approach to automatically learn cache access patterns by leveraging Belady's, an oracle policy that computes the optimal eviction decision given the future cache accesses.

280, TITLE: Revisiting Training Strategies and Generalization Performance in Deep Metric Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1739-Paper.pdf
AUTHORS: Karsten Roth, Timo Milbich, Samrath Sinha, Prateek Gupta, Bjorn Ommer, Joseph Paul Cohen
HIGHLIGHT: Exploiting these insights, we propose a simple, yet effective, training regularization to reliably boost the performance of ranking-based DML models on various standard benchmark datasets; code and a publicly accessible WandB-repo are available at https://github.com/Confusezius/RevisitingDeepMetricLearningPyTorch.

281, TITLE: Temporal Phenotyping using Deep Predictive Clustering of Disease Progression
https://proceedings.icml.cc/static/paper_files/icml/2020/1742-Paper.pdf
AUTHORS: Changhee Lee, Mihaela van der Schaar
HIGHLIGHT: In this paper, we develop a deep learning approach for clustering time-series data, where each cluster comprises patients who share similar future outcomes of interest (e.g., adverse events, the onset of comorbidities).

282, TITLE: Countering Language Drift with Seeded Iterated Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1746-Paper.pdf
AUTHORS: Yuchen Lu, Soumye Singhal, Florian Strub, Aaron Courville, Olivier Pietquin
HIGHLIGHT: In this paper, we propose a generic approach to counter language drift by using iterated learning.

283, TITLE: Stochastic Gauss-Newton Algorithms for Nonconvex Compositional Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/1773-Paper.pdf
AUTHORS: Quoc Tran-Dinh, Nhan Pham, Lam Nguyen
HIGHLIGHT: We develop two new stochastic Gauss-Newton algorithms for solving a class of stochastic non-convex compositional optimization problems frequently arising in practice.

284, TITLE: Strategyproof Mean Estimation from Multiple-Choice Questions
https://proceedings.icml.cc/static/paper_files/icml/2020/1775-Paper.pdf
AUTHORS: Anson Kahng, Gregory Kehne, Ariel Procaccia
HIGHLIGHT: Given n values possessed by n agents, we study the problem of estimating the mean by truthfully eliciting agents' answers to multiple-choice questions about their values.

285, TITLE: Sequential Cooperative Bayesian Inference
https://proceedings.icml.cc/static/paper_files/icml/2020/1777-Paper.pdf
AUTHORS: Junqi Wang, Pei Wang, Patrick Shafto
HIGHLIGHT: We develop novel approaches analyzing consistency, rate of convergence and stability of Sequential Cooperative Bayesian Inference (SCBI).

286, TITLE: Spectral Graph Matching and Regularized Quadratic Relaxations: Algorithm and Theory
https://proceedings.icml.cc/static/paper_files/icml/2020/1778-Paper.pdf
AUTHORS: Zhou Fan, Cheng Mao, Yihong Wu, Jiaming Xu
HIGHLIGHT: To tackle this task, we propose a spectral method, GRAph Matching by Pairwise eigen-Alignments (GRAMPA), which first constructs a similarity matrix as a weighted sum of outer products between all pairs of eigenvectors of the two graphs, and then outputs a matching by a simple rounding procedure.

287, TITLE: Zeno++: Robust Fully Asynchronous SGD
https://proceedings.icml.cc/static/paper_files/icml/2020/1780-Paper.pdf
AUTHORS: Cong Xie, Sanmi Koyejo, Indranil Gupta
HIGHLIGHT: We propose Zeno++, a new robust asynchronous Stochastic Gradient Descent(SGD) procedure, intended to tolerate Byzantine failures of workers.

288, TITLE: Network Pruning by Greedy Subnetwork Selection

https://proceedings.icml.cc/static/paper_files/icml/2020/1781-Paper.pdf
AUTHORS: Mao Ye, Chengyue Gong, Lizhen Nie, Denny Zhou, Adam Klivans, Qiang Liu
HIGHLIGHT: In this work, we study a greedy forward selection approach following the opposite direction, which starts from an empty network, and gradually adds good neurons from the large network.

289, TITLE: Logarithmic Regret for Learning Linear Quadratic Regulators Efficiently
https://proceedings.icml.cc/static/paper_files/icml/2020/1802-Paper.pdf
AUTHORS: Asaf Cassel, Alon Cohen, Tomer Koren
HIGHLIGHT: We present new efficient algorithms that achieve, perhaps surprisingly,regret that scales only (poly-)logarithmically with the number of steps, in two scenarios: when only the state transition matrix A is unknown, and when only the state-action transition matrix B is unknown and the optimal policy satisfies a certain non-degeneracy condition.

290, TITLE: Hierarchical Verification for Adversarial Robustness
https://proceedings.icml.cc/static/paper_files/icml/2020/1808-Paper.pdf
AUTHORS: Cong Han Lim, Raquel Urtasun, Ersin Yumer
HIGHLIGHT: We introduce a new framework for the exact pointwise lp robustness verification problem that exploits the layer-wise geometric structure of deep feed-forward networks with rectified linear activations (ReLU networks).

291, TITLE: BINOCULARS for efficient, nonmyopic sequential experimental design
https://proceedings.icml.cc/static/paper_files/icml/2020/1809-Paper.pdf
AUTHORS: Shali Jiang, Henry Chai, Javier Gonzalez, Roman Garnett
HIGHLIGHT: We present BINOCULARS: Batch-Informed NOnmyopic Choices, Using Long-horizons for Adaptive, Rapid SED, a general framework for deriving efficient, nonmyopic approximations to the optimal experimental policy.

292, TITLE: On the Global Optimality of Model-Agnostic Meta-Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1816-Paper.pdf
AUTHORS: Lingxiao Wang, Qi Cai, Zhuoran Yang, Zhaoran Wang
HIGHLIGHT: To bridge such a gap between theory and practice, we characterize the optimality gap of the stationary points attained by MAML for both reinforcement learning and supervised learning, where both the inner- and outer-level problems are solved via first-order optimization methods.

293, TITLE: Breaking the Curse of Many Agents: Provable Mean Embedding Q-Iteration for Mean-Field Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1819-Paper.pdf
AUTHORS: Lingxiao Wang, Zhuoran Yang, Zhaoran Wang
HIGHLIGHT: In this paper, we exploit the symmetry of agents in MARL.

294, TITLE: Learning with Bounded Instance- and Label-dependent Label Noise
https://proceedings.icml.cc/static/paper_files/icml/2020/1820-Paper.pdf
AUTHORS: Jiacheng Cheng, Tongliang Liu, Kotagiri Ramamohanarao, Dacheng Tao
HIGHLIGHT: In this paper, we focus on Bounded Instance- and Label-dependent label Noise (BILN), a particular case of ILN where the label noise rates---the probabilities that the true labels of examples flip into the corrupted ones---have upper bound less than 1.

295, TITLE: Transparency Promotion with Model-Agnostic Linear Competitors
https://proceedings.icml.cc/static/paper_files/icml/2020/1828-Paper.pdf
AUTHORS: Hassan Rafique, Tong Wang, Qihang Lin, Arshia Singhani
HIGHLIGHT: We propose a novel type of hybrid model for multi-class classification, which utilizes competing linear models to collaborate with an existing black-box model, promoting transparency in the decision-making process.

296, TITLE: Learning Mixtures of Graphs from Epidemic Cascades
https://proceedings.icml.cc/static/paper_files/icml/2020/1829-Paper.pdf
AUTHORS: Jessica Hoffmann, Soumya Basu, Surbhi Goel, Constantine Caramanis
HIGHLIGHT: We consider the problem of learning the weighted edges of a balanced mixture of two undirected graphs from epidemic cascades.

297, TITLE: Implicit differentiation of Lasso-type models for hyperparameter optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/1831-Paper.pdf
AUTHORS: Quentin Bertrand, Quentin Klopfenstein, Mathieu Blondel, Samuel Vaiter, Alexandre Gramfort, Joseph Salmon
HIGHLIGHT: This work introduces an efficient implicit differentiation algorithm, without matrix inversion, tailored for Lasso-type problems.

298, TITLE: Latent Space Factorisation and Manipulation via Matrix Subspace Projection
https://proceedings.icml.cc/static/paper_files/icml/2020/1832-Paper.pdf
AUTHORS: Xiao Li, Chenghua Lin, Ruizhe Li, Chaozheng Wang, Frank Guerin
HIGHLIGHT: We tackle the problem disentangling the latent space of an autoencoder in order to separate labelled attribute information from other characteristic information.

299, TITLE: Active World Model Learning in Agent-rich Environments with Progress Curiosity
https://proceedings.icml.cc/static/paper_files/icml/2020/1837-Paper.pdf
AUTHORS: Kuno Kim, Megumi Sano, Julian De Freitas, Nick Haber, Daniel Yamins
HIGHLIGHT: In this work, we study how to design such a curiosity-driven Active World Model Learning (AWML) system.

300, TITLE: SDE-Net: Equipping Deep Neural Networks with Uncertainty Estimates
https://proceedings.icml.cc/static/paper_files/icml/2020/1840-Paper.pdf
AUTHORS: Lingkai Kong, Jimeng Sun, Chao Zhang
HIGHLIGHT: We propose a new method for quantifying uncertainties of DNNs from a dynamical system perspective.

301, TITLE: GANs May Have No Nash Equilibria
https://proceedings.icml.cc/static/paper_files/icml/2020/1847-Paper.pdf
AUTHORS: Farzan Farnia, Asuman Ozdaglar
HIGHLIGHT: In this work, we show through several theoretical and numerical results that indeed GAN zero-sum games may not have any Nash equilibria.

302, TITLE: Gradient Temporal-Difference Learning with Regularized Corrections
https://proceedings.icml.cc/static/paper_files/icml/2020/1857-Paper.pdf
AUTHORS: Sina Ghiassian, Andrew Patterson, Shivam Garg, Dhawal Gutpa, Adam White, Martha White
HIGHLIGHT: In this paper, we introduce a new method called TD with Regularized Corrections (TDRC), that attempts to balance ease of use, soundness, and performance.

303, TITLE: Online mirror descent and dual averaging: keeping pace in the dynamic case
https://proceedings.icml.cc/static/paper_files/icml/2020/1863-Paper.pdf
AUTHORS: Huang Fang, Victor Sanches Portella, Nick Harvey, Michael Friedlander
HIGHLIGHT: In this paper, we modify the OMD algorithm by a simple technique that we call stabilization.

304, TITLE: Choice Set Optimization Under Discrete Choice Models of Group Decisions
https://proceedings.icml.cc/static/paper_files/icml/2020/1865-Paper.pdf
AUTHORS: Kiran Tomlinson, Austin Benson
HIGHLIGHT: Here, we use discrete choice modeling to develop an optimization framework of such interventions for several problems of group influence, including maximizing agreement or disagreement and promoting a particular choice.

305, TITLE: Complexity of Finding Stationary Points of Nonconvex Nonsmooth Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/1881-Paper.pdf
AUTHORS: Jingzhao Zhang, Hongzhou Lin, Stefanie Jegelka, Suvrit Sra, Ali Jadbabaie
HIGHLIGHT: Therefore, we introduce the notion of (delta, epsilon)-stationarity, a generalization that allows for a point to be within distance delta of an epsilon-stationary point and reduces to epsilon-stationarity for smooth functions.

306, TITLE: Multi-Agent Routing Value Iteration Network
https://proceedings.icml.cc/static/paper_files/icml/2020/1891-Paper.pdf
AUTHORS: Quinlan Sykora, Mengye Ren, Raquel Urtasun
HIGHLIGHT: Whereas traditional methods are not designed for realistic environments such as sparse connectivity and unknown traffics and are often slow in runtime; in this paper, we propose a graph neural network based model that is able to perform multiagent routing in a sparsely connected graph with dynamically changing traffic conditions, outperforming existing methods.

307, TITLE: Adversarial Attacks on Copyright Detection Systems
https://proceedings.icml.cc/static/paper_files/icml/2020/1894-Paper.pdf
AUTHORS: Parsa Saadatpanah, Ali Shafahi, Tom Goldstein
HIGHLIGHT: This paper discusses how industrial copyright detection tools, which serve a central role on the web, are susceptible to adversarial attacks.

308, TITLE: Differentiating through the Fréchet Mean
https://proceedings.icml.cc/static/paper_files/icml/2020/1896-Paper.pdf
AUTHORS: Aaron Lou, Isay Katsman, Qingxuan Jiang, Serge Belongie, Ser Nam Lim, Christopher De Sa
HIGHLIGHT: In this paper, we show how to differentiate through the Fréchet mean for arbitrary Riemannian manifolds.

309, TITLE: Online Learning for Active Cache Synchronization
https://proceedings.icml.cc/static/paper_files/icml/2020/1917-Paper.pdf
AUTHORS: Andrey Kolobov, Sebastien Bubeck, Julian Zimmert
HIGHLIGHT: We present MirrorSync, an online learning algorithm for synchronization bandits, establish an adversarial regret of $O(T^{2/3})$ for it, and show how to make it efficient in practice.

310, TITLE: PoKED: A Semi-Supervised System for Word Sense Disambiguation
https://proceedings.icml.cc/static/paper_files/icml/2020/1929-Paper.pdf
AUTHORS: Feng Wei
HIGHLIGHT: In this paper, we propose a semi-supervised neural system, Position-wise Orthogonal Knowledge-Enhanced Disambiguator (PoKED), which allows attention-driven, long-range dependency modeling for word sense disambiguation tasks.

311, TITLE: A Finite-Time Analysis of Q-Learning with Neural Network Function Approximation
https://proceedings.icml.cc/static/paper_files/icml/2020/1930-Paper.pdf
AUTHORS: Pan Xu, Quanquan Gu
HIGHLIGHT: In this paper, we present a finite-time analysis of a neural Q-learning algorithm, where the data are generated from a Markov decision process and the action-value function is approximated by a deep ReLU neural network.

312, TITLE: Understanding and Stabilizing GANs' Training Dynamics Using Control Theory
https://proceedings.icml.cc/static/paper_files/icml/2020/1933-Paper.pdf
AUTHORS: Kun Xu, Chongxuan Li, Jun Zhu, Bo Zhang
HIGHLIGHT: To this end, we present a conceptually novel perspective from control theory to directly model the dynamics of GANs in the frequency domain and provide simple yet effective methods to stabilize GAN's training.

313, TITLE: Scalable Nearest Neighbor Search for Optimal Transport
https://proceedings.icml.cc/static/paper_files/icml/2020/1937-Paper.pdf
AUTHORS: Arturs Backurs, Yihe Dong, Piotr Indyk, Ilya Razenshteyn, Tal Wagner
HIGHLIGHT: In this work we introduce Flowtree, a fast and accurate approximation algorithm for the Wasserstein-1 distance.

314, TITLE: Supervised learning: no loss no cry
https://proceedings.icml.cc/static/paper_files/icml/2020/1939-Paper.pdf
AUTHORS: Richard Nock, Aditya Menon
HIGHLIGHT: In this paper, we revisit the {\sc SLIsotron} algorithm of Kakade et al. (2011) through a novel lens, derive a generalisation based on Bregman divergences, and show how it provides a principled procedure for learning the loss.

315, TITLE: Label-Noise Robust Domain Adaptation
https://proceedings.icml.cc/static/paper_files/icml/2020/1942-Paper.pdf
AUTHORS: Xiyu Yu, Tongliang Liu, Mingming Gong, Kun Zhang, Kayhan Batmanghelich, Dacheng Tao
HIGHLIGHT: Focusing on the generalized target shift scenario, where both label distribution P_Y and the class-conditional distribution $P_{X|Y}$ can change, we propose a new Denoising Conditional Invariant Component (DCIC) framework, which provably ensures (1) extracting invariant representations given examples with noisy labels in the source domain and unlabeled examples in the target domain and (2) estimating the label distribution in the target domain with no bias.

316, TITLE: Description Based Text Classification with Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/1944-Paper.pdf
AUTHORS: Wei Wu, Duo Chai, Qinghong Han, Fei Wu, Jiwei Li
HIGHLIGHT: Inspired by the current trend of formalizing NLP problems as question answering tasks, we propose a new framework for text classification, in which each category label is associated with a category description.

317, TITLE: Bandits for BMO Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/1959-Paper.pdf
AUTHORS: Tianyu Wang, Cynthia Rudin
HIGHLIGHT: We study the bandit problem where the underlying expected reward is a Bounded Mean Oscillation (BMO) function.

318, TITLE: Cost-effectively Identifying Causal Effect When Only Response Variable Observable
https://proceedings.icml.cc/static/paper_files/icml/2020/1967-Paper.pdf
AUTHORS: Tian-Zuo Wang, Xi-Zhu Wu, Sheng-Jun Huang, Zhi-Hua Zhou
HIGHLIGHT: In this paper, we propose a novel solution for this challenging task where only the response variable is observable under intervention.

319, TITLE: Learning with Multiple Complementary Labels
https://proceedings.icml.cc/static/paper_files/icml/2020/1969-Paper.pdf
AUTHORS: LEI FENG, Takuo Kaneko, Bo Han, Gang Niu, Bo An, Masashi Sugiyama
HIGHLIGHT: In this paper, we propose a novel problem setting to allow MCLs for each example and two ways for learning with MCLs.

320, TITLE: Contrastive Multi-View Representation Learning on Graphs
https://proceedings.icml.cc/static/paper_files/icml/2020/1971-Paper.pdf
AUTHORS: Kaveh Hassani, Amir Hosein Khasahmadi
HIGHLIGHT: We introduce a self-supervised approach for learning node and graph level representations by contrasting structural views of graphs.

321, TITLE: A Chance-Constrained Generative Framework for Sequence Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/1976-Paper.pdf
AUTHORS: Xianggen Liu, Jian Peng, Qiang Liu, Sen Song
HIGHLIGHT: In this paper, we formulate the sequence optimization task as a chance-constrained sampling problem.

322, TITLE: dS^2LBI: Exploring Structural Sparsity on Deep Network via Differential Inclusion Paths
https://proceedings.icml.cc/static/paper_files/icml/2020/1977-Paper.pdf
AUTHORS: Yanwei Fu, Chen Liu, Donghao Li, Xinwei Sun, Jinshan ZENG, Yuan Yao
HIGHLIGHT: In this paper, instead of pruning or distilling over-parameterized models to compressive ones, we propose a new approach based on differential inclusions of inverse scale spaces.

323, TITLE: Sparse Subspace Clustering with Entropy-Norm
https://proceedings.icml.cc/static/paper_files/icml/2020/1982-Paper.pdf
AUTHORS: Liang Bai, Jiye Liang
HIGHLIGHT: Therefore, in this paper, we provide an explicit theoretical connection between them from the respective of learning a data similarity matrix.

324, TITLE: On the Generalization Effects of Linear Transformations in Data Augmentation
https://proceedings.icml.cc/static/paper_files/icml/2020/2002-Paper.pdf
AUTHORS: Sen Wu, Hongyang Zhang, Gregory Valiant, Christopher Re
HIGHLIGHT: In this work, we consider a family of linear transformations and study their effects on the ridge estimator in an over-parametrized linear regression setting.

325, TITLE: Sparse Shrunk Additive Models
https://proceedings.icml.cc/static/paper_files/icml/2020/2013-Paper.pdf
AUTHORS: Hong Chen, guodong liu, Heng Huang
HIGHLIGHT: A new method, called as sparse shrunk additive models (SSAM), is proposed to explore the structure information among features.

326, TITLE: Unsupervised Discovery of Interpretable Directions in the GAN Latent Space
https://proceedings.icml.cc/static/paper_files/icml/2020/2025-Paper.pdf
AUTHORS: Andrey Voynov, Artem Babenko
HIGHLIGHT: In this paper, we introduce an unsupervised method to identify interpretable directions in the latent space of a pretrained GAN model.

327, TITLE: DropNet: Reducing Neural Network Complexity via Iterative Pruning
https://proceedings.icml.cc/static/paper_files/icml/2020/2026-Paper.pdf
AUTHORS: Chong Min John Tan, Mehul Motani
HIGHLIGHT: Inspired by the iterative weight pruning in the Lottery Ticket Hypothesis, we propose DropNet, an iterative pruning method which prunes nodes/filters to reduce network complexity.

328, TITLE: Self-supervised Label Augmentation via Input Transformations
https://proceedings.icml.cc/static/paper_files/icml/2020/2048-Paper.pdf
AUTHORS: Hankook Lee, Sung Ju Hwang, Jinwoo Shin
HIGHLIGHT: Our main idea is to learn a single unified task with respect to the joint distribution of the original and self-supervised labels, i.e., we augment original labels via self-supervision.

329, TITLE: Mapping natural-language problems to formal-language solutions using structured neural representations
https://proceedings.icml.cc/static/paper_files/icml/2020/2067-Paper.pdf
AUTHORS: Kezhen Chen, Qiuyuan Huang, Hamid Palangi, Paul Smolensky, Ken Forbus, Jianfeng Gao
HIGHLIGHT: In this paper, we propose a new encoder-decoder model based on a structured neural representation, Tensor Product Representations (TPRs), for generating formal-language solutions from natural-language, called TP-N2F.

330, TITLE: Transformation of ReLU-based recurrent neural networks from discrete-time to continuous-time
https://proceedings.icml.cc/static/paper_files/icml/2020/2079-Paper.pdf
AUTHORS: Zahra Monfared, Daniel Durstewitz
HIGHLIGHT: Here we show how to perform such a translation from discrete to continuous time for a particular class of ReLU-based RNN.

331, TITLE: Implicit Geometric Regularization for Learning Shapes
https://proceedings.icml.cc/static/paper_files/icml/2020/2086-Paper.pdf
AUTHORS: Amos Gropp, Lior Yariv, Niv Haim, Matan Atzmon, Yaron Lipman
HIGHLIGHT: In this paper we offer a new paradigm for computing high fidelity implicit neural representations directly from raw data (i.e., point clouds, with or without normal information).

332, TITLE: Influence Diagram Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/2093-Paper.pdf
AUTHORS: Tong Yu, Branislav Kveton, Zheng Wen, Ruiyi Zhang, Ole J. Mengshoel
HIGHLIGHT: We propose a novel framework for structured bandits, which we call influence diagram bandit.

333, TITLE: Information Particle Filter Tree: An Online Algorithm for POMDPs with Belief-Based Rewards on Continuous Domains
https://proceedings.icml.cc/static/paper_files/icml/2020/2113-Paper.pdf
AUTHORS: Johannes Fischer, Ömer Sahin Tas
HIGHLIGHT: In this work we propose a novel online algorithm, Information Particle Filter Tree (IPFT), to solve problems with belief-dependent rewards on continuous domains.

334, TITLE: Convergence Rates of Variational Inference in Sparse Deep Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2115-Paper.pdf
AUTHORS: Badr-Eddine Chérief-Abdellatif
HIGHLIGHT: In this paper, we show that variational inference for sparse deep learning retains precisely the same generalization properties than exact Bayesian inference.

335, TITLE: Unsupervised Transfer Learning for Spatiotemporal Predictive Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/2121-Paper.pdf
AUTHORS: Zhiyu Yao, Yunbo Wang, Mingsheng Long, Jianmin Wang
HIGHLIGHT: Technically, we propose a differentiable framework named transferable memory.

336, TITLE: DINO: Distributed Newton-Type Optimization Method
https://proceedings.icml.cc/static/paper_files/icml/2020/2125-Paper.pdf
AUTHORS: Rixon Crane, Fred Roosta
HIGHLIGHT: We present a novel communication-efficient Newton-type algorithm for finite-sum optimization over a distributed computing environment.

337, TITLE: Quantum Expectation-Maximization for Gaussian Mixture Models
https://proceedings.icml.cc/static/paper_files/icml/2020/2139-Paper.pdf
AUTHORS: Alessandro Luongo, Iordanis Kerenidis, Anupam Prakash
HIGHLIGHT: We define a quantum version of Expectation-Maximization (QEM), a fundamental tool in unsupervised machine learning, often used to solve Maximum Likelihood (ML) and Maximum A Posteriori (MAP) estimation problems.

338, TITLE: Consistent Structured Prediction with Max-Min Margin Markov Networks

https://proceedings.icml.cc/static/paper_files/icml/2020/2140-Paper.pdf
AUTHORS: Alex Nowak, Francis Bach, Alessandro Rudi
HIGHLIGHT: In this paper, we prove consistency and finite sample generalization bounds for M^4N and provide an explicit algorithm to compute the estimator.

339, TITLE: Concentration bounds for CVaR estimation: The cases of light-tailed and heavy-tailed distributions
https://proceedings.icml.cc/static/paper_files/icml/2020/2156-Paper.pdf
AUTHORS: Prashanth L.A., Krishna Jagannathan, Ravi Kolla
HIGHLIGHT: We derive concentration bounds for CVaR estimates, considering separately the cases of sub-Gaussian, light-tailed and heavy-tailed distributions.

340, TITLE: Robust Pricing in Dynamic Mechanism Design
https://proceedings.icml.cc/static/paper_files/icml/2020/2157-Paper.pdf
AUTHORS: Yuan Deng, Sébastien Lahaie, Vahab Mirrokni
HIGHLIGHT: In this paper, we propose robust dynamic mechanism design.

341, TITLE: Nested Subspace Arrangement for Representation of Relational Data
https://proceedings.icml.cc/static/paper_files/icml/2020/2159-Paper.pdf
AUTHORS: Nozomi Hata, Shizuo Kaji, Akihiro Yoshida, Katsuki Fujisawa
HIGHLIGHT: In this paper, we introduce Nested SubSpace arrangement (NSS arrangement), a comprehensive framework for representation learning.

342, TITLE: Equivariant Neural Rendering
https://proceedings.icml.cc/static/paper_files/icml/2020/2167-Paper.pdf
AUTHORS: Emilien Dupont, Miguel Bautista Martin, Alex Colburn, Aditya Sankar, Joshua Susskind, Qi Shan
HIGHLIGHT: We propose a framework for learning neural scene representations directly from images, without 3D supervision.

343, TITLE: Bounding the fairness and accuracy of classifiers from population statistics
https://proceedings.icml.cc/static/paper_files/icml/2020/2168-Paper.pdf
AUTHORS: Sivan Sabato, Elad Yom-Tov
HIGHLIGHT: We propose an efficient and practical procedure for finding the best possible lower bound on the discrepancy of the classifier, given the aggregate statistics, and demonstrate in experiments the empirical tightness of this lower bound, as well as its possible uses on various types of problems, ranging from estimating the quality of voting polls to measuring the effectiveness of patient identification from internet search queries.

344, TITLE: Healing Gaussian Process Experts
https://proceedings.icml.cc/static/paper_files/icml/2020/2170-Paper.pdf
AUTHORS: samuel cohen, Rendani Mbuvha, Tshilidzi Marwala, Marc Deisenroth
HIGHLIGHT: In this paper, we provide a solution to these problems for multiple expert models, including the generalised product of experts and the robust Bayesian committee machine.

345, TITLE: Beyond UCB: Optimal and Efficient Contextual Bandits with Regression Oracles
https://proceedings.icml.cc/static/paper_files/icml/2020/2171-Paper.pdf
AUTHORS: Dylan Foster, Alexander Rakhlin
HIGHLIGHT: We provide the first universal and optimal reduction from contextual bandits to online regression.

346, TITLE: Simple and Deep Graph Convolutional Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/2172-Paper.pdf
AUTHORS: Ming Chen, Zhewei Wei, Zengfeng Huang, Bolin Ding, Yaliang Li
HIGHLIGHT: In this paper, we study the problem of designing and analyzing deep graph convolutional networks.

347, TITLE: Projection-free Distributed Online Convex Optimization with $O(\sqrt{T})$ Communication Complexity
https://proceedings.icml.cc/static/paper_files/icml/2020/2175-Paper.pdf
AUTHORS: Yuanyu Wan, Wei-Wei Tu, Lijun Zhang
HIGHLIGHT: In this paper, we first propose an improved variant of D-OCG, namely D-BOCG, which enjoys an $O(T^{3/4})$ regret bound with only $O(\sqrt{T})$ communication complexity.

348, TITLE: Meta Variance Transfer: Learning to Augment from the Others
https://proceedings.icml.cc/static/paper_files/icml/2020/2222-Paper.pdf

AUTHORS: Seong-Jin Park, Seungju Han, Ji-won Baek, Insoo Kim, Juhwan Song, Hae Beom Lee, Jae-Joon Han, Sung Ju Hwang
HIGHLIGHT: To alleviate the need of collecting large data and better learn from scarce samples, we propose a novel meta-learning method which learns to transfer factors of variations from one class to another, such that it can improve the classification performance on unseen examples.

349, TITLE: Coresets for Clustering in Graphs of Bounded Treewidth
https://proceedings.icml.cc/static/paper_files/icml/2020/2231-Paper.pdf
AUTHORS: Daniel Baker, Vladimir Braverman, Lingxiao Huang, Shaofeng H.-C. Jiang, Robert Krauthgamer, Xuan Wu
HIGHLIGHT: The construction is based on the framework of Feldman and Langberg [STOC 2011], and our main technical contribution, as required by this framework, is a uniform bound of $O(\tw(G))$ on the shattering dimension under any point weights.

350, TITLE: On Breaking Deep Generative Model-based Defenses and Beyond
https://proceedings.icml.cc/static/paper_files/icml/2020/2236-Paper.pdf
AUTHORS: Yanzhi Chen, Renjie Xie, Zhanxing Zhu
HIGHLIGHT: In this work, we develop a new gradient approximation attack to break these defenses.

351, TITLE: Exploration Through Bias: Revisiting Biased Maximum Likelihood Estimation in Stochastic Multi-Armed Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/2244-Paper.pdf
AUTHORS: Xi Liu, Ping-Chun Hsieh, Yu Heng Hung, Anirban Bhattacharya, P. Kumar
HIGHLIGHT: We propose a new family of bandit algorithms, that are formulated in a general way based on the Biased Maximum Likelihood Estimation (BMLE) method originally appearing in the adaptive control literature.

352, TITLE: Bisection-Based Pricing for Repeated Contextual Auctions against Strategic Buyer
https://proceedings.icml.cc/static/paper_files/icml/2020/2249-Paper.pdf
AUTHORS: Anton Zhiyanov, Alexey Drutsa
HIGHLIGHT: We introduce a novel deterministic learning algorithm that is based on ideas of the Bisection method and has strategic regret upper bound of $O(\log^2 T)$.

353, TITLE: Haar Graph Pooling
https://proceedings.icml.cc/static/paper_files/icml/2020/2250-Paper.pdf
AUTHORS: Yuguang Wang, Ming Li, Zheng Ma, Guido Montufar, Xiaosheng Zhuang, Yanan Fan
HIGHLIGHT: We propose a new graph pooling operation based on compressive Haar transforms --- \emph{HaarPooling}.

354, TITLE: Explaining Groups of Points in Low-Dimensional Representations
https://proceedings.icml.cc/static/paper_files/icml/2020/2264-Paper.pdf
AUTHORS: Gregory Plumb, Jonathan Terhorst, Sriram Sankararaman, Ameet Talwalkar
HIGHLIGHT: To solve this problem, we introduce a new type of explanation, a Global Counterfactual Explanation (GCE), and our algorithm, Transitive Global Translations (TGT), for computing GCEs.

355, TITLE: Learning Portable Representations for High-Level Planning
https://proceedings.icml.cc/static/paper_files/icml/2020/2270-Paper.pdf
AUTHORS: Steven James, Benjamin Rosman, George Konidaris
HIGHLIGHT: We present a framework for autonomously learning a portable representation that describes a collection of low-level continuous environments.

356, TITLE: Adaptive Estimator Selection for Off-Policy Evaluation
https://proceedings.icml.cc/static/paper_files/icml/2020/2273-Paper.pdf
AUTHORS: Yi Su, Pavithra Srinath, Akshay Krishnamurthy
HIGHLIGHT: We develop a generic data-driven method for estimator selection in off-policy policy evaluation settings.

357, TITLE: Doubly Stochastic Variational Inference for Neural Processes with Hierarchical Latent Variables
https://proceedings.icml.cc/static/paper_files/icml/2020/2280-Paper.pdf
AUTHORS: Qi Wang, Herke van Hoof
HIGHLIGHT: To address this challenge, we investigate NPs systematically and present a new variant of NP model that we call Doubly Stochastic Variational Neural Process (DSVNP).

358, TITLE: Generative Flows with Matrix Exponential
https://proceedings.icml.cc/static/paper_files/icml/2020/2283-Paper.pdf

AUTHORS: Changyi Xiao, Ligang Liu
HIGHLIGHT: In this paper, we incorporate matrix exponential into generative flows.

359, TITLE: Composable Sketches for Functions of Frequencies: Beyond the Worst Case
https://proceedings.icml.cc/static/paper_files/icml/2020/2290-Paper.pdf
AUTHORS: Edith Cohen, Ofir Geri, Rasmus Pagh
HIGHLIGHT: In this paper we study when it is possible to construct compact, composable sketches for weighted sampling and statistics estimation according to functions of data frequencies.

360, TITLE: Self-concordant analysis of Frank-Wolfe algorithm
https://proceedings.icml.cc/static/paper_files/icml/2020/2292-Paper.pdf
AUTHORS: Mathias Staudigl, Pavel Dvurechenskii, Shimrit Shtern, Kamil Safin, Petr Ostroukhov
HIGHLIGHT: If the problem can be represented by a local linear minimization oracle, we are the first to propose a FW method with linear convergence rate without assuming neither strong convexity nor a Lipschitz continuous gradient.

361, TITLE: Towards non-parametric drift detection via Dynamic Adapting Window Independence Drift Detection (DAWIDD)
https://proceedings.icml.cc/static/paper_files/icml/2020/2298-Paper.pdf
AUTHORS: Fabian Hinder, André Artelt, CITEC Barbara Hammer
HIGHLIGHT: In this paper we present a novel concept drift detection method, Dynamic Adapting Window Independence Drift Detection (DAWIDD), which aims for non-parametric drift detection of diverse drift characteristics.

362, TITLE: Non-Stationary Bandits with Intermediate Observations
https://proceedings.icml.cc/static/paper_files/icml/2020/2302-Paper.pdf
AUTHORS: Claire Vernade, Andrés György, Timothy Mann
HIGHLIGHT: To model this situation, we introduce the problem of stochastic, non-stationary, delayed bandits with intermediate observations.

363, TITLE: Does label smoothing mitigate label noise?
https://proceedings.icml.cc/static/paper_files/icml/2020/2305-Paper.pdf
AUTHORS: Michal Lukasik, Srinadh Bhojanapalli, Aditya Menon, Sanjiv Kumar
HIGHLIGHT: In this paper, we study whether label smoothing is also effective as a means of coping with label noise.

364, TITLE: Proving the Lottery Ticket Hypothesis: Pruning is All You Need
https://proceedings.icml.cc/static/paper_files/icml/2020/2313-Paper.pdf
AUTHORS: Eran Malach, Gilad Yehudai, Shai Shalev-Schwartz, Ohad Shamir
HIGHLIGHT: We prove an even stronger hypothesis (as was also conjectured in Ramanujan et al., 2019), showing that for every bounded distribution and every target network with bounded weights, a sufficiently over-parameterized neural network with random weights contains a subnetwork with roughly the same accuracy as the target network, without any further training.

365, TITLE: Linear bandits with Stochastic Delayed Feedback
https://proceedings.icml.cc/static/paper_files/icml/2020/2321-Paper.pdf
AUTHORS: Claire Vernade, Alexandra Carpentier, Tor Lattimore, Giovanni Zappella, Beyza Ermis, Michael Brueckner
HIGHLIGHT: We formalize this problem as a novel stochastic delayed linear bandit and propose OTFLinUCB and OTFLinTS, two computationally efficient algorithms able to integrate new information as it becomes available and to deal with the permanently censored feedback.

366, TITLE: Time Series Deconfounder: Estimating Treatment Effects over Time in the Presence of Hidden Confounders
https://proceedings.icml.cc/static/paper_files/icml/2020/2331-Paper.pdf
AUTHORS: Ioana Bica, Ahmed Alaa, Mihaela van der Schaar
HIGHLIGHT: In this paper, we develop the Time Series Deconfounder, a method that leverages the assignment of multiple treatments over time to enable the estimation of treatment effects in the presence of multi-cause hidden confounders.

367, TITLE: Negative Sampling in Semi-Supervised learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2333-Paper.pdf
AUTHORS: John Chen, Vatsal Shah, Anastasios Kyrillidis
HIGHLIGHT: We introduce Negative Sampling in Semi-Supervised Learning (NS^3L), a simple, fast, easy to tune algorithm for semi-supervised learning (SSL).

368, TITLE: Adaptive Sketching for Fast and Convergent Canonical Polyadic Decomposition

https://proceedings.icml.cc/static/paper_files/icml/2020/2334-Paper.pdf
AUTHORS: Alex Gittens, Kareem Aggour, Bülent Yener
HIGHLIGHT: This work considers the canonical polyadic decomposition (CPD) of tensors using proximally regularized sketched alternating least squares algorithms.

369, TITLE: Private Counting from Anonymous Messages: Near-Optimal Accuracy with Vanishing Communication Overhead
https://proceedings.icml.cc/static/paper_files/icml/2020/2341-Paper.pdf
AUTHORS: Badih Ghazi, Ravi Kumar, Pasin Manurangsi, Rasmus Pagh
HIGHLIGHT: In this paper, we obtain practical communication-efficient algorithms in the shuffled DP model for two basic aggregation primitives: 1) binary summation, and 2) histograms over a moderate number of buckets.

370, TITLE: On the Generalization Benefit of Noise in Stochastic Gradient Descent
https://proceedings.icml.cc/static/paper_files/icml/2020/2343-Paper.pdf
AUTHORS: Samuel Smith, Erich Elsen, Soham De
HIGHLIGHT: In this paper, we perform carefully designed experiments and rigorous hyperparameter sweeps on a range of popular models, which verify that small or moderately large batch sizes can substantially outperform very large batches on the test set.

371, TITLE: Momentum-Based Policy Gradient Methods
https://proceedings.icml.cc/static/paper_files/icml/2020/2345-Paper.pdf
AUTHORS: Feihu Huang, Shangqian Gao, Jian Pei, Heng Huang
HIGHLIGHT: Specifically, we propose a fast important-sampling momentum-based policy gradient (IS-MBPG) method by using the important sampling technique.

372, TITLE: Knowing The What But Not The Where in Bayesian Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/2351-Paper.pdf
AUTHORS: Vu Nguyen, Michael Osborne
HIGHLIGHT: In this paper, we consider a new setting in BO in which the knowledge of the optimum output is available.

373, TITLE: Robust Bayesian Classification Using An Optimistic Score Ratio
https://proceedings.icml.cc/static/paper_files/icml/2020/2354-Paper.pdf
AUTHORS: Viet Anh Nguyen, Nian Si, Jose Blanchet
HIGHLIGHT: We consider the optimistic score ratio for robust Bayesian classification when the class-conditional distribution of the features is not perfectly known.

374, TITLE: Boosted Histogram Transform for Regression
https://proceedings.icml.cc/static/paper_files/icml/2020/2360-Paper.pdf
AUTHORS: Yuchao Cai, Hanyuan Hang, Hanfang Yang, Zhouchen Lin
HIGHLIGHT: In this paper, we propose a boosting algorithm for regression problems called \textit{boosted histogram transform for regression} (BHTR) based on histogram transforms composed of random rotations, stretchings, and translations.

375, TITLE: Stochastic bandits with arm-dependent delays
https://proceedings.icml.cc/static/paper_files/icml/2020/2361-Paper.pdf
AUTHORS: Anne Gael Manegueu, Claire Vernade, Alexandra Carpentier, Michal Valko
HIGHLIGHT: Addressing these difficulties, we propose a simple but efficient UCB-based algorithm called the PATIENTBANDITS. We provide both problem-dependent and problem-independent bounds on the regret as well as performance lower bounds.

376, TITLE: Projective Preferential Bayesian Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/2377-Paper.pdf
AUTHORS: Petrus Mikkola, Milica Todorovic, Jari Järvi, Patrick Rinke, Samuel Kaski
HIGHLIGHT: We propose a new type of Bayesian optimization for learning user preferences in high-dimensional spaces.

377, TITLE: On Relativistic f-Divergences
https://proceedings.icml.cc/static/paper_files/icml/2020/2391-Paper.pdf
AUTHORS: Alexia Jolicoeur-Martineau
HIGHLIGHT: We introduce the minimum-variance unbiased estimator (MVUE) for Relativistic paired GANs (RpGANs; originally called RGANs which could bring confusion) and show that it does not perform better.

378, TITLE: A Flexible Framework for Nonparametric Graphical Modeling that Accommodates Machine Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2397-Paper.pdf
AUTHORS: Yunhua Xiang, Noah Simon
HIGHLIGHT: In this paper, we instead consider 3 non-parametric measures of conditional dependence.

379, TITLE: The Natural Lottery Ticket Winner: Reinforcement Learning with Ordinary Neural Circuits
https://proceedings.icml.cc/static/paper_files/icml/2020/2398-Paper.pdf
AUTHORS: Ramin Hasani, Mathias Lechner, Alexander Amini, Daniela Rus, Radu Grosu
HIGHLIGHT: We propose a neural information processing system which is obtained by re-purposing the function of a biological neural circuit model to govern simulated and real-world control tasks.

380, TITLE: Schatten Norms in Matrix Streams: Hello Sparsity, Goodbye Dimension
https://proceedings.icml.cc/static/paper_files/icml/2020/2399-Paper.pdf
AUTHORS: Aditya Krishnan, Roi Sinoff, Robert Krauthgamer, Vladimir Braverman
HIGHLIGHT: We address this challenge by providing the first algorithms whose space requirement is independent of the matrix dimension, assuming the matrix is doubly-sparse and presented in row-order.

381, TITLE: Control Frequency Adaptation via Action Persistence in Batch Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2405-Paper.pdf
AUTHORS: Alberto Maria Metelli, Flavio Mazzolini, Lorenzo Bisi, Luca Sabbioni, Marcello Restelli
HIGHLIGHT: In this paper, we introduce the notion of \emph{action persistence} that consists in the repetition of an action for a fixed number of decision steps, having the effect of modifying the control frequency.

382, TITLE: Minimax Rate for Learning From Pairwise Comparisons in the BTL Model
https://proceedings.icml.cc/static/paper_files/icml/2020/2406-Paper.pdf
AUTHORS: Julien Hendrickx, Alex Olshevsky, Venkatesh Saligrama
HIGHLIGHT: Our contribution is the determination of the minimax rate up to a constant factor.

383, TITLE: Interferometric Graph Transform: a Deep Unsupervised Graph Representation
https://proceedings.icml.cc/static/paper_files/icml/2020/2411-Paper.pdf
AUTHORS: Edouard Oyallon
HIGHLIGHT: We propose the Interferometric Graph Transform (IGT), which is a new class of deep unsupervised graph convolutional neural network for building graph representations.

384, TITLE: Stochastic Differential Equations with Variational Wishart Diffusions
https://proceedings.icml.cc/static/paper_files/icml/2020/2419-Paper.pdf
AUTHORS: Martin Jørgensen, Marc Deisenroth, Hugh Salimbeni
HIGHLIGHT: We present a Bayesian non-parametric way of inferring stochastic differential equations for both regression tasks and continuous-time dynamical modelling.

385, TITLE: What Can Learned Intrinsic Rewards Capture?
https://proceedings.icml.cc/static/paper_files/icml/2020/2425-Paper.pdf
AUTHORS: Zeyu Zheng, Junhyuk Oh, Matteo Hessel, Zhongwen Xu, Manuel Kroiss, Hado van Hasselt, David Silver, Satinder Singh
HIGHLIGHT: In this paper, we instead consider the proposition that the reward function itself can be a good locus of learned knowledge.

386, TITLE: Random extrapolation for primal-dual coordinate descent
https://proceedings.icml.cc/static/paper_files/icml/2020/2433-Paper.pdf
AUTHORS: Ahmet Alacaoglu, Olivier Fercoq, Volkan Cevher
HIGHLIGHT: We introduce a randomly extrapolated primal-dual coordinate descent method that automatically adapts to the sparsity of the data matrix as well as the favorable structures of the objective function in optimization.

387, TITLE: Reinforcement Learning with Differential Privacy
https://proceedings.icml.cc/static/paper_files/icml/2020/2453-Paper.pdf
AUTHORS: Giuseppe Vietri, Borja de Balle Pigem, Steven Wu, Akshay Krishnamurthy
HIGHLIGHT: Motivated by high-stakes decision-making domains like personalized medicine where user information is inherently sensitive, we design privacy preserving exploration policies for episodic reinforcement learning (RL).

388, TITLE: Median Matrix Completion: from Embarrassment to Optimality

https://proceedings.icml.cc/static/paper_files/icml/2020/2463-Paper.pdf
AUTHORS: Weidong Liu, Xiaojun Mao, Raymond K. W. Wong
HIGHLIGHT: In this paper, we consider matrix completion with absolute deviation loss and obtain an estimator of the median matrix.

389, TITLE: Improved Optimistic Algorithms for Logistic Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/2468-Paper.pdf
AUTHORS: Louis Faury, Marc Abeille, Clément Calauzènes, Olivier Fercoq
HIGHLIGHT: In this work, we study the logistic bandit with a focus on the prohibitive dependencies introduced by κ.

390, TITLE: Learning to Rank Learning Curves
https://proceedings.icml.cc/static/paper_files/icml/2020/2472-Paper.pdf
AUTHORS: Martin Wistuba, Tejaswini Pedapati
HIGHLIGHT: In this work, we present a new method that saves computational budget by terminating poor configurations early on in the training.

391, TITLE: Model Fusion with Kullback--Leibler Divergence
https://proceedings.icml.cc/static/paper_files/icml/2020/2474-Paper.pdf
AUTHORS: Sebastian Claici, Mikhail Yurochkin, Soumya Ghosh, Justin Solomon
HIGHLIGHT: We propose a method to fuse posterior distributions learned from heterogeneous datasets.

392, TITLE: Randomization matters How to defend against strong adversarial attacks
https://proceedings.icml.cc/static/paper_files/icml/2020/2479-Paper.pdf
AUTHORS: Rafael Pinot, Raphael Ettedgui, Geovani Rizk, Yann Chevaleyre, Jamal Atif
HIGHLIGHT: We tackle this problem by showing that, under mild conditions on the dataset distribution, any deterministic classifier can be outperformed by a randomized one.

393, TITLE: Evolutionary Topology Search for Tensor Network Decomposition
https://proceedings.icml.cc/static/paper_files/icml/2020/2484-Paper.pdf
AUTHORS: Chao Li, Zhun Sun
HIGHLIGHT: In this paper, we claim that this issue can be practically tackled by evolutionary algorithms in an efficient manner.

394, TITLE: Quadratically Regularized Subgradient Methods for Weakly Convex Optimization with Weakly Convex Constraints
https://proceedings.icml.cc/static/paper_files/icml/2020/2489-Paper.pdf
AUTHORS: Runchao Ma, Qihang Lin, Tianbao Yang
HIGHLIGHT: This paper proposes a class of subgradient methods for constrained optimization where the objective function and the constraint functions are weakly convex and nonsmooth.

395, TITLE: Scalable and Efficient Comparison-based Search without Features
https://proceedings.icml.cc/static/paper_files/icml/2020/2496-Paper.pdf
AUTHORS: Daniyar Chumbalov, Lucas Maystre, Matthias Grossglauser
HIGHLIGHT: We propose a new Bayesian comparison-based search algorithm with noisy answers; it has low computational complexity yet is efficient in the number of queries.

396, TITLE: Error-Bounded Correction of Noisy Labels
https://proceedings.icml.cc/static/paper_files/icml/2020/2506-Paper.pdf
AUTHORS: Songzhu Zheng, Pengxiang Wu, Aman Goswami, Mayank Goswami, Dimitris Metaxas, Chao Chen
HIGHLIGHT: We introduce a novel approach that directly cleans labels in order to train a high quality model.

397, TITLE: Learning with Feature and Distribution Evolvable Streams
https://proceedings.icml.cc/static/paper_files/icml/2020/2507-Paper.pdf
AUTHORS: Zhen-Yu Zhang, Peng Zhao, Yuan Jiang, Zhi-Hua Zhou
HIGHLIGHT: To address this difficulty, we propose a novel discrepancy measure for evolving feature space and data distribution named the evolving discrepancy, based on which we provide the generalization error analysis.

398, TITLE: On Unbalanced Optimal Transport: An Analysis of Sinkhorn Algorithm
https://proceedings.icml.cc/static/paper_files/icml/2020/2508-Paper.pdf
AUTHORS: Khiem Pham, Khang Le, Nhat Ho, Tung Pham, Hung Bui

HIGHLIGHT: We provide a computational complexity analysis for the Sinkhorn algorithm that solves the entropic regularized Unbalanced Optimal Transport (UOT) problem between two measures of possibly different masses with at most n components.

399, TITLE: Learning Optimal Tree Models under Beam Search
https://proceedings.icml.cc/static/paper_files/icml/2020/2514-Paper.pdf
AUTHORS: Jingwei Zhuo, Ziru Xu, Wei Dai, Han Zhu, HAN LI, Jian Xu, Kun Gai
HIGHLIGHT: In this paper, we take a first step towards understanding the discrepancy by developing the definition of Bayes optimality and calibration under beam search as general analyzing tools, and prove that neither TDMs nor PLTs are Bayes optimal under beam search.

400, TITLE: Estimating the Number and Effect Sizes of Non-null Hypotheses
https://proceedings.icml.cc/static/paper_files/icml/2020/2515-Paper.pdf
AUTHORS: Jennifer Brennan, Ramya Korlakai Vinayak, Kevin Jamieson
HIGHLIGHT: We study the problem of estimating the distribution of effect sizes (the mean of the test statistic under the alternate hypothesis) in a multiple testing setting.

401, TITLE: Estimating Model Uncertainty of Neural Network in Sparse Information Form
https://proceedings.icml.cc/static/paper_files/icml/2020/2525-Paper.pdf
AUTHORS: Jongseok Lee, Matthias Humt, Jianxiang Feng, Rudolph Triebel
HIGHLIGHT: The key insight of our work is that the information matrix, i.e. the inverse of the covariance matrix tends to be sparse in its spectrum.

402, TITLE: Double-Loop Unadjusted Langevin Algorithm
https://proceedings.icml.cc/static/paper_files/icml/2020/2531-Paper.pdf
AUTHORS: Paul Rolland, Armin Eftekhari, Ali Kavis, Volkan Cevher
HIGHLIGHT: This work proposes a new annealing step-size schedule for ULA, which allows to prove new convergence guarantees for sampling from a smooth log-concave distribution, which are not covered by existing state-of-the-art convergence guarantees.

403, TITLE: Growing Action Spaces
https://proceedings.icml.cc/static/paper_files/icml/2020/2537-Paper.pdf
AUTHORS: Gregory Farquhar, Laura Gustafson, Zeming Lin, Shimon Whiteson, Nicolas Usunier, Gabriel Synnaeve
HIGHLIGHT: In this work, we use a curriculum of progressively growing action spaces to accelerate learning.

404, TITLE: Analytic Marching: An Analytic Meshing Solution from Deep Implicit Surface Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/2541-Paper.pdf
AUTHORS: Jiabao Lei, Kui Jia
HIGHLIGHT: We propose a naturally parallelizable algorithm of analytic marching to exactly recover the mesh captured by a learned MLP.

405, TITLE: Anderson Acceleration of Proximal Gradient Methods
https://proceedings.icml.cc/static/paper_files/icml/2020/2548-Paper.pdf
AUTHORS: Vien Mai, Mikael Johansson
HIGHLIGHT: This work introduces novel methods for adapting Anderson acceleration to (non-smooth and constrained) proximal gradient algorithms.

406, TITLE: Interpretable, Multidimensional, Multimodal Anomaly Detection with Negative Sampling for Detection of Device Failure
https://proceedings.icml.cc/static/paper_files/icml/2020/2557-Paper.pdf
AUTHORS: John Sipple
HIGHLIGHT: In this paper we propose a scalable, unsupervised approach for detecting anomalies in the Internet of Things (IoT).

407, TITLE: Certified Robustness to Label-Flipping Attacks via Randomized Smoothing
https://proceedings.icml.cc/static/paper_files/icml/2020/2565-Paper.pdf
AUTHORS: Elan Rosenfeld, Ezra Winston, Pradeep Ravikumar, Zico Kolter
HIGHLIGHT: In this work, we propose a strategy for building linear classifiers that are certifiably robust against a strong variant of label flipping, where each test example is targeted independently.

408, TITLE: Responsive Safety in Reinforcement Learning

https://proceedings.icml.cc/static/paper_files/icml/2020/2566-Paper.pdf
AUTHORS: Adam Stooke, Joshua Achiam, Pieter Abbeel
HIGHLIGHT: Lagrangian method are the most commonly used algorithms for the resulting constrained optimization problem. Yet they are known to oscillate and overshoot cost limits, causing constraint-violating behavior during training.

409, TITLE: Deep k-NN for Noisy Labels
https://proceedings.icml.cc/static/paper_files/icml/2020/2572-Paper.pdf
AUTHORS: Dara Bahri, Heinrich Jiang, Maya Gupta
HIGHLIGHT: In this paper, we provide an empirical study showing that a simple k-nearest neighbor-based filtering approach on the logit layer of a preliminary model can remove mislabeled training data and produce more accurate models than some recently proposed methods.

410, TITLE: Learning the piece-wise constant graph structure of a varying Ising model
https://proceedings.icml.cc/static/paper_files/icml/2020/2583-Paper.pdf
AUTHORS: Batiste Le Bars, Pierre Humbert, Argyris Kalogeratos, Nicolas Vayatis
HIGHLIGHT: For this purpose, we propose to estimate the neighborhood of each node by maximizing a penalized version of its conditional log-likelihood.

411, TITLE: Stabilizing Transformers for Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2596-Paper.pdf
AUTHORS: Emilio Parisotto, Francis Song, Jack Rae, Razvan Pascanu, Caglar Gulcehre, Siddhant Jayakumar, Max Jaderberg, Raphael Lopez Kaufman, Aidan Clark, Seb Noury, Matthew Botvinick, Nicolas Heess, Raia Hadsell
HIGHLIGHT: In this work we demonstrate that the standard transformer architecture is difficult to optimize, which was previously observed in the supervised learning setting but becomes especially pronounced with RL objectives.

412, TITLE: An Explicitly Relational Neural Network Architecture
https://proceedings.icml.cc/static/paper_files/icml/2020/2604-Paper.pdf
AUTHORS: Murray Shanahan, Kyriacos Nikiforou, Antonia Creswell, Christos Kaplanis, David Barrett, Marta Garnelo
HIGHLIGHT: With a view to bridging the gap between deep learning and symbolic AI, we present a novel end-to-end neural network architecture that learns to form propositional representations with an explicitly relational structure from raw pixel data.

413, TITLE: Harmonic Decompositions of Convolutional Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/2609-Paper.pdf
AUTHORS: Meyer Scetbon, Zaid Harchaoui
HIGHLIGHT: We present a description of function spaces and smoothness classes associated with convolutional networks from a reproducing kernel Hilbert space viewpoint.

414, TITLE: Discriminative Jackknife: Quantifying Uncertainty in Deep Learning via Higher-Order Influence Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/2610-Paper.pdf
AUTHORS: Ahmed Alaa, Mihaela van der Schaar
HIGHLIGHT: To this end, this paper develops the discriminative jackknife (DJ), a frequentist procedure that uses higher-order influence functions (HOIFs) of a trained model parameters to construct a jackknife (leave-one-out) estimator of predictive confidence intervals.

415, TITLE: Robust Graph Representation Learning via Neural Sparsification
https://proceedings.icml.cc/static/paper_files/icml/2020/2611-Paper.pdf
AUTHORS: Cheng Zheng, Bo Zong, Wei Cheng, Dongjin Song, Jingchao Ni, Wenchao Yu, Haifeng Chen, Wei Wang
HIGHLIGHT: In this paper, we present NeuralSparse, a supervised graph sparsification technique that improves generalization power by learning to remove potentially task-irrelevant edges from input graphs.

416, TITLE: Semiparametric Nonlinear Bipartite Graph Representation Learning with Provable Guarantees
https://proceedings.icml.cc/static/paper_files/icml/2020/2616-Paper.pdf
AUTHORS: Sen Na, Yuwei Luo, Zhuoran Yang, Zhaoran Wang, Mladen Kolar
HIGHLIGHT: To overcome these challenges, we propose a pseudo-likelihood objective based on the rank-order decomposition technique and focus on its local geometry.

417, TITLE: Forecasting sequential data using Consistent Koopman Autoencoders
https://proceedings.icml.cc/static/paper_files/icml/2020/2620-Paper.pdf
AUTHORS: Omri Azencot, N. Benjamin Erichson, Vanessa Lin, Michael Mahoney
HIGHLIGHT: We propose a novel Consistent Koopman Autoencoder that exploits the forward and backward dynamics to achieve long time predictions.

418, TITLE: Scalable Identification of Partially Observed Systems with Certainty-Equivalent EM
https://proceedings.icml.cc/static/paper_files/icml/2020/2629-Paper.pdf
AUTHORS: Kunal Menda, Jean de Becdelievre, Jayesh K. Gupta, Ilan Kroo, Mykel Kochenderfer, Zachary Manchester
HIGHLIGHT: This work considers the offline identification of partially observed nonlinear systems.

419, TITLE: Learning to Score Behaviors for Guided Policy Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/2630-Paper.pdf
AUTHORS: Aldo Pacchiano, Jack Parker-Holder, Yunhao Tang, Krzysztof Choromanski, Anna Choromanska, Michael Jordan
HIGHLIGHT: We introduce a new approach for comparing reinforcement learning policies, using Wasserstein distances (WDs) in a newly defined latent behavioral space.

420, TITLE: Improved Communication Cost in Distributed PageRank Computation- A Theoretical Study
https://proceedings.icml.cc/static/paper_files/icml/2020/2637-Paper.pdf
AUTHORS: Siqiang Luo
HIGHLIGHT: In this paper, we provide a new algorithm that uses asymptotically the same communication rounds while significantly improves the bandwidth from $O(\log^{2d+3}{n})$ bits to $O(d\log^3{n})$ bits.

421, TITLE: Learning Autoencoders with Relational Regularization
https://proceedings.icml.cc/static/paper_files/icml/2020/2640-Paper.pdf
AUTHORS: Hongteng Xu, Dixin Luo, Ricardo Henao, Svati Shah, Lawrence Carin
HIGHLIGHT: We propose a new algorithmic framework for learning autoencoders of data distributions.

422, TITLE: Neural Contextual Bandits with UCB-based Exploration
https://proceedings.icml.cc/static/paper_files/icml/2020/2647-Paper.pdf
AUTHORS: Dongruo Zhou, Lihong Li, Quanquan Gu
HIGHLIGHT: We propose the NeuralUCB algorithm, which leverages the representation power of deep neural networks and uses a neural network-based random feature mapping to construct an upper confidence bound (UCB) of reward for efficient exploration.

423, TITLE: Super-efficiency of automatic differentiation for functions defined as a minimum
https://proceedings.icml.cc/static/paper_files/icml/2020/2648-Paper.pdf
AUTHORS: Pierre Ablin, Gabriel Peyré, Thomas Moreau
HIGHLIGHT: In this paper, we study the asymptotic error made by these estimators as a function of the optimization error.

424, TITLE: PowerNorm: Rethinking Batch Normalization in Transformers
https://proceedings.icml.cc/static/paper_files/icml/2020/2650-Paper.pdf
AUTHORS: Sheng Shen, Zhewei Yao, Amir Gholaminejad, Michael Mahoney, Kurt Keutzer
HIGHLIGHT: In this paper, we perform a systematic study of NLP transformer models to understand why BN has a poor performance, as compared to LN.

425, TITLE: Invertible generative models for inverse problems: mitigating representation error and dataset bias
https://proceedings.icml.cc/static/paper_files/icml/2020/2655-Paper.pdf
AUTHORS: Muhammad Asim, Max Daniels, Oscar Leong, Paul Hand, Ali Ahmed
HIGHLIGHT: In this paper, we demonstrate that invertible neural networks, which have zero representation error by design, can be effective natural signal priors at inverse problems such as denoising, compressive sensing, and inpainting.

426, TITLE: Acceleration for Compressed Gradient Descent in Distributed Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/2658-Paper.pdf
AUTHORS: Zhize Li, Dmitry Kovalev, Xun Qian, Peter Richtarik
HIGHLIGHT: In this paper, we remedy this situation and propose the first {\em accelerated compressed gradient descent (ACGD)} methods.

427, TITLE: Neural Networks are Convex Regularizers: Exact Polynomial-time Convex Optimization Formulations for Two-Layer Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/2660-Paper.pdf
AUTHORS: Mert Pilanci, Tolga Ergen
HIGHLIGHT: We develop exact representations of two layer neural networks with rectified linear units in terms of a single convex program with number of variables polynomial in the number of training samples and number of hidden neurons.

428, TITLE: Learning Quadratic Games on Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/2663-Paper.pdf
AUTHORS: Yan Leng, Xiaowen Dong, Junfeng Wu, Alex `Sandy' Pentland
HIGHLIGHT: In this paper, we propose two novel frameworks for learning, from the observations on individual actions, network games with linear-quadratic payoffs, and in particular the structure of the interaction network.

429, TITLE: Margin-aware Adversarial Domain Adaptation with Optimal Transport
https://proceedings.icml.cc/static/paper_files/icml/2020/2666-Paper.pdf
AUTHORS: Sofien Dhouib, Ievgen Redko, Carole Lartizien
HIGHLIGHT: In this paper, we propose a new theoretical analysis of unsupervised domain adaptation that relates notions of large margin separation, adversarial learning and optimal transport.

430, TITLE: The Sample Complexity of Best-k Items Selection from Pairwise Comparisons
https://proceedings.icml.cc/static/paper_files/icml/2020/2667-Paper.pdf
AUTHORS: Wenbo Ren, Jia Liu, Ness Shroff
HIGHLIGHT: In this paper, we study two problems: (i) finding the probably approximately correct (PAC) best-k items and (ii) finding the exact best-k items, both under strong stochastic transitivity and stochastic triangle inequality.

431, TITLE: GraphOpt: Learning Optimization Models of Graph Formation
https://proceedings.icml.cc/static/paper_files/icml/2020/2675-Paper.pdf
AUTHORS: Rakshit Trivedi, Jiachen Yang, Hongyuan Zha
HIGHLIGHT: In this work, we propose GraphOpt, an end-to-end framework that jointly learns an implicit model of graph structure formation and discovers an underlying optimization mechanism in the form of a latent objective function.

432, TITLE: Distributionally Robust Policy Evaluation and Learning in Offline Contextual Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/2684-Paper.pdf
AUTHORS: Nian Si, Fan Zhang, Zhengyuan Zhou, Jose Blanchet
HIGHLIGHT: In this paper, we lift this assumption and aim to learn a distributionally robust policy with bandit observational data.

433, TITLE: Incremental Sampling Without Replacement for Sequence Models
https://proceedings.icml.cc/static/paper_files/icml/2020/2688-Paper.pdf
AUTHORS: Kensen Shi, David Bieber, Charles Sutton
HIGHLIGHT: We present an elegant procedure for sampling without replacement from a broad class of randomized programs, including generative neural models that construct outputs sequentially.

434, TITLE: Variable Skipping for Autoregressive Range Density Estimation
https://proceedings.icml.cc/static/paper_files/icml/2020/2693-Paper.pdf
AUTHORS: Eric Liang, Zongheng Yang, Ion Stoica, Pieter Abbeel, Yan Duan, Peter Chen
HIGHLIGHT: In this paper, we explore a technique for accelerating range density estimation over deep autoregressive models.

435, TITLE: TaskNorm: Rethinking Batch Normalization for Meta-Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2696-Paper.pdf
AUTHORS: John Bronskill, Jonathan Gordon, James Requeima, Sebastian Nowozin, Richard Turner
HIGHLIGHT: We evaluate a range of approaches to batch normalization for meta-learning scenarios, and develop a novel approach that we call TaskNorm.

436, TITLE: Scalable Gaussian Process Regression for Kernels with a Non-Stationary Phase
https://proceedings.icml.cc/static/paper_files/icml/2020/2702-Paper.pdf
AUTHORS: Jan Graßhoff, Alexandra Jankowski, Philipp Rostalski
HIGHLIGHT: This paper investigates an efficient GP framework, that extends structured kernel interpolation methods to GPs with a non-stationary phase.

437, TITLE: Transformer Hawkes Process
https://proceedings.icml.cc/static/paper_files/icml/2020/2705-Paper.pdf
AUTHORS: Simiao Zuo, Haoming Jiang, Zichong Li, Tuo Zhao, Hongyuan Zha
HIGHLIGHT: To address this issue, we propose a Transformer Hawkes Process (THP) model, which leverages the self-attention mechanism to capture long-term dependencies and meanwhile enjoys computational efficiency.

438, TITLE: An EM Approach to Non-autoregressive Conditional Sequence Generation
https://proceedings.icml.cc/static/paper_files/icml/2020/2711-Paper.pdf
AUTHORS: Zhiqing Sun, Yiming Yang
HIGHLIGHT: This paper proposes a new approach that jointly optimizes both AR and NAR models in a unified Expectation-Maximization (EM) framework.

439, TITLE: Variance Reduction in Stochastic Particle-Optimization Sampling
https://proceedings.icml.cc/static/paper_files/icml/2020/2712-Paper.pdf
AUTHORS: Jianyi Zhang, Yang Zhao, Changyou Chen
HIGHLIGHT: In this paper, we bridge the gap by presenting several variance-reduction techniques for SPOS.

440, TITLE: CLUB: A Contrastive Log-ratio Upper Bound of Mutual Information
https://proceedings.icml.cc/static/paper_files/icml/2020/2718-Paper.pdf
AUTHORS: Pengyu Cheng, Weituo Hao, Shuyang Dai, Jiachang Liu, Zhe Gan, Lawrence Carin
HIGHLIGHT: In this paper, we propose a novel Contrastive Log-ratio Upper Bound (CLUB) of mutual information.

441, TITLE: State Space Expectation Propagation: Efficient Inference Schemes for Temporal Gaussian Processes
https://proceedings.icml.cc/static/paper_files/icml/2020/2722-Paper.pdf
AUTHORS: William Wilkinson, Paul Chang, Michael Andersen, Arno Solin
HIGHLIGHT: We formulate expectation propagation (EP), a state-of-the-art method for approximate Bayesian inference, as a nonlinear Kalman smoother, showing that it generalises a wide class of classical smoothing algorithms.

442, TITLE: Training Neural Networks for and by Interpolation
https://proceedings.icml.cc/static/paper_files/icml/2020/2730-Paper.pdf
AUTHORS: Leonard Berrada, M. Pawan Kumar, Andrew Zisserman
HIGHLIGHT: In this work, we explicitly exploit this interpolation property for the design of a new optimization algorithm for deep learning, which we term Adaptive Learning-rates for Interpolation with Gradients (ALI-G).

443, TITLE: Learning Representations that Support Extrapolation
https://proceedings.icml.cc/static/paper_files/icml/2020/2731-Paper.pdf
AUTHORS: Taylor Webb, Zachary Dulberg, Steven Frankland, Alexander Petrov, Randall O'Reilly, Jonathan Cohen
HIGHLIGHT: In this paper, we consider the challenge of learning representations that support extrapolation.

444, TITLE: Topic Modeling via Full Dependence Mixtures
https://proceedings.icml.cc/static/paper_files/icml/2020/2732-Paper.pdf
AUTHORS: Dan Fisher, Mark Kozdoba, Shie Mannor
HIGHLIGHT: In this paper we introduce a new approach to topic modelling that scales to large datasets by using a compact representation of the data and by leveraging the GPU architecture.

445, TITLE: Instance-hiding Schemes for Private Distributed Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2735-Paper.pdf
AUTHORS: Yangsibo Huang, Zhao Song, Sanjeev Arora, Kai Li
HIGHLIGHT: The new ideas in the current paper are: (a) new variants of mixup with negative as well as positive coefficients, and extend the sample-wise mixup to be pixel-wise.

446, TITLE: The Implicit Regularization of Stochastic Gradient Flow for Least Squares
https://proceedings.icml.cc/static/paper_files/icml/2020/2740-Paper.pdf
AUTHORS: Alnur Ali, Edgar Dobriban, Ryan Tibshirani
HIGHLIGHT: We study the implicit regularization of mini-batch stochastic gradient descent, when applied to the fundamental problem of least squares regression.

447, TITLE: Decentralised Learning with Random Features and Distributed Gradient Descent
https://proceedings.icml.cc/static/paper_files/icml/2020/2742-Paper.pdf
AUTHORS: Dominic Richards, Patrick Rebeschini, Lorenzo Rosasco
HIGHLIGHT: We present simulations that show how the number of random features, iterations and samples impact predictive performance.

448, TITLE: Hierarchical Generation of Molecular Graphs using Structural Motifs
https://proceedings.icml.cc/static/paper_files/icml/2020/2743-Paper.pdf

AUTHORS: Wengong Jin, Regina Barzilay, Tommi Jaakkola
HIGHLIGHT: In this paper, we propose a new hierarchical graph encoder-decoder that employs significantly larger and more flexible graph motifs as basic building blocks.

449, TITLE: Composing Molecules with Multiple Property Constraints
https://proceedings.icml.cc/static/paper_files/icml/2020/2748-Paper.pdf
AUTHORS: Wengong Jin, Regina Barzilay, Tommi Jaakkola
HIGHLIGHT: We propose to offset this complexity by composing molecules from a vocabulary of substructures that we call molecular rationales.

450, TITLE: Data preprocessing to mitigate bias: A maximum entropy based approach
https://proceedings.icml.cc/static/paper_files/icml/2020/2750-Paper.pdf
AUTHORS: Elisa Celis, Vijay Keswani, Nisheeth Vishnoi
HIGHLIGHT: This paper presents an optimization framework that can be used as a data preprocessing method towards mitigating bias: It can learn distributions over large domains and controllably adjust the representation rates of protected groups and/or achieve target fairness metrics such as statistical parity, yet remains close to the empirical distribution induced by the given dataset.

451, TITLE: On Efficient Low Distortion Ultrametric Embedding
https://proceedings.icml.cc/static/paper_files/icml/2020/2751-Paper.pdf
AUTHORS: Vincent Cohen-Addad, Karthik C. S., Guillaume Lagarde
HIGHLIGHT: In this paper, we provide a new algorithm which takes as input a set of points P in R^d, and for every $c\ge 1$, runs in time $n^{1+O(1/c^2)}$ to output an ultrametric Δ such that for any two points u,v in P, we have $\Delta(u,v)$ is within a multiplicative factor of $5c$ to the distance between u and v in the "best" ultrametric representation of P.

452, TITLE: Global Concavity and Optimization in a Class of Dynamic Discrete Choice Models
https://proceedings.icml.cc/static/paper_files/icml/2020/2760-Paper.pdf
AUTHORS: Yiding Feng, Ekaterina Khmelnitskaya, Denis Nekipelov
HIGHLIGHT: We show that in an important class of discrete choice models the value function is globally concave in the policy. That means that simple algorithms that do not require fixed point computation, such as the policy gradient algorithm, globally converge to the optimal policy.

453, TITLE: Efficient Policy Learning from Surrogate-Loss Classification Reductions
https://proceedings.icml.cc/static/paper_files/icml/2020/2767-Paper.pdf
AUTHORS: Andrew Bennett, Nathan Kallus
HIGHLIGHT: In light of this, we instead propose an estimation approach based on generalized method of moments, which is efficient for the policy parameters.

454, TITLE: On Contrastive Learning for Likelihood-free Inference
https://proceedings.icml.cc/static/paper_files/icml/2020/2772-Paper.pdf
AUTHORS: Conor Durkan, Iain Murray, George Papamakarios
HIGHLIGHT: In this work, we show that both of these approaches can be unified under a general contrastive learning scheme, and clarify how they should be run and compared.

455, TITLE: Obtaining Adjustable Regularization for Free via Iterate Averaging
https://proceedings.icml.cc/static/paper_files/icml/2020/2773-Paper.pdf
AUTHORS: Jingfeng Wu, Vladimir Braverman, Lin Yang
HIGHLIGHT: In this paper, we establish a complete theory by showing an averaging scheme that provably converts the iterates of SGD on an arbitrary strongly convex and smooth objective function to its regularized counterpart with an adjustable regularization parameter.

456, TITLE: Invariant Risk Minimization Games
https://proceedings.icml.cc/static/paper_files/icml/2020/2777-Paper.pdf
AUTHORS: Kartik Ahuja, Karthikeyan Shanmugam, Kush Varshney, Amit Dhurandhar
HIGHLIGHT: In this work, we pose such invariant risk minimization as finding the Nash equilibrium of an ensemble game among several environments.

457, TITLE: Video Prediction via Example Guidance
https://proceedings.icml.cc/static/paper_files/icml/2020/2778-Paper.pdf
AUTHORS: Jingwei Xu, Harry (Huazhe) Xu, Bingbing Ni, Xiaokang Yang, Trevor Darrell
HIGHLIGHT: In this work, we propose a simple yet effective framework that can predict diverse and plausible future states.

458, TITLE: Learning Discrete Structured Representations by Adversarially Maximizing Mutual Information
https://proceedings.icml.cc/static/paper_files/icml/2020/2785-Paper.pdf
AUTHORS: Karl Stratos, Sam Wiseman
HIGHLIGHT: We propose learning discrete structured representations from unlabeled data by maximizing the mutual information between a structured latent variable and a target variable.

459, TITLE: Reinforcement Learning in Feature Space: Matrix Bandit, Kernels, and Regret Bound
https://proceedings.icml.cc/static/paper_files/icml/2020/2789-Paper.pdf
AUTHORS: Lin Yang, Mengdi Wang
HIGHLIGHT: In this paper, we propose an online RL algorithm, namely the MatrixRL, that leverages ideas from linear bandit to learn a low-dimensional representation of the probability transition model while carefully balancing the exploitation-exploration tradeoff.

460, TITLE: Frequency Bias in Neural Networks for Input of Non-Uniform Density
https://proceedings.icml.cc/static/paper_files/icml/2020/2790-Paper.pdf
AUTHORS: Ronen Basri, Meirav Galun, Amnon Geifman, David Jacobs, Yoni Kasten, Shira Kritchman
HIGHLIGHT: As realistic training sets are not drawn from a uniform distribution, we here use the Neural Tangent Kernel (NTK) model to explore the effect of variable density on training dynamics.

461, TITLE: Constrained Markov Decision Processes via Backward Value Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/2791-Paper.pdf
AUTHORS: Harsh Satija, Philip Amortila, Joelle Pineau
HIGHLIGHT: In this work, we model the problem of learning with constraints as a Constrained Markov Decision Process and provide a new on-policy formulation for solving it.

462, TITLE: Adding seemingly uninformative labels helps in low data regimes
https://proceedings.icml.cc/static/paper_files/icml/2020/2797-Paper.pdf
AUTHORS: Christos Matsoukas, Albert Bou Hernandez, Yue Liu, Karin Dembrower, Gisele Miranda, Emir Konuk, Johan Fredin Haslum, Athanasios Zouzos, Peter Lindholm, Fredrik Strand, Kevin Smith
HIGHLIGHT: In this work, we consider a task that requires difficult-to-obtain expert annotations: tumor segmentation in mammography images.

463, TITLE: When are Non-Parametric Methods Robust?
https://proceedings.icml.cc/static/paper_files/icml/2020/2812-Paper.pdf
AUTHORS: Robi Bhattacharjee, Kamalika Chaudhuri
HIGHLIGHT: In this work, we study general non-parametric methods, with a view towards understanding when they are robust to these modifications.

464, TITLE: Learning Calibratable Policies using Programmatic Style-Consistency
https://proceedings.icml.cc/static/paper_files/icml/2020/2816-Paper.pdf
AUTHORS: Eric Zhan, Albert Tseng, Yisong Yue, Adith Swaminathan, Matthew Hausknecht
HIGHLIGHT: In this paper, we leverage large amounts of raw behavioral data to learn policies that can be calibrated to generate a diverse range of behavior styles (e.g., aggressive versus passive play in sports).

465, TITLE: Momentum Improves Normalized SGD
https://proceedings.icml.cc/static/paper_files/icml/2020/2819-Paper.pdf
AUTHORS: Ashok Cutkosky, Harsh Mehta
HIGHLIGHT: We provide an improved analysis of normalized SGD showing that adding momentum provably removes the need for large batch sizes on non-convex objectives.

466, TITLE: Parameter-free, Dynamic, and Strongly-Adaptive Online Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2820-Paper.pdf
AUTHORS: Ashok Cutkosky
HIGHLIGHT: We provide a new online learning algorithm that for the first time combines several disparate notions of adaptivity.

467, TITLE: PENNI: Pruned Kernel Sharing for Efficient CNN Inference
https://proceedings.icml.cc/static/paper_files/icml/2020/2823-Paper.pdf
AUTHORS: Shiyu Li, Edward Hanson, Hai Li, Yiran Chen

HIGHLIGHT: Based on this observation, we propose PENNI, a CNN model compression framework that is able to achieve model compactness and hardware efficiency simultaneously by (1) implementing kernel sharing in convolution layers via a small number of basis kernels and (2) alternately adjusting bases and coefficients with sparse constraints.

468, TITLE: Optimal transport mapping via input convex neural networks
https://proceedings.icml.cc/static/paper_files/icml/2020/2824-Paper.pdf
AUTHORS: Ashok Vardhan Makkuva, Amirhossein Taghvaei, Sewoong Oh, Jason Lee
HIGHLIGHT: In this paper, we present a novel and principled approach to learn the optimal transport between two distributions, from samples.

469, TITLE: All in the (Exponential) Family: Information Geometry and Thermodynamic Variational Inference
https://proceedings.icml.cc/static/paper_files/icml/2020/2826-Paper.pdf
AUTHORS: Rob Brekelmans, Vaden Masrani, Frank Wood, Greg Ver Steeg, Aram Galstyan
HIGHLIGHT: We interpret the geometric mixture curve common to TVO and related path sampling methods using the geometry of exponential families, which allows us to characterize the gap in TVO bounds as a sum of KL divergences along a given path.

470, TITLE: SimGANs: Simulator-Based Generative Adversarial Networks for ECG Synthesis to Improve Deep ECG Classification
https://proceedings.icml.cc/static/paper_files/icml/2020/2829-Paper.pdf
AUTHORS: Tomer Golany, Kira Radinsky, Daniel Freedman
HIGHLIGHT: We study the problem of heart signal electrocardiogram (ECG) synthesis for improved heartbeat classification.

471, TITLE: Is There a Trade-Off Between Fairness and Accuracy? A Perspective Using Mismatched Hypothesis Testing
https://proceedings.icml.cc/static/paper_files/icml/2020/2831-Paper.pdf
AUTHORS: Sanghamitra Dutta, Dennis Wei, Hazar Yueksel, Pin-Yu Chen, Sijia Liu, Kush Varshney
HIGHLIGHT: Novel to this work, we examine fair classification through the lens of mismatched hypothesis testing: trying to find a classifier that distinguishes between two ideal distributions when given two mismatched distributions that are biased.

472, TITLE: Convex Calibrated Surrogates for the Multi-Label F-Measure
https://proceedings.icml.cc/static/paper_files/icml/2020/2842-Paper.pdf
AUTHORS: Mingyuan Zhang, Harish Guruprasad Ramaswamy, Shivani Agarwal
HIGHLIGHT: In this paper, we explore the question of designing convex surrogate losses that are \emph{calibrated} for the F-measure -- specifically, that have the property that minimizing the surrogate loss yields (in the limit of sufficient data) a Bayes optimal multi-label classifier for the F-measure.

473, TITLE: Learning Robot Skills with Temporal Variational Inference
https://proceedings.icml.cc/static/paper_files/icml/2020/2847-Paper.pdf
AUTHORS: Tanmay Shankar, Abhinav Gupta
HIGHLIGHT: In this paper, we address the discovery of robotic options from demonstrations in an unsupervised manner.

474, TITLE: Adaptive Gradient Descent without Descent
https://proceedings.icml.cc/static/paper_files/icml/2020/2854-Paper.pdf
AUTHORS: Konstantin Mishchenko, Yura Malitsky
HIGHLIGHT: We present a strikingly simple proof that two rules are sufficient to automate gradient descent: 1) don't increase the stepsize too fast and 2) don't overstep the local curvature.

475, TITLE: An end-to-end Differentially Private Latent Dirichlet Allocation Using a Spectral Algorithm
https://proceedings.icml.cc/static/paper_files/icml/2020/2863-Paper.pdf
AUTHORS: Christopher DeCarolis, Mukul Ram, Seyed Esmaeili, Yu-Xiang Wang, Furong Huang
HIGHLIGHT: We provide an end-to-end differentially private spectral algorithm for learning LDA, based on matrix/tensor decompositions, and establish theoretical guarantees on utility/consistency of the estimated model parameters.

476, TITLE: Dual Mirror Descent for Online Allocation Problems
https://proceedings.icml.cc/static/paper_files/icml/2020/2866-Paper.pdf
AUTHORS: Haihao Lu, Santiago Balseiro, Vahab Mirrokni
HIGHLIGHT: We consider online allocation problems with concave revenue functions and resource constraints, which are central problems in revenue management and online advertising.

477, TITLE: Optimal Robust Learning of Discrete Distributions from Batches

https://proceedings.icml.cc/static/paper_files/icml/2020/2870-Paper.pdf
AUTHORS: Ayush Jain, Alon Orlitsky
HIGHLIGHT: We provide the first polynomial-time estimator that is optimal in the number of batches and achieves essentially the best possible estimation accuracy.

478, TITLE: BoXHED: Boosted eXact Hazard Estimator with Dynamic covariates
https://proceedings.icml.cc/static/paper_files/icml/2020/2882-Paper.pdf
AUTHORS: Xiaochen Wang, Arash Pakbin, Bobak Mortazavi, Hongyu Zhao, Donald Lee
HIGHLIGHT: This paper introduces the software package BoXHED (pronounced `box-head') for nonparametrically estimating hazard functions via gradient boosting.

479, TITLE: Unlabelled Data Improves Bayesian Uncertainty Calibration under Covariate Shift
https://proceedings.icml.cc/static/paper_files/icml/2020/2888-Paper.pdf
AUTHORS: Alexander Chan, Ahmed Alaa, Zhaozhi Qian, Mihaela van der Schaar
HIGHLIGHT: In this paper, we develop an approximate Bayesian inference scheme based on posterior regularisation, where we use information from unlabelled target data to produce more appropriate uncertainty estimates for "covariate-shifted" predictions.

480, TITLE: Universal Equivariant Multilayer Perceptrons
https://proceedings.icml.cc/static/paper_files/icml/2020/2889-Paper.pdf
AUTHORS: Siamak Ravanbakhsh
HIGHLIGHT: Using tools from group theory, this paper proves the universality of a broad class of equivariant MLPs with a single hidden layer.

481, TITLE: Improving generalization by controlling label-noise information in neural network weights
https://proceedings.icml.cc/static/paper_files/icml/2020/2896-Paper.pdf
AUTHORS: Hrayr Harutyunyan, Kyle Reing, Greg Ver Steeg, Aram Galstyan
HIGHLIGHT: To obtain these low values, we propose training algorithms that employ an auxiliary network that predicts gradients in the final layers of a classifier without accessing labels.

482, TITLE: DeepMatch: Balancing Deep Covariate Representations for Causal Inference Using Adversarial Training
https://proceedings.icml.cc/static/paper_files/icml/2020/2897-Paper.pdf
AUTHORS: Nathan Kallus
HIGHLIGHT: We propose a new method based on adversarial training of a weighting and a discriminator network that effectively addresses this methodological gap.

483, TITLE: Bayesian Optimisation over Multiple Continuous and Categorical Inputs
https://proceedings.icml.cc/static/paper_files/icml/2020/2906-Paper.pdf
AUTHORS: Binxin Ru, Ahsan Alvi, Vu Nguyen, Michael Osborne, Stephen Roberts
HIGHLIGHT: We propose a new approach, Continuous and Categorical Bayesian Optimisation (CoCaBO), which combines the strengths of multi-armed bandits and Bayesian optimisation to select values for both categorical and continuous inputs.

484, TITLE: Generalization and Representational Limits of Graph Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/2911-Paper.pdf
AUTHORS: Vikas Garg, Stefanie Jegelka, Tommi Jaakkola
HIGHLIGHT: We address two fundamental questions about graph neural networks (GNNs).

485, TITLE: Multi-Precision Policy Enforced Training (MuPPET) : A Precision-Switching Strategy for Quantised Fixed-Point Training of CNNs
https://proceedings.icml.cc/static/paper_files/icml/2020/2917-Paper.pdf
AUTHORS: Aditya Rajagopal, Diederik Vink, Stylianos Venieris, Christos-Savvas Bouganis
HIGHLIGHT: This work pushes the boundary of quantised training by employing a multilevel optimisation approach that utilises multiple precisions including low-precision fixed-point representations.

486, TITLE: LowFER: Low-rank Bilinear Pooling for Link Prediction
https://proceedings.icml.cc/static/paper_files/icml/2020/2919-Paper.pdf
AUTHORS: Saadullah Amin, Stalin Varanasi, Katherine Ann Dunfield, Günter Neumann
HIGHLIGHT: In this work, we propose a factorized bilinear pooling model, commonly used in multi-modal learning, for better fusion of entities and relations, leading to an efficient and constraints free model.

487, TITLE: Parameterized Rate-Distortion Stochastic Encoder

https://proceedings.icml.cc/static/paper_files/icml/2020/2921-Paper.pdf
AUTHORS: Quan Hoang, Trung Le, Dinh Phung
HIGHLIGHT: We propose a novel gradient-based tractable approach for the Blahut-Arimoto (BA) algorithm to compute the rate-distortion function where the BA algorithm is fully parameterized.

488, TITLE: Incidence Networks for Geometric Deep Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2924-Paper.pdf
AUTHORS: Marjan Albooyeh, Daniele Bertolini, Siamak Ravanbakhsh
HIGHLIGHT: In this paper, we formalize incidence tensors, analyze their structure, and present the family of equivariant networks that operate on them.

489, TITLE: Energy-Based Processes for Exchangeable Data
https://proceedings.icml.cc/static/paper_files/icml/2020/2926-Paper.pdf
AUTHORS: Mengjiao Yang, Bo Dai, Hanjun Dai, Dale Schuurmans
HIGHLIGHT: To overcome these limitations, we introduce Energy-Based Processes (EBPs), which extend energy based models to exchangeable data while allowing neural network parameterizations of the energy function.

490, TITLE: Deep Isometric Learning for Visual Recognition
https://proceedings.icml.cc/static/paper_files/icml/2020/2932-Paper.pdf
AUTHORS: Haozhi Qi, Chong You, Xiaolong Wang, Yi Ma, Jitendra Malik
HIGHLIGHT: This paper shows that deep vanilla ConvNets without normalization nor residual structure can also be trained to achieve surprisingly good performance on standard image recognition benchmarks (ImageNet, and COCO).

491, TITLE: Second-Order Provable Defenses against Adversarial Attacks
https://proceedings.icml.cc/static/paper_files/icml/2020/2933-Paper.pdf
AUTHORS: Sahil Singla, Soheil Feizi
HIGHLIGHT: In this paper, we provide computationally-efficient robustness certificates for neural networks with differentiable activation functions in two steps.

492, TITLE: Transformers are RNNs: Fast Autoregressive Transformers with Linear Attention
https://proceedings.icml.cc/static/paper_files/icml/2020/2935-Paper.pdf
AUTHORS: Angelos Katharopoulos, Apoorv Vyas, Nikolaos Pappas, Francois Fleuret
HIGHLIGHT: To address this limitation, we express the self-attention as a linear dot-product of kernel feature maps and make use of the associativity property of matrix products to reduce the complexity from $\bigO{N^2}$ to $\bigO{N}$, where N is the sequence length.

493, TITLE: Overfitting in adversarially robust deep learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2936-Paper.pdf
AUTHORS: Eric Wong, Leslie Rice, Zico Kolter
HIGHLIGHT: In this paper, we empirically study this phenomenon in the setting of adversarially trained deep networks, which are trained to minimize the loss under worst-case adversarial perturbations.

494, TITLE: Rethinking Bias-Variance Trade-off for Generalization of Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/2946-Paper.pdf
AUTHORS: Zitong Yang, Yaodong Yu, Chong You, Jacob Steinhardt, Yi Ma
HIGHLIGHT: We provide a simple explanation of this by measuring the bias and variance of neural networks: while the bias is {\em monotonically decreasing} as in the classical theory, the variance is {\em unimodal} or bell-shaped: it increases then decreases with the width of the network.

495, TITLE: Boosting for Control of Dynamical Systems
https://proceedings.icml.cc/static/paper_files/icml/2020/2948-Paper.pdf
AUTHORS: Naman Agarwal, Nataly Brukhim, Elad Hazan, Zhou Lu
HIGHLIGHT: To this end, we propose a framework of boosting for online control.

496, TITLE: Frustratingly Simple Few-Shot Object Detection
https://proceedings.icml.cc/static/paper_files/icml/2020/2957-Paper.pdf
AUTHORS: Xin Wang, Thomas Huang, Joseph Gonzalez, Trevor Darrell, Fisher Yu
HIGHLIGHT: We find that fine-tuning only the last layer of existing detectors on rare classes is crucial to the few-shot object detection task.

497, TITLE: Data-Dependent Differentially Private Parameter Learning for Directed Graphical Models
https://proceedings.icml.cc/static/paper_files/icml/2020/2960-Paper.pdf
AUTHORS: Amrita Roy Chowdhury, Theodoros Rekatsinas, Somesh Jha
HIGHLIGHT: In this paper, we present an algorithm for differentially-private learning of the parameters of a DGM.

498, TITLE: Adversarial Risk via Optimal Transport and Optimal Couplings
https://proceedings.icml.cc/static/paper_files/icml/2020/2962-Paper.pdf
AUTHORS: Muni Sreenivas Pydi, Varun Jog
HIGHLIGHT: In this paper, we investigate the optimal adversarial risk and optimal adversarial classifiers from an optimal transport perspective.

499, TITLE: Decoupled Greedy Learning of CNNs
https://proceedings.icml.cc/static/paper_files/icml/2020/2966-Paper.pdf
AUTHORS: Eugene Belilovsky, Michael Eickenberg, Edouard Oyallon
HIGHLIGHT: In this context, we consider a simpler, but more effective, substitute that uses minimal feedback, which we call Decoupled Greedy Learning (DGL).

500, TITLE: ACFlow: Flow Models for Arbitrary Conditional Likelihoods
https://proceedings.icml.cc/static/paper_files/icml/2020/2968-Paper.pdf
AUTHORS: Yang Li, Shoaib Akbar, Junier Oliva
HIGHLIGHT: Instead, in this work we develop a model that is capable of yielding \emph{all} conditional distributions $p(x_u \mid x_o)$ (for arbitrary x_u) via tractable conditional likelihoods.

501, TITLE: Can autonomous vehicles identify, recover from, and adapt to distribution shifts?
https://proceedings.icml.cc/static/paper_files/icml/2020/2969-Paper.pdf
AUTHORS: Angelos Filos, Panagiotis Tigkas, Rowan McAllister, Nicholas Rhinehart, Sergey Levine, Yarin Gal
HIGHLIGHT: In this paper, we introduce an autonomous car novel-scene benchmark, \texttt{CARNOVEL}, to evaluate the robustness of driving agents to a suite of tasks involving distribution shift.

502, TITLE: Leveraging Procedural Generation to Benchmark Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2971-Paper.pdf
AUTHORS: Karl Cobbe, Chris Hesse, Jacob Hilton, John Schulman
HIGHLIGHT: We introduce Procgen Benchmark, a suite of 16 procedurally generated game-like environments designed to benchmark both sample efficiency and generalization in reinforcement learning.

503, TITLE: The Tree Ensemble Layer: Differentiability meets Conditional Computation
https://proceedings.icml.cc/static/paper_files/icml/2020/2974-Paper.pdf
AUTHORS: Hussein Hazimeh, Natalia Ponomareva, Rahul Mazumder, Zhenyu Tan, Petros Mol
HIGHLIGHT: We aim to combine these advantages by introducing a new layer for neural networks, composed of an ensemble of differentiable decision trees (a.k.a. soft trees).

504, TITLE: Near-Tight Margin-Based Generalization Bounds for Support Vector Machines
https://proceedings.icml.cc/static/paper_files/icml/2020/2977-Paper.pdf
AUTHORS: Allan Grønlund, Lior Kamma, Kasper Green Larsen
HIGHLIGHT: In this paper, we revisit and improve the classic generalization bounds in terms of margins.

505, TITLE: Error Estimation for Sketched SVD
https://proceedings.icml.cc/static/paper_files/icml/2020/2978-Paper.pdf
AUTHORS: Miles Lopes, N. Benjamin Erichson, Michael Mahoney
HIGHLIGHT: To overcome these challenges, this paper develops a fully data-driven bootstrap method that numerically estimates the actual error of sketched singular vectors/values.

506, TITLE: Goal-Aware Prediction: Learning to Model What Matters
https://proceedings.icml.cc/static/paper_files/icml/2020/2981-Paper.pdf
AUTHORS: Suraj Nair, Silvio Savarese, Chelsea Finn
HIGHLIGHT: In this paper, we propose to direct prediction towards task relevant information, enabling the model to be aware of the current task and encouraging it to only model relevant quantities of the state space, resulting in a learning objective that more closely matches the downstream task.

507, TITLE: Combinatorial Pure Exploration for Dueling Bandit

https://proceedings.icml.cc/static/paper_files/icml/2020/2990-Paper.pdf
AUTHORS: Wei Chen, Yihan Du, Longbo Huang, Haoyu Zhao
HIGHLIGHT: In this paper, we study combinatorial pure exploration for dueling bandits (CPE-DB): we have multiple candidates for multiple positions as modeled by a bipartite graph, and in each round we sample a duel of two candidates on one position and observe who wins in the duel, with the goal of finding the best candidate-position matching with high probability after multiple rounds of samples.

508, TITLE: Optimal Sequential Maximization: One Interview is Enough!
https://proceedings.icml.cc/static/paper_files/icml/2020/2991-Paper.pdf
AUTHORS: Moein Falahatgar, Alon Orlitsky, Venkatadheeraj Pichapati
HIGHLIGHT: We derive the first query-optimal sequential algorithm for probabilistic-maximization.

509, TITLE: What can I do here? A Theory of Affordances in Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/2993-Paper.pdf
AUTHORS: Khimya Khetarpal, Zafarali Ahmed, Gheorghe Comanici, David Abel, Doina Precup
HIGHLIGHT: In this paper, we develop a theory of affordances for agents who learn and plan in Markov Decision Processes.

510, TITLE: An end-to-end approach for the verification problem: learning the right distance
https://proceedings.icml.cc/static/paper_files/icml/2020/3002-Paper.pdf
AUTHORS: Joao Monteiro, Isabela Albuquerque, Jahangir Alam, R Devon Hjelm, Tiago Falk
HIGHLIGHT: In this contribution, we augment the metric learning setting by introducing a parametric pseudo-distance, trained jointly with the encoder.

511, TITLE: Data Valuation using Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3003-Paper.pdf
AUTHORS: Jinsung Yoon, Sercan Arik, Tomas Pfister
HIGHLIGHT: We propose Data Valuation using Reinforcement Learning (DVRL), to adaptively learn data values jointly with the predictor model.

512, TITLE: FormulaZero: Distributionally Robust Online Adaptation via Offline Population Synthesis
https://proceedings.icml.cc/static/paper_files/icml/2020/3008-Paper.pdf
AUTHORS: Aman Sinha, Matthew O'Kelly, Hongrui Zheng, Rahul Mangharam, John Duchi, Russ Tedrake
HIGHLIGHT: This work makes algorithmic contributions to both challenges. First, to generate a realistic, diverse set of opponents, we develop a novel method for self-play based on replica-exchange Markov chain Monte Carlo. Second, we propose a distributionally robust bandit optimization procedure that adaptively adjusts risk aversion relative to uncertainty in beliefs about opponents\u2019 behaviors.

513, TITLE: Latent Bernoulli Autoencoder
https://proceedings.icml.cc/static/paper_files/icml/2020/3022-Paper.pdf
AUTHORS: Jiri Fajtl, Vasileios Argyriou, Dorothy Monekosso, Paolo Remagnino
HIGHLIGHT: In this work, we pose a question whether it is possible to design and train an autoencoder model in an end-to-end fashion to learn latent representations in multivariate Bernoulli space, and achieve performance comparable with the current state-of-the-art variational methods.

514, TITLE: Learning To Stop While Learning To Predict
https://proceedings.icml.cc/static/paper_files/icml/2020/3024-Paper.pdf
AUTHORS: Xinshi Chen, Hanjun Dai, Yu Li, Xin Gao, Le Song
HIGHLIGHT: In this paper, we tackle this varying depth problem using a steerable architecture, where a feed-forward deep model and a variational stopping policy are learned together to sequentially determine the optimal number of layers for each input instance.

515, TITLE: Accelerating the diffusion-based ensemble sampling by non-reversible dynamics
https://proceedings.icml.cc/static/paper_files/icml/2020/3027-Paper.pdf
AUTHORS: Futoshi Futami, Issei Sato, Masashi Sugiyama
HIGHLIGHT: To cope with this problem, we propose a novel ensemble method that uses a non-reversible Markov chain for the interaction, and we present a non-asymptotic theoretical analysis for our method.

516, TITLE: Efficient nonparametric statistical inference on population feature importance using Shapley values
https://proceedings.icml.cc/static/paper_files/icml/2020/3042-Paper.pdf
AUTHORS: Brian Williamson, Jean Feng

HIGHLIGHT: We present a computationally efficient procedure for estimating and obtaining valid statistical inference on the \textbf{S}hapley \textbf{P}opulation \textbf{V}ariable \textbf{I}mportance \textbf{M}easure (SPVIM).

517, TITLE: Curse of Dimensionality on Randomized Smoothing for Certifiable Robustness
https://proceedings.icml.cc/static/paper_files/icml/2020/3044-Paper.pdf
AUTHORS: Aounon Kumar, Alexander Levine, Tom Goldstein, Soheil Feizi
HIGHLIGHT: In this work, we show that extending the smoothing technique to defend against other attack models can be challenging, especially in the high-dimensional regime.

518, TITLE: Upper bounds for Model-Free Row-Sparse Principal Component Analysis
https://proceedings.icml.cc/static/paper_files/icml/2020/3046-Paper.pdf
AUTHORS: Guanyi Wang, Santanu Dey
HIGHLIGHT: We propose a new framework that finds out upper (dual) bounds for the sparse PCA within polynomial time via solving a convex integer program (IP).

519, TITLE: Explainable k-Means and k-Medians Clustering
https://proceedings.icml.cc/static/paper_files/icml/2020/3047-Paper.pdf
AUTHORS: Michal Moshkovitz, Sanjoy Dasgupta, Cyrus Rashtchian, Nave Frost
HIGHLIGHT: We study this problem from a theoretical viewpoint, measuring the output quality by the k-means and k-medians objectives.

520, TITLE: Reward-Free Exploration for Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3050-Paper.pdf
AUTHORS: Chi Jin, Akshay Krishnamurthy, Max Simchowitz, Tiancheng Yu
HIGHLIGHT: To isolate the challenges of exploration, we propose the following ``reward-free RL'' framework.

521, TITLE: Parametric Gaussian Process Regressors
https://proceedings.icml.cc/static/paper_files/icml/2020/3062-Paper.pdf
AUTHORS: Martin Jankowiak, Geoff Pleiss, Jacob Gardner
HIGHLIGHT: In this work we propose two simple methods for scalable GP regression that address this issue and thus yield substantially improved predictive uncertainties.

522, TITLE: p-Norm Flow Diffusion for Local Graph Clustering
https://proceedings.icml.cc/static/paper_files/icml/2020/3065-Paper.pdf
AUTHORS: Kimon Fountoulakis, Di Wang, Shenghao Yang
HIGHLIGHT: In this work, we draw inspiration from both fields and propose a family of convex optimization formulations based on the idea of diffusion with p-norm network flow for $p\in (1,\infty)$.

523, TITLE: Low-Rank Bottleneck in Multi-head Attention Models
https://proceedings.icml.cc/static/paper_files/icml/2020/3073-Paper.pdf
AUTHORS: Srinadh Bhojanapalli, Chulhee Yun, Ankit Singh Rawat, Sashank Jakkam Reddi, Sanjiv Kumar
HIGHLIGHT: In this paper we identify one of the important factors contributing to the large embedding size requirement.

524, TITLE: LEEP: A New Measure to Evaluate Transferability of Learned Representations
https://proceedings.icml.cc/static/paper_files/icml/2020/3080-Paper.pdf
AUTHORS: Cuong Nguyen, Tal Hassner, Cedric Archambeau, Matthias Seeger
HIGHLIGHT: We introduce a new measure to evaluate the transferability of representations learned by classifiers.

525, TITLE: The FAST Algorithm for Submodular Maximization
https://proceedings.icml.cc/static/paper_files/icml/2020/3089-Paper.pdf
AUTHORS: Adam Breuer, Eric Balkanski, Yaron Singer
HIGHLIGHT: In this paper we describe a new parallel algorithm called Fast Adaptive Sequencing Technique (FAST) for maximizing a monotone submodular function under a cardinality constraint k.

526, TITLE: On the Relation between Quality-Diversity Evaluation and Distribution-Fitting Goal in Text Generation
https://proceedings.icml.cc/static/paper_files/icml/2020/3095-Paper.pdf
AUTHORS: Jianing Li, Yanyan Lan, Jiafeng Guo, Xueqi Cheng
HIGHLIGHT: In this paper, we try to reveal such relation in a theoretical approach.

527, TITLE: Designing Optimal Dynamic Treatment Regimes: A Causal Reinforcement Learning Approach
https://proceedings.icml.cc/static/paper_files/icml/2020/3096-Paper.pdf
AUTHORS: Junzhe Zhang
HIGHLIGHT: In particular, we develop two online algorithms that satisfy such regret bounds by exploiting the causal structure underlying the DTR; one is based on the principle of optimism in the face of uncertainty (OFU-DTR), and the other uses the posterior sampling learning (PS-DTR).

528, TITLE: Global Decision-Making via Local Economic Transactions
https://proceedings.icml.cc/static/paper_files/icml/2020/3099-Paper.pdf
AUTHORS: Michael Chang, Sid Kaushik, S. Matthew Weinberg, Sergey Levine, Thomas Griffiths
HIGHLIGHT: This paper seeks to establish a mechanism for directing a collection of simple, specialized, self-interested agents to solve what traditionally are posed as monolithic single-agent sequential decision problems with a central global objective.

529, TITLE: Retrieval Augmented Language Model Pre-Training
https://proceedings.icml.cc/static/paper_files/icml/2020/3102-Paper.pdf
AUTHORS: Kelvin Guu, Kenton Lee, Zora Tung, Panupong Pasupat, Mingwei Chang
HIGHLIGHT: To capture knowledge in a more modular and interpretable way, we augment language model pre-training with a latent knowledge retriever, which allows the model to retrieve and attend over documents from a large corpus such as Wikipedia, used during pre-training, fine-tuning and inference.

530, TITLE: Variational Label Enhancement
https://proceedings.icml.cc/static/paper_files/icml/2020/3104-Paper.pdf
AUTHORS: Ning Xu, Yun-Peng Liu, Jun Shu, Xin Geng
HIGHLIGHT: To solve this problem, we consider the label distributions as the latent vectors and infer the label distributions from the logical labels in the training datasets by using variational inference.

531, TITLE: Bandits with Adversarial Scaling
https://proceedings.icml.cc/static/paper_files/icml/2020/3107-Paper.pdf
AUTHORS: Thodoris Lykouris, Vahab Mirrokni, Renato Leme
HIGHLIGHT: We study "adversarial scaling", a multi-armed bandit model where rewards have a stochastic and an adversarial component.

532, TITLE: Eliminating the Invariance on the Loss Landscape of Linear Autoencoders
https://proceedings.icml.cc/static/paper_files/icml/2020/3112-Paper.pdf
AUTHORS: Reza Oftadeh, Jiayi Shen, Zhangyang Wang, Dylan Shell
HIGHLIGHT: Here, we prove that our loss function eliminates this issue, i.e., the decoder converges to the exact ordered unnormalized eigenvectors of the sample covariance matrix.

533, TITLE: What is Local Optimality in Nonconvex-Nonconcave Minimax Optimization?
https://proceedings.icml.cc/static/paper_files/icml/2020/3113-Paper.pdf
AUTHORS: Chi Jin, Praneeth Netrapalli, Michael Jordan
HIGHLIGHT: The main contribution of this paper is to propose a proper mathematical definition of local optimality for this sequential setting---local minimax, as well as to present its properties and existence results.

534, TITLE: Lookahead-Bounded Q-learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3126-Paper.pdf
AUTHORS: Ibrahim El Shar, Daniel Jiang
HIGHLIGHT: We introduce the lookahead-bounded Q-learning (LBQL) algorithm, a new, provably convergent variant of Q-learning that seeks to improve the performance of standard Q-learning in stochastic environments through the use of "lookahead" upper and lower bounds.

535, TITLE: Learning From Irregularly-Sampled Time Series: A Missing Data Perspective
https://proceedings.icml.cc/static/paper_files/icml/2020/3129-Paper.pdf
AUTHORS: Steven Cheng-Xian Li, Benjamin Marlin
HIGHLIGHT: In this paper, we consider irregular sampling from the perspective of missing data.

536, TITLE: Evaluating the Performance of Reinforcement Learning Algorithms
https://proceedings.icml.cc/static/paper_files/icml/2020/3133-Paper.pdf
AUTHORS: Scott Jordan, Yash Chandak, Daniel Cohen, Mengxue Zhang, Philip Thomas
HIGHLIGHT: In this work, we argue that the inconsistency of performance stems from the use of flawed evaluation metrics.

537, TITLE: Unbiased Risk Estimators Can Mislead: A Case Study of Learning with Complementary Labels
https://proceedings.icml.cc/static/paper_files/icml/2020/3134-Paper.pdf
AUTHORS: Yu-Ting Chou, Gang Niu, Hsuan-Tien Lin, Masashi Sugiyama
HIGHLIGHT: In this paper, we investigate reasons for such overfitting by studying learning with complementary labels.

538, TITLE: Provable Self-Play Algorithms for Competitive Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3137-Paper.pdf
AUTHORS: Yu Bai, Chi Jin
HIGHLIGHT: We introduce a self-play algorithm---Value Iteration with Upper/Lower Confidence Bound (VI-ULCB), and show that it achieves regret $\tilde{O}(\sqrt{T})$ after playing T steps of the game.

539, TITLE: Optimizing Long-term Social Welfare in Recommender Systems: A Constrained Matching Approach
https://proceedings.icml.cc/static/paper_files/icml/2020/3138-Paper.pdf
AUTHORS: Martin Mladenov, Elliot Creager, Omer Ben-Porat, Kevin Swersky, Richard Zemel, Craig Boutilier
HIGHLIGHT: In this work, we explore settings in which content providers cannot remain viable unless they receive a certain level of user engagement.

540, TITLE: Semi-Supervised StyleGAN for Disentanglement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3146-Paper.pdf
AUTHORS: Weili Nie, Tero Karras, Animesh Garg, Shoubhik Debnath, Anjul Patney, Ankit Patel, Anima Anandkumar
HIGHLIGHT: To alleviate these limitations, we design new architectures and loss functions based on StyleGAN (Karras et al., 2019), for semi-supervised high-resolution disentanglement learning.

541, TITLE: The Non-IID Data Quagmire of Decentralized Machine Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3152-Paper.pdf
AUTHORS: Kevin Hsieh, Amar Phanishayee, Onur Mutlu, Phillip Gibbons
HIGHLIGHT: Based on these findings, we present SkewScout, a system-level approach that adapts the communication frequency of decentralized learning algorithms to the (skew-induced) accuracy loss between data partitions.

542, TITLE: On the Noisy Gradient Descent that Generalizes as SGD
https://proceedings.icml.cc/static/paper_files/icml/2020/3155-Paper.pdf
AUTHORS: Jingfeng Wu, Wenqing Hu, Haoyi Xiong, Jun Huan, Vladimir Braverman, Zhanxing Zhu
HIGHLIGHT: In this work we provide negative results by showing that noises in classes different from the SGD noise can also effectively regularize gradient descent.

543, TITLE: Safe screening rules for L0-regression
https://proceedings.icml.cc/static/paper_files/icml/2020/3161-Paper.pdf
AUTHORS: Alper Atamturk, Andres Gomez
HIGHLIGHT: We give safe screening rules to eliminate variables from regression with L0 regularization or cardinality constraint.

544, TITLE: Single Point Transductive Prediction
https://proceedings.icml.cc/static/paper_files/icml/2020/3168-Paper.pdf
AUTHORS: Nilesh Tripuraneni, Lester Mackey
HIGHLIGHT: We address this question in the context of linear prediction, showing how techniques from semi-parametric inference can be used transductively to combat regularization bias.

545, TITLE: History-Gradient Aided Batch Size Adaptation for Variance Reduced Algorithms
https://proceedings.icml.cc/static/paper_files/icml/2020/3171-Paper.pdf
AUTHORS: Kaiyi Ji, Zhe Wang, Bowen Weng, Yi Zhou, Wei Zhang, Yingbin LIANG
HIGHLIGHT: In this paper, we propose a novel scheme, which eliminates backtracking line search but still exploits the information along optimization path by adapting the batch size via history stochastic gradients.

546, TITLE: Batch Stationary Distribution Estimation
https://proceedings.icml.cc/static/paper_files/icml/2020/3172-Paper.pdf
AUTHORS: Junfeng Wen, Bo Dai, Lihong Li, Dale Schuurmans
HIGHLIGHT: We propose a consistent estimator that is based on recovering a correction ratio function over the given data.

547, TITLE: Optimal Statistical Guaratees for Adversarially Robust Gaussian Classification

https://proceedings.icml.cc/static/paper_files/icml/2020/3175-Paper.pdf
AUTHORS: Chen Dan, Yuting Wei, Pradeep Ravikumar
HIGHLIGHT: In this paper, we provide the first result of the \emph{optimal} minimax guarantees for the excess risk for adversarially robust classification, under Gaussian mixture model proposed by \cite{schmidt2018adversarially}.

548, TITLE: Generative Adversarial Imitation Learning with Neural Network Parameterization: Global Optimality and Convergence Rate
https://proceedings.icml.cc/static/paper_files/icml/2020/3185-Paper.pdf
AUTHORS: Yufeng Zhang, Qi Cai, Zhuoran Yang, Zhaoran Wang
HIGHLIGHT: To bridge the gap between practice and theory, we analyze a gradient-based algorithm with alternating updates and establish its sublinear convergence to the globally optimal solution.

549, TITLE: A Game Theoretic Perspective on Model-Based Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3189-Paper.pdf
AUTHORS: Aravind Rajeswaran, Igor Mordatch, Vikash Kumar
HIGHLIGHT: We show that stable algorithms for MBRL can be derived by considering a Stackelberg game between the two players.

550, TITLE: (Locally) Differentially Private Combinatorial Semi-Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/3194-Paper.pdf
AUTHORS: Xiaoyu Chen, Kai Zheng, Zixin Zhou, Yunchang Yang, Wei Chen, Liwei Wang
HIGHLIGHT: In this paper, we study (locally) differentially private Combinatorial Semi-Bandits (CSB).

551, TITLE: Optimizing for the Future in Non-Stationary MDPs
https://proceedings.icml.cc/static/paper_files/icml/2020/3200-Paper.pdf
AUTHORS: Yash Chandak, Georgios Theocharous, Shiv Shankar, Martha White, Sridhar Mahadevan, Philip Thomas
HIGHLIGHT: To address this problem, we develop a method that builds upon ideas from both counter-factual reasoning and curve-fitting to proactively search for a good future policy, without ever modeling the underlying non-stationarity.

552, TITLE: Learning Task-Agnostic Embedding of Multiple Black-Box Experts for Multi-Task Model Fusion
https://proceedings.icml.cc/static/paper_files/icml/2020/3219-Paper.pdf
AUTHORS: Nghia Hoang, Thanh Lam, Bryan Kian Hsiang Low, Patrick Jaillet
HIGHLIGHT: To address this multi-task challenge, we develop a new fusion paradigm that represents each expert as a distribution over a spectrum of predictive prototypes, which are isolated from task-specific information encoded within the prototype distribution.

553, TITLE: Dual-Path Distillation: A Unified Framework to Improve Black-Box Attacks
https://proceedings.icml.cc/static/paper_files/icml/2020/3224-Paper.pdf
AUTHORS: Yonggang Zhang, Ya Li, Tongliang Liu, Xinmei Tian
HIGHLIGHT: Therefore, we propose a novel framework, dual-path distillation, that utilizes the feedback knowledge not only to craft adversarial examples but also to alter the searching directions to achieve efficient attacks.

554, TITLE: Safe Deep Semi-Supervised Learning for Unseen-Class Unlabeled Data
https://proceedings.icml.cc/static/paper_files/icml/2020/3231-Paper.pdf
AUTHORS: Lan-Zhe Guo, Zhen-Yu Zhang, Yuan Jiang, Yufeng Li, Zhi-Hua Zhou
HIGHLIGHT: This paper proposes a simple and effective safe deep SSL method to alleviate the performance harm caused by it.

555, TITLE: Generalizing Convolutional Neural Networks for Equivariance to Lie Groups on Arbitrary Continuous Data
https://proceedings.icml.cc/static/paper_files/icml/2020/3232-Paper.pdf
AUTHORS: Marc Finzi, Samuel Stanton, Pavel Izmailov, Andrew Wilson
HIGHLIGHT: We propose a general method to construct a convolutional layer that is equivariant to transformations from any specified Lie group with a surjective exponential map.

556, TITLE: Dispersed EM-VAEs for Interpretable Text Generation
https://proceedings.icml.cc/static/paper_files/icml/2020/3242-Paper.pdf
AUTHORS: Wenxian Shi, Hao Zhou, Ning Miao, Lei Li
HIGHLIGHT: In this paper, we find that mode-collapse is a general problem for VAEs with exponential family mixture priors.

557, TITLE: Deep Graph Random Process for Relational-Thinking-Based Speech Recognition

https://proceedings.icml.cc/static/paper_files/icml/2020/3253-Paper.pdf
AUTHORS: Huang Hengguan, Fuzhao Xue, Hao Wang, Ye Wang
HIGHLIGHT: We present a framework that models a percept as weak relations between a current utterance and its history.

558, TITLE: Hypernetwork approach to generating point clouds
https://proceedings.icml.cc/static/paper_files/icml/2020/3258-Paper.pdf
AUTHORS: Przemyslaw Spurek, Sebastian Winczowski, Jacek Tabor, Maciej Zamorski, Maciej Zieba, Tomasz Trzcinski
HIGHLIGHT: In this work, we propose a novel method for generating 3D point clouds that leverage properties of hyper networks.

559, TITLE: On a projective ensemble approach to two sample test for equality of distributions
https://proceedings.icml.cc/static/paper_files/icml/2020/3271-Paper.pdf
AUTHORS: Zhimei Li, Yaowu Zhang
HIGHLIGHT: In this work, we propose a robust test for the multivariate two-sample problem through projective ensemble, which is a generalization of the Cramer-von Mises statistic.

560, TITLE: Coresets for Data-efficient Training of Machine Learning Models
https://proceedings.icml.cc/static/paper_files/icml/2020/3274-Paper.pdf
AUTHORS: Baharan Mirzasoleiman, Jeff Bilmes, Jure Leskovec
HIGHLIGHT: Here we develop CRAIG, a method to select a weighted subset (or coreset) of training data that closely estimates the full gradient by maximizing a submodular function.

561, TITLE: Searching to Exploit Memorization Effect in Learning with Noisy Labels
https://proceedings.icml.cc/static/paper_files/icml/2020/3285-Paper.pdf
AUTHORS: QUANMING YAO, Hansi Yang, Bo Han, Gang Niu, James Kwok
HIGHLIGHT: In this paper, motivated by the success of automated machine learning (AutoML), we model this issue as a function approximation problem.

562, TITLE: Randomized Smoothing of All Shapes and Sizes
https://proceedings.icml.cc/static/paper_files/icml/2020/3289-Paper.pdf
AUTHORS: Greg Yang, Tony Duan, J. Edward Hu, Hadi Salman, Ilya Razenshteyn, Jerry Li
HIGHLIGHT: We propose a novel framework for devising and analyzing randomized smoothing schemes, and validate its effectiveness in practice.

563, TITLE: DeepCoDA: personalized interpretability for compositional health
https://proceedings.icml.cc/static/paper_files/icml/2020/3291-Paper.pdf
AUTHORS: Thomas Quinn, Dang Nguyen, Santu Rana, Sunil Gupta, Svetha Venkatesh
HIGHLIGHT: We propose the DeepCoDA framework to extend precision health modelling to high-dimensional compositional data, and to provide personalized interpretability through patient-specific weights.

564, TITLE: Private Query Release Assisted by Public Data
https://proceedings.icml.cc/static/paper_files/icml/2020/3293-Paper.pdf
AUTHORS: Raef Bassily, Albert Cheu, Shay Moran, Aleksandar Nikolov, Jonathan Ullman, Steven Wu
HIGHLIGHT: We study the problem of differentially private query release assisted by public data.

565, TITLE: Adaptive Droplet Routing in Digital Microfluidic Biochips Using Deep Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3297-Paper.pdf
AUTHORS: Tung-Che Liang, Zhanwei Zhong, Yaas Bigdeli, Tsung-Yi Ho, Richard Fair, Krishnendu Chakrabarty
HIGHLIGHT: We present and investigate a novel application domain for deep reinforcement learning (RL): droplet routing on digital microfluidic biochips (DMFBs).

566, TITLE: Continuous-time Lower Bounds for Gradient-based Algorithms
https://proceedings.icml.cc/static/paper_files/icml/2020/3305-Paper.pdf
AUTHORS: Michael Muehlebach, Michael Jordan
HIGHLIGHT: We reduce the multi-dimensional problem to a single dimension, recover well-known lower bounds from the discrete-time setting, and provide insights into why these lower bounds occur.

567, TITLE: A Tree-Structured Decoder for Image-to-Markup Generation
https://proceedings.icml.cc/static/paper_files/icml/2020/3307-Paper.pdf
AUTHORS: Jianshu Zhang, Jun Du, Yongxin Yang, Yi-Zhe Song, Si Wei, Lirong Dai

HIGHLIGHT: In this work, we first show via a set of toy problems that string decoders struggle to decode tree structures, especially as structural complexity increases. We then propose a tree-structured decoder that specifically aims at generating a tree-structured markup.

568, TITLE: Sample Factory: Egocentric 3D Control from Pixels at 100000 FPS with Asynchronous Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3314-Paper.pdf
AUTHORS: Aleksei Petrenko, Zhehui Huang, Tushar Kumar, Gaurav Sukhatme, Vladlen Koltun
HIGHLIGHT: In this work we aim to solve this problem by optimizing the efficiency and resource utilization of reinforcement learning algorithms instead of relying on distributed computation.

569, TITLE: Scalable Deep Generative Modeling for Sparse Graphs
https://proceedings.icml.cc/static/paper_files/icml/2020/3323-Paper.pdf
AUTHORS: Hanjun Dai, Azade Nazi, Yujia Li, Bo Dai, Dale Schuurmans
HIGHLIGHT: Based on this, we develop a novel autoregressive model, named BiGG, that utilizes this sparsity to avoid generating the full adjacency matrix, and importantly reduces the graph generation time complexity to $O((n + m)\log n)$.

570, TITLE: Closed Loop Neural-Symbolic Learning via Integrating Neural Perception, Grammar Parsing, and Symbolic Reasoning
https://proceedings.icml.cc/static/paper_files/icml/2020/3327-Paper.pdf
AUTHORS: Qing Li, Siyuan Huang, Yining Hong, Yixin Chen, Ying Nian Wu, Song-Chun Zhu
HIGHLIGHT: In this paper, we address these issues and close the loop of neural-symbolic learning by (1) introducing the grammar model as a symbolic prior to bridge neural perception and symbolic reasoning, and (2) proposing a novel back-search algorithm which mimics the top-down human-like learning procedure to propagate the error through the symbolic reasoning module efficiently.

571, TITLE: NGBoost: Natural Gradient Boosting for Probabilistic Prediction
https://proceedings.icml.cc/static/paper_files/icml/2020/3337-Paper.pdf
AUTHORS: Tony Duan, Anand Avati, Daisy Ding, Khanh K. Thai, Sanjay Basu, Andrew Ng, Alejandro Schuler
HIGHLIGHT: We present Natural Gradient Boosting (NGBoost), an algorithm for generic probabilistic prediction via gradient boosting.

572, TITLE: Q-value Path Decomposition for Deep Multiagent Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3354-Paper.pdf
AUTHORS: Yaodong Yang, Jianye Hao, Guangyong Chen, Hongyao Tang, Yingfeng Chen, Yujing Hu, Changjie Fan, Zhongyu Wei
HIGHLIGHT: In this paper, we propose a new method called Q-value Path Decomposition (QPD) to decompose the system's global Q-values into individual agents' Q-values.

573, TITLE: Online Learned Continual Compression with Adaptive Quantization Modules
https://proceedings.icml.cc/static/paper_files/icml/2020/3358-Paper.pdf
AUTHORS: Lucas Caccia, Eugene Belilovsky, Massimo Caccia, Joelle Pineau
HIGHLIGHT: We introduce and study the problem of Online Continual Compression, where one attempts to simultaneously learn to compress and store a representative dataset from a non i.i.d data stream, while only observing each sample once.

574, TITLE: Learning What to Defer for Maximum Independent Sets
https://proceedings.icml.cc/static/paper_files/icml/2020/3363-Paper.pdf
AUTHORS: Sungsoo Ahn, Younggyo Seo, Jinwoo Shin
HIGHLIGHT: In this paper, we seek to resolve this issue by proposing a novel DRL scheme where the agent adaptively shrinks or stretch the number of stages by learning to defer the determination of the solution at each stage.

575, TITLE: Generalized and Scalable Optimal Sparse Decision Trees
https://proceedings.icml.cc/static/paper_files/icml/2020/3364-Paper.pdf
AUTHORS: Jimmy Lin, Chudi Zhong, Diane Hu, Cynthia Rudin, Margo Seltzer
HIGHLIGHT: The contribution in this work is to provide a general framework for decision tree optimization that addresses the two significant open problems in the area: treatment of imbalanced data and fully optimizing over continuous variables.

576, TITLE: The Effect of Natural Distribution Shift on Question Answering Models
https://proceedings.icml.cc/static/paper_files/icml/2020/3366-Paper.pdf
AUTHORS: John Miller, Karl Krauth, Ludwig Schmidt, Benjamin Recht

HIGHLIGHT: Taken together, our results confirmthe surprising resilience of the holdout methodand emphasize the need to move towards evalua-tion metrics that incorporate robustness to naturaldistribution shifts.

577, TITLE: Quantized Decentralized Stochastic Learning over Directed Graphs
https://proceedings.icml.cc/static/paper_files/icml/2020/3372-Paper.pdf
AUTHORS: Hossein Taheri, Aryan Mokhtari, Hamed Hassani, Ramtin Pedarsani
HIGHLIGHT: To tackle this bottleneck, we propose the quantized decentralized stochastic learning algorithm over directed graphs that is based on the push-sum algorithm in decentralized consensus optimization.

578, TITLE: Semi-Supervised Learning with Normalizing Flows
https://proceedings.icml.cc/static/paper_files/icml/2020/3378-Paper.pdf
AUTHORS: Pavel Izmailov, Polina Kirichenko, Marc Finzi, Andrew Wilson
HIGHLIGHT: We propose FlowGMM, an end-to-end approach to generative semi supervised learning with normalizing flows, using a latent Gaussian mixture model.

579, TITLE: Student Specialization in Deep Rectified Networks With Finite Width and Input Dimension
https://proceedings.icml.cc/static/paper_files/icml/2020/3379-Paper.pdf
AUTHORS: Yuandong Tian
HIGHLIGHT: We consider a deep ReLU / Leaky ReLU student network trained from the output of a fixed teacher network of the same depth, with Stochastic Gradient Descent (SGD).

580, TITLE: Sample Amplification: Increasing Dataset Size even when Learning is Impossible
https://proceedings.icml.cc/static/paper_files/icml/2020/3381-Paper.pdf
AUTHORS: Brian Axelrod, Shivam Garg, Vatsal Sharan, Gregory Valiant
HIGHLIGHT: Perhaps surprisingly, we show a valid amplification procedure exists for both of these settings, even in the regime where the size of the input dataset, n, is significantly less than what would be necessary to learn distribution D to non-trivial accuracy.

581, TITLE: Alleviating Privacy Attacks via Causal Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3387-Paper.pdf
AUTHORS: Shruti Tople, Amit Sharma, Aditya Nori
HIGHLIGHT: Therefore, we propose the use of causal learning approaches where a model learns the causal relationship between the input features and the outcome.

582, TITLE: The Intrinsic Robustness of Stochastic Bandits to Strategic Manipulation
https://proceedings.icml.cc/static/paper_files/icml/2020/3395-Paper.pdf
AUTHORS: Zhe Feng, David Parkes, Haifeng Xu
HIGHLIGHT: Motivated by economic applications such as recommender systems, we study the behavior of stochastic bandits algorithms under \emph{strategic behavior} conducted by rational actors, i.e., the arms.

583, TITLE: Normalized Flat Minima: Exploring Scale Invariant Definition of Flat Minima for Neural Networks Using PAC-Bayesian Analysis
https://proceedings.icml.cc/static/paper_files/icml/2020/3399-Paper.pdf
AUTHORS: Yusuke Tsuzuku, Issei Sato, Masashi Sugiyama
HIGHLIGHT: In this paper, we first provide generalization error bounds using existing normalized flatness measures. Using the analysis, we then propose a novel normalized flatness metric.

584, TITLE: Fiedler Regularization: Learning Neural Networks with Graph Sparsity
https://proceedings.icml.cc/static/paper_files/icml/2020/3408-Paper.pdf
AUTHORS: Edric Tam, David Dunson
HIGHLIGHT: We introduce a novel regularization approach for deep learning that incorporates and respects the underlying graphical structure of the neural network.

585, TITLE: Online Learning with Imperfect Hints
https://proceedings.icml.cc/static/paper_files/icml/2020/3411-Paper.pdf
AUTHORS: Aditya Bhaskara, Ashok Cutkosky, Ravi Kumar, Manish Purohit
HIGHLIGHT: In this paper we develop algorithms and nearly matching lower bounds for online learning with imperfect hints.

586, TITLE: Rate-distortion optimization guided autoencoder for isometric embedding in Euclidean latent space
https://proceedings.icml.cc/static/paper_files/icml/2020/3417-Paper.pdf

AUTHORS: Keizo Kato, Jing Zhou, Tomotake Sasaki, Akira Nakagawa
HIGHLIGHT: In the end, the probability distribution function (PDF) in the real space cannot be estimated from that of the latent space accurately. To overcome this problem, we propose Rate-Distortion Optimization guided autoencoder.

587, TITLE: Optimization from Structured Samples for Coverage Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/3418-Paper.pdf
AUTHORS: Wei Chen, Xiaoming Sun, Jialin Zhang, Zhijie Zhang
HIGHLIGHT: In this work, to circumvent the impossibility result of OPS, we propose a stronger model called optimization from structured samples (OPSS) for coverage functions, where the data samples encode the structural information of the functions.

588, TITLE: Optimal Randomized First-Order Methods for Least-Squares Problems
https://proceedings.icml.cc/static/paper_files/icml/2020/3430-Paper.pdf
AUTHORS: Jonathan Lacotte, Mert Pilanci
HIGHLIGHT: We provide an exact asymptotic analysis of the performance of some fast randomized algorithms for solving overdetermined least-squares problems.

589, TITLE: Stochastic Optimization for Non-convex Inf-Projection Problems
https://proceedings.icml.cc/static/paper_files/icml/2020/3450-Paper.pdf
AUTHORS: Yan Yan, Yi Xu, Lijun Zhang, Wang Xiaoyu, Tianbao Yang
HIGHLIGHT: In this paper, we study a family of non-convex and possibly non-smooth inf-projection minimization problems, where the target objective function is equal to minimization of a joint function over another variable.

590, TITLE: Convex Representation Learning for Generalized Invariance in Semi-Inner-Product Space
https://proceedings.icml.cc/static/paper_files/icml/2020/3475-Paper.pdf
AUTHORS: Yingyi Ma, Vignesh Ganapathiraman, Yaoliang Yu, Xinhua Zhang
HIGHLIGHT: In this work, we develop a \emph{convex} representation learning algorithm for a variety of generalized invariances that can be modeled as semi-norms.

591, TITLE: Neural Kernels Without Tangents
https://proceedings.icml.cc/static/paper_files/icml/2020/3479-Paper.pdf
AUTHORS: Vaishaal Shankar, Alex Fang, Wenshuo Guo, Sara Fridovich-Keil, Jonathan Ragan-Kelley, Ludwig Schmidt, Benjamin Recht
HIGHLIGHT: In particular, using well established feature space tools such as direct sum, averaging, and moment lifting, we present an algebra for creating "compositional" kernels from bags of features.

592, TITLE: Linear Lower Bounds and Conditioning of Differentiable Games
https://proceedings.icml.cc/static/paper_files/icml/2020/3497-Paper.pdf
AUTHORS: Adam Ibrahim, Waïss Azizian, Gauthier Gidel, Ioannis Mitliagkas
HIGHLIGHT: In this work, we approach the question of fundamental iteration complexity by providing lower bounds to complement the linear (i.e. geometric) upper bounds observed in the literature on a wide class of problems.

593, TITLE: Finite-Time Last-Iterate Convergence for Multi-Agent Learning in Games
https://proceedings.icml.cc/static/paper_files/icml/2020/3513-Paper.pdf
AUTHORS: Tianyi Lin, Zhengyuan Zhou, Panayotis Mertikopoulos, Michael Jordan
HIGHLIGHT: In this paper, we consider multi-agent learning via online gradient descent in a class of games called λ-cocoercive games, a fairly broad class of games that admits many Nash equilibria and that properly includes unconstrained strongly monotone games.

594, TITLE: Communication-Efficient Distributed PCA by Riemannian Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/3520-Paper.pdf
AUTHORS: Long-Kai Huang, Jialin Pan
HIGHLIGHT: In this paper, we study the leading eigenvector problem in a statistically distributed setting and propose a communication-efficient algorithm based on Riemannian optimization, which trades local computation for global communication.

595, TITLE: Manifold Identification for Ultimately Communication-Efficient Distributed Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/3524-Paper.pdf
AUTHORS: Yu-Sheng Li, Wei-Lin Chiang, Ching-pei Lee
HIGHLIGHT: This work proposes a progressive manifold identification approach with sound theoretical justifications to greatly reduce both the communication rounds and the bytes communicated per round for partly smooth regularized problems, which include many large-scale machine learning tasks such as the training of ℓ_1- and group-LASSO-regularized models.

596, TITLE: When Demands Evolve Larger and Noisier: Learning and Earning in a Growing Environment
https://proceedings.icml.cc/static/paper_files/icml/2020/3536-Paper.pdf
AUTHORS: Feng Zhu, Zeyu Zheng
HIGHLIGHT: We consider a single-product dynamic pricing problem under a specific non-stationary setting, where the demand grows over time in expectation and possibly gets noisier.

597, TITLE: Being Bayesian about Categorical Probability
https://proceedings.icml.cc/static/paper_files/icml/2020/3560-Paper.pdf
AUTHORS: Taejong Joo, Uijung Chung, Min-Gwan Seo
HIGHLIGHT: As a Bayesian alternative to the softmax, we consider a random variable of a categorical probability over class labels.

598, TITLE: Context-aware Dynamics Model for Generalization in Model-Based Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3567-Paper.pdf
AUTHORS: Kimin Lee, Younggyo Seo, Seunghyun Lee, Honglak Lee, Jinwoo Shin
HIGHLIGHT: To tackle this problem, we decompose the task of learning a global dynamics model into two stages: (a) learning a context latent vector that captures the local dynamics, then (b) predicting the next state conditioned on it.

599, TITLE: Learning Reasoning Strategies in End-to-End Differentiable Proving
https://proceedings.icml.cc/static/paper_files/icml/2020/3569-Paper.pdf
AUTHORS: Pasquale Minervini, Tim Rocktäschel, Sebastian Riedel, Edward Grefenstette, Pontus Stenetorp
HIGHLIGHT: We present Conditional Theorem Provers (CTPs), an extension to NTPs that learns an optimal rule selection strategy via gradient-based optimisation.

600, TITLE: Fast and Private Submodular and k-Submodular Functions Maximization with Matroid Constraints
https://proceedings.icml.cc/static/paper_files/icml/2020/3576-Paper.pdf
AUTHORS: Akbar Rafiey, Yuichi Yoshida
HIGHLIGHT: In this paper, we study the problem of maximizing monotone submodular functions subject to matroid constraints in the framework of differential privacy.

601, TITLE: Streaming Coresets for Symmetric Tensor Factorization
https://proceedings.icml.cc/static/paper_files/icml/2020/3579-Paper.pdf
AUTHORS: Supratim Shit, Anirban Dasgupta, Rachit Chhaya, Jayesh Choudhari
HIGHLIGHT: Given a set of n vectors, each in $\~R^d$, we present algorithms to select a sublinear number of these vectors as coreset, while guaranteeing that the CP decomposition of the p-moment tensor of the coreset approximates the corresponding decomposition of the p-moment tensor computed from the full data.

602, TITLE: How Good is the Bayes Posterior in Deep Neural Networks Really?
https://proceedings.icml.cc/static/paper_files/icml/2020/3581-Paper.pdf
AUTHORS: Florian Wenzel, Kevin Roth, Bastiaan Veeling, Jakub Swiatkowski, Linh Tran, Stephan Mandt, Jasper Snoek, Tim Salimans, Rodolphe Jenatton, Sebastian Nowozin
HIGHLIGHT: In this work we cast doubt on the current understanding of Bayes posteriors in popular deep neural networks: we demonstrate through careful MCMC sampling that the posterior predictive induced by the Bayes posterior yields systematically worse predictions when compared to simpler methods including point estimates obtained from SGD.

603, TITLE: Optimally Solving Two-Agent Decentralized POMDPs Under One-Sided Information Sharing
https://proceedings.icml.cc/static/paper_files/icml/2020/3582-Paper.pdf
AUTHORS: Yuxuan Xie, Jilles Dibangoye, Olivier Buffet
HIGHLIGHT: This paper addresses this question for a team of two agents, with one-sided information sharing---\ie both agents have imperfect information about the state of the world, but only one has access to what the other sees and does.

604, TITLE: Learning Algebraic Multigrid Using Graph Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/3595-Paper.pdf
AUTHORS: Ilay Luz, Meirav Galun, Haggai Maron, Ronen Basri, Irad Yavneh
HIGHLIGHT: Here we propose a framework for learning AMG prolongation operators for linear systems with sparse symmetric positive (semi-) definite matrices.

605, TITLE: Fractal Gaussian Networks: A sparse random graph model based on Gaussian Multiplicative Chaos
https://proceedings.icml.cc/static/paper_files/icml/2020/3598-Paper.pdf
AUTHORS: Subhroshekhar Ghosh, Krishna Balasubramanian, Xiaochuan Yang

HIGHLIGHT: We propose a novel stochastic network model, called Fractal Gaussian Network (FGN), that embodies well-defined and analytically tractable fractal structures.

606, TITLE: Structured Policy Iteration for Linear Quadratic Regulator
https://proceedings.icml.cc/static/paper_files/icml/2020/3607-Paper.pdf
AUTHORS: Youngsuk Park, Ryan Rossi, Zheng Wen, Gang Wu, Handong Zhao
HIGHLIGHT: In this paper, we introduce the Structured Policy Iteration (S-PI) for LQR, a method capable of deriving a structured linear policy.

607, TITLE: T-GD: Transferable GAN-generated Images Detection Framework
https://proceedings.icml.cc/static/paper_files/icml/2020/3622-Paper.pdf
AUTHORS: Hyeonseong Jeon, Young Oh Bang, Junyaup Kim, Simon Woo
HIGHLIGHT: In this work, we present a robust transferable framework to effectively detect GAN-images, called Transferable GAN-images Detection framework (T-GD).

608, TITLE: Low Bias Low Variance Gradient Estimates for Hierarchical Boolean Stochastic Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/3626-Paper.pdf
AUTHORS: Adeel Pervez, Taco Cohen, Efstratios Gavves
HIGHLIGHT: To analyze such networks, we introduce the framework of harmonic analysis for Boolean functions to derive an analytic formulation for the bias and variance in the Straight-Through estimator.

609, TITLE: Learning Flat Latent Manifolds with VAEs
https://proceedings.icml.cc/static/paper_files/icml/2020/3631-Paper.pdf
AUTHORS: Nutan Chen, Alexej Klushyn, Francesco Ferroni, Justin Bayer, Patrick van der Smagt
HIGHLIGHT: We propose an extension to the framework of variational auto-encoders allows learning flat latent manifolds, where the Euclidean metric is a proxy for the similarity between data points.

610, TITLE: Multi-Task Learning with User Preferences: Gradient Descent with Controlled Ascent in Pareto Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/3635-Paper.pdf
AUTHORS: Debabrata Mahapatra, Vaibhav Rajan
HIGHLIGHT: We develop the first gradient-based multi-objective MTL algorithm to address this problem.

611, TITLE: Transfer Learning without Knowing: Reprogramming Black-box Machine Learning Models with Scarce Data and Limited Resources
https://proceedings.icml.cc/static/paper_files/icml/2020/3642-Paper.pdf
AUTHORS: Yun Yun Tsai, Pin-Yu Chen, Tsung-Yi Ho
HIGHLIGHT: Motivated by the techniques from adversarial machine learning (ML) that are capable of manipulating the model prediction via data perturbations, in this paper we propose a novel approach, black-box adversarial reprogramming (BAR), that repurposes a well-trained black-box ML model (e.g., a prediction API or a proprietary software) for solving different ML tasks, especially in the scenario with scarce data and constrained resources.

612, TITLE: On Coresets for Regularized Regression
https://proceedings.icml.cc/static/paper_files/icml/2020/3647-Paper.pdf
AUTHORS: Rachit Chhaya, Supratim Shit, Anirban Dasgupta
HIGHLIGHT: We propose a modified version of the LASSO problem and obtain for it a coreset of size smaller than the least square regression.

613, TITLE: Budgeted Online Influence Maximization
https://proceedings.icml.cc/static/paper_files/icml/2020/3649-Paper.pdf
AUTHORS: Pierre Perrault, Zheng Wen, Michal Valko, Jennifer Healey
HIGHLIGHT: We introduce a new budgeted framework for online influence maximization, considering the total cost of an advertising campaign instead of the common cardinality constraint on a chosen influencer set.

614, TITLE: On the (In)tractability of Computing Normalizing Constants for the Product of Determinantal Point Processes
https://proceedings.icml.cc/static/paper_files/icml/2020/3653-Paper.pdf
AUTHORS: Naoto Ohsaka, Tatsuya Matsuoka
HIGHLIGHT: We consider the product of determinantal point processes (DPPs), a point process whose probability mass is proportional to the product of principal minors of multiple matrices as a natural, promising generalization of DPPs.

615, TITLE: Monte-Carlo Tree Search as Regularized Policy Optimization

https://proceedings.icml.cc/static/paper_files/icml/2020/3655-Paper.pdf
AUTHORS: Jean-Bastien Grill, Florent Altché, Yunhao Tang, Thomas Hubert, Michal Valko, Ioannis Antonoglou, Remi Munos
HIGHLIGHT: In this paper, we show that AlphaZero's search heuristic, along with other common ones, can be interpreted as an approximation to the solution of a specific regularized policy optimization problem.

616, TITLE: On the Expressivity of Neural Networks for Deep Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3657-Paper.pdf
AUTHORS: Kefan Dong, Yuping Luo, Tianhe Yu, Chelsea Finn, Tengyu Ma
HIGHLIGHT: We show, theoretically and empirically, that even for one-dimensional continuous state space, there are many MDPs whose optimal Q-functions and policies are much more complex than the dynamics.

617, TITLE: The k-tied Normal Distribution: A Compact Parameterization of Gaussian Mean Field Posteriors in Bayesian Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/3662-Paper.pdf
AUTHORS: Jakub Swiatkowski, Kevin Roth, Bastiaan Veeling, Linh Tran, Joshua Dillon, Jasper Snoek, Stephan Mandt, Tim Salimans, Rodolphe Jenatton, Sebastian Nowozin
HIGHLIGHT: For a variety of deep Bayesian neural networks trained using Gaussian mean-field variational inference, we find that the posterior standard deviations consistently exhibit strong low-rank structure after convergence.

618, TITLE: A Generative Model for Molecular Distance Geometry
https://proceedings.icml.cc/static/paper_files/icml/2020/3679-Paper.pdf
AUTHORS: Gregor Simm, Jose Miguel Hernandez-Lobato
HIGHLIGHT: We present a probabilistic model that generates such samples for molecules from their graph representations.

619, TITLE: Why bigger is not always better: on finite and infinite neural networks
https://proceedings.icml.cc/static/paper_files/icml/2020/3680-Paper.pdf
AUTHORS: Laurence Aitchison
HIGHLIGHT: This motivates the introduction of a new class of network: infinite networks with bottlenecks, which inherit the theoretical tractability of infinite networks while at the same time allowing representation learning.

620, TITLE: Data-Efficient Image Recognition with Contrastive Predictive Coding
https://proceedings.icml.cc/static/paper_files/icml/2020/3694-Paper.pdf
AUTHORS: Olivier Henaff
HIGHLIGHT: We therefore revisit and improve Contrastive Predictive Coding, an unsupervised objective for learning such representations.

621, TITLE: Intrinsic Reward Driven Imitation Learning via Generative Model
https://proceedings.icml.cc/static/paper_files/icml/2020/3696-Paper.pdf
AUTHORS: Xingrui Yu, Yueming LYU, Ivor Tsang
HIGHLIGHT: To address this challenge, we propose a novel reward learning module to generate intrinsic reward signals via a generative model.

622, TITLE: Can Increasing Input Dimensionality Improve Deep Reinforcement Learning?
https://proceedings.icml.cc/static/paper_files/icml/2020/3700-Paper.pdf
AUTHORS: Kei Ota, Tomoaki Oiki, Devesh Jha, Toshisada Mariyama, Daniel Nikovski
HIGHLIGHT: In this paper, we try to study if increasing input dimensionality helps improve performance and sample efficiency of model-free deep RL algorithms.

623, TITLE: Batch Reinforcement Learning with Hyperparameter Gradients
https://proceedings.icml.cc/static/paper_files/icml/2020/3705-Paper.pdf
AUTHORS: Byung-Jun Lee, Jongmin Lee, Peter Vrancx, Dongho Kim, Kee-Eung Kim
HIGHLIGHT: Unlike prior work where this trade-off is controlled by hand-tuned hyperparameters, we propose a novel batch reinforcement learning approach, batch optimization of policy and hyperparameter (BOPAH), that uses a gradient-based optimization of the hyperparameter using held-out data.

624, TITLE: Sub-Goal Trees -- a Framework for Goal-Based Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3711-Paper.pdf
AUTHORS: Tom Jurgenson, Or Avner, Edward Groshev, Aviv Tamar
HIGHLIGHT: Instead, we propose a new RL framework, derived from a dynamic programming equation for the all pairs shortest path (APSP) problem, which naturally solves goal-directed queries.

625, TITLE: A Geometric Approach to Archetypal Analysis via Sparse Projections
https://proceedings.icml.cc/static/paper_files/icml/2020/3716-Paper.pdf
AUTHORS: Vinayak Abrol, Pulkit Sharma
HIGHLIGHT: This work presents a computationally efficient greedy AA (GAA) algorithm.

626, TITLE: Sequence Generation with Mixed Representations
https://proceedings.icml.cc/static/paper_files/icml/2020/3729-Paper.pdf
AUTHORS: Lijun Wu, Shufang Xie, Yingce Xia, Yang Fan, Jian-Huang Lai, Tao Qin, Tie-Yan Liu
HIGHLIGHT: In this work, we propose to leverage the mixed representations from different tokenization methods for sequence generation tasks, in order to boost the model performance with unique characteristics and advantages of individual tokenization methods.

627, TITLE: Agent57: Outperforming the Atari Human Benchmark
https://proceedings.icml.cc/static/paper_files/icml/2020/3732-Paper.pdf
AUTHORS: Adrià Puigdomenech Badia, Bilal Piot, Steven Kapturowski, Pablo Sprechmann, Oleksandr Vitvitskyi, Zhaohan Guo, Charles Blundell
HIGHLIGHT: We propose Agent57, the first deep RL agent that outperforms the standard human benchmark on all 57 Atari games.

628, TITLE: RIFLE: Backpropagation in Depth for Deep Transfer Learning through Re-Initializing the Fully-connected LayEr
https://proceedings.icml.cc/static/paper_files/icml/2020/3745-Paper.pdf
AUTHORS: Xingjian Li, Haoyi Xiong, Haozhe An, Dejing Dou, Cheng-Zhong Xu
HIGHLIGHT: In this work, we propose RIFLE - a simple yet effective strategy that deepens backpropagation in transfer learning settings, through periodically ReInitializing the Fully-connected LayEr with random scratch during the fine-tuning procedure.

629, TITLE: Fairwashing explanations with off-manifold detergent
https://proceedings.icml.cc/static/paper_files/icml/2020/3760-Paper.pdf
AUTHORS: Christopher Anders, Ann-Kathrin Dombrowski, Klaus-robert Mueller, Pan Kessel, Plamen Pasliev
HIGHLIGHT: In this paper, we show both theoretically and experimentally that these hopes are presently unfounded.

630, TITLE: Learning disconnected manifolds: a no GAN's land
https://proceedings.icml.cc/static/paper_files/icml/2020/3761-Paper.pdf
AUTHORS: Ugo Tanielian, Thibaut Issenhuth, Elvis Dohmatob, Jeremie Mary
HIGHLIGHT: We formalize this problem by establishing a "no free lunch" theorem for the disconnected manifold learning stating an upper-bound on the precision of the targeted distribution.

631, TITLE: Sets Clustering
https://proceedings.icml.cc/static/paper_files/icml/2020/3768-Paper.pdf
AUTHORS: Ibrahim Jubran, Murad Tukan, Alaa Maalouf, Dan Feldman
HIGHLIGHT: We prove that such a core-set of $O(\log^2{n})$ sets always exists, and can be computed in $O(n\log{n})$ time, for every input $\mathcal{P}$ and every fixed $d,k\geq 1$ and $\varepsilon \in (0,1)$.

632, TITLE: Variational Autoencoders with Riemannian Brownian Motion Priors
https://proceedings.icml.cc/static/paper_files/icml/2020/3786-Paper.pdf
AUTHORS: Dimitris Kalatzis, David Eklund, Georgios Arvanitidis, Søren Hauberg
HIGHLIGHT: To counter this, we assume a Riemannian structure over the latent space, which constitutes a more principled geometric view of the latent codes, and replace the standard Gaussian prior with a Riemannian Brownian motion prior.

633, TITLE: Non-separable Non-stationary random fields
https://proceedings.icml.cc/static/paper_files/icml/2020/3803-Paper.pdf
AUTHORS: Kangrui Wang, Oliver Hamelijnck, Theodoros Damoulas, Mark Steel
HIGHLIGHT: We describe a framework for constructing non-separable non-stationary random fields that is based on an infinite mixture of convolved stochastic processes.

634, TITLE: Nonparametric Score Estimators
https://proceedings.icml.cc/static/paper_files/icml/2020/3804-Paper.pdf
AUTHORS: Yuhao Zhou, Jiaxin Shi, Jun Zhu
HIGHLIGHT: We provide a unifying view of these estimators under the framework of regularized nonparametric regression.

635, TITLE:	A Free-Energy Principle for Representation Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3813-Paper.pdf
AUTHORS:	Yansong Gao, Pratik Chaudhari
HIGHLIGHT:	This paper employs a formal connection of machine learning with thermodynamics to characterize the quality of learnt representations for transfer learning.

636, TITLE:	Scalable Differential Privacy with Certified Robustness in Adversarial Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3815-Paper.pdf
AUTHORS:	Hai Phan, My T. Thai, Han Hu, Ruoming Jin, Tong Sun, Dejing Dou
HIGHLIGHT:	In this paper, we aim to develop a scalable algorithm to preserve differential privacy (DP) in adversarial learning for deep neural networks (DNNs), with certified robustness to adversarial examples.

637, TITLE:	Variational Inference for Sequential Data with Future Likelihood Estimates
https://proceedings.icml.cc/static/paper_files/icml/2020/3816-Paper.pdf
AUTHORS:	Geon-Hyeong Kim, Youngsoo Jang, Hongseok Yang, Kee-Eung Kim
HIGHLIGHT:	To tackle this challenge, we present a novel variational inference algorithm for sequential data, which performs well even when the density from the model is not differentiable, for instance, due to the use of discrete random variables.

638, TITLE:	Implicit Learning Dynamics in Stackelberg Games: Equilibria Characterization, Convergence Analysis, and Empirical Study
https://proceedings.icml.cc/static/paper_files/icml/2020/3821-Paper.pdf
AUTHORS:	Tanner Fiez, Benjamin Chasnov, Lillian Ratliff
HIGHLIGHT:	We derive novel gradient-based learning dynamics emulating the natural structure of a Stackelberg game using the Implicit Function Theorem and provide convergence analysis for deterministic and stochastic updates for zero-sum and general-sum games.

639, TITLE:	Let's Agree to Agree: Neural Networks Share Classification Order on Real Datasets
https://proceedings.icml.cc/static/paper_files/icml/2020/3822-Paper.pdf
AUTHORS:	Guy Hacohen, Leshem Choshen, Daphna Weinshall
HIGHLIGHT:	We report a series of robust empirical observations, whereby deep Neural Networks learn the examples in both the training and test sets in a similar order.

640, TITLE:	Quantile Causal Discovery
https://proceedings.icml.cc/static/paper_files/icml/2020/3826-Paper.pdf
AUTHORS:	Natasa Tagasovska, Thibault Vatter, Valérie Chavez-Demoulin
HIGHLIGHT:	Based on this theory, we develop Quantile Causal Discovery (QCD), a new method to uncover causal relationships.

641, TITLE:	How to Solve Fair k-Center in Massive Data Models
https://proceedings.icml.cc/static/paper_files/icml/2020/3827-Paper.pdf
AUTHORS:	Ashish Chiplunkar, Sagar Kale, Sivaramakrishnan Natarajan Ramamoorthy
HIGHLIGHT:	In this work, we design new streaming and distributed algorithms for the fair k-center problem that models fair data summarization.

642, TITLE:	Bayesian Learning from Sequential Data using Gaussian Processes with Signature Covariances
https://proceedings.icml.cc/static/paper_files/icml/2020/3828-Paper.pdf
AUTHORS:	Csaba Toth, Harald Oberhauser
HIGHLIGHT:	To deal with this, we introduce a sparse variational approach with inducing tensors.

643, TITLE:	Beyond Signal Propagation: Is Feature Diversity Necessary in Deep Neural Network Initialization?
https://proceedings.icml.cc/static/paper_files/icml/2020/3840-Paper.pdf
AUTHORS:	Yaniv Blumenfeld, Dar Gilboa, Daniel Soudry
HIGHLIGHT:	This indicates that random, diverse initializations are \textit{not} necessary for training neural networks.

644, TITLE:	Dynamic Knapsack Optimization Towards Efficient Multi-Channel Sequential Advertising
https://proceedings.icml.cc/static/paper_files/icml/2020/3844-Paper.pdf
AUTHORS:	Xiaotian Hao, Zhaoqing Peng, Yi Ma, Guan Wang, Junqi Jin, Jianye Hao, Shan Chen, Rongquan Bai, Mingzhou Xie, Miao Xu, Zhenzhe Zheng, Chuan Yu, HAN LI, Jian Xu, Kun Gai
HIGHLIGHT:	In this paper, we formulate the sequential advertising strategy optimization as a dynamic knapsack problem.

645, TITLE: Stochastically Dominant Distributional Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/3862-Paper.pdf
AUTHORS: John Martin, Michal Lyskawinski, Xiaohu Li, Brendan Englot
HIGHLIGHT: We describe a new approach for managing aleatoric uncertainty in the Reinforcement Learning paradigm.

646, TITLE: Adversarial Robustness Against the Union of Multiple Threat Models
https://proceedings.icml.cc/static/paper_files/icml/2020/3863-Paper.pdf
AUTHORS: Pratyush Maini, Eric Wong, Zico Kolter
HIGHLIGHT: In this work, we develop a natural generalization of the standard PGD-based procedure to incorporate multiple threat models into a single attack, by taking the worst-case over all steepest descent directions.

647, TITLE: Student-Teacher Curriculum Learning via Reinforcement Learning: Predicting Hospital Inpatient Admission Location
https://proceedings.icml.cc/static/paper_files/icml/2020/3870-Paper.pdf
AUTHORS: Rasheed El-Bouri, David Eyre, Peter Watkinson, Tingting Zhu, David Clifton
HIGHLIGHT: In this work we propose a student-teacher network via reinforcement learning to deal with this specific problem.

648, TITLE: Option Discovery in the Absence of Rewards with Manifold Analysis
https://proceedings.icml.cc/static/paper_files/icml/2020/3873-Paper.pdf
AUTHORS: Amitay Bar, Ronen Talmon, Ron Meir
HIGHLIGHT: In this paper, we present an approach based on spectral graph theory and derive an algorithm that systematically discovers options without access to a specific reward or task assignment.

649, TITLE: Generalisation error in learning with random features and the hidden manifold model
https://proceedings.icml.cc/static/paper_files/icml/2020/3887-Paper.pdf
AUTHORS: Federica Gerace, Bruno Loureiro, Florent Krzakala, Marc Mezard, Lenka Zdeborova
HIGHLIGHT: We study generalized linear regression and classification for a synthetically generated dataset encompassing different problems of interest, such as learning with random features, neural networks in the lazy training regime, and the hidden manifold model.

650, TITLE: Fast and Consistent Learning of Hidden Markov Models by Incorporating Non-Consecutive Correlations
https://proceedings.icml.cc/static/paper_files/icml/2020/3896-Paper.pdf
AUTHORS: Robert Mattila, Cristian Rojas, Eric Moulines, Vikram Krishnamurthy, Bo Wahlberg
HIGHLIGHT: In this paper, we propose extending these methods (both pair- and triplet-based) by also including non-consecutive correlations in a way which does not significantly increase the computational cost (which scales linearly with the number of additional lags included).

651, TITLE: Gradient-free Online Learning in Continuous Games with Delayed Rewards
https://proceedings.icml.cc/static/paper_files/icml/2020/3922-Paper.pdf
AUTHORS: Amélie Héliou, Panayotis Mertikopoulos, Zhengyuan Zhou
HIGHLIGHT: Motivated by applications to online advertising and recommender systems, we consider a game-theoretic model with delayed rewards and asynchronous, payoff-based feedback.

652, TITLE: Pseudo-Masked Language Models for Unified Language Model Pre-Training
https://proceedings.icml.cc/static/paper_files/icml/2020/3934-Paper.pdf
AUTHORS: Hangbo Bao, Li Dong, Furu Wei, Wenhui Wang, Nan Yang, Xiaodong Liu, Yu Wang, Jianfeng Gao, Songhao Piao, Ming Zhou, Hsiao-Wuen Hon
HIGHLIGHT: We propose to pre-train a unified language model for both autoencoding and partially autoregressive language modeling tasks using a novel training procedure, referred to as a pseudo-masked language model (PMLM).

653, TITLE: Einsum Networks: Fast and Scalable Learning of Tractable Probabilistic Circuits
https://proceedings.icml.cc/static/paper_files/icml/2020/3949-Paper.pdf
AUTHORS: Robert Peharz, Steven Lang, Antonio Vergari, Karl Stelzner, Alejandro Molina, Martin Trapp, Guy Van den Broeck, Kristian Kersting, Zoubin Ghahramani
HIGHLIGHT: In this paper, we propose Einsum Networks (EiNets), a novel implementation design for PCs, improving prior art in several regards.

654, TITLE: Polynomial Tensor Sketch for Element-wise Function of Low-Rank Matrix
https://proceedings.icml.cc/static/paper_files/icml/2020/3955-Paper.pdf

AUTHORS: Insu Han, Haim Avron, Jinwoo Shin
HIGHLIGHT: To this end, we propose an efficient sketching-based algorithm whose complexity is significantly lower than the number of entries of A, i.e., it runs without accessing all entries of [f(Aij)] explicitly.

655, TITLE: Inexact Tensor Methods with Dynamic Accuracies
https://proceedings.icml.cc/static/paper_files/icml/2020/3958-Paper.pdf
AUTHORS: Nikita Doikov, Yurii Nesterov
HIGHLIGHT: In this paper, we study inexact high-order Tensor Methods for solving convex optimization problems with composite objective.

656, TITLE: k-means++: few more steps yield constant approximation
https://proceedings.icml.cc/static/paper_files/icml/2020/3965-Paper.pdf
AUTHORS: Davin Choo, Christoph Grunau, Julian Portmann, Vaclav Rozhon
HIGHLIGHT: In this paper, we improve their analysis to show that, for any arbitrarily small constant epsilon > 0, with only epsilon * k additional local search steps, one can achieve a constant approximation guarantee (with high probability in k), resolving an open problem in their paper.

657, TITLE: Radioactive data: tracing through training
https://proceedings.icml.cc/static/paper_files/icml/2020/3974-Paper.pdf
AUTHORS: Alexandre Sablayrolles, Douze Matthijs, Cordelia Schmid, Herve Jegou
HIGHLIGHT: We propose a new technique, radioactive data, that makes imperceptible changes to this dataset such that any model trained on it will bear an identifiable mark.

658, TITLE: Doubly robust off-policy evaluation with shrinkage
https://proceedings.icml.cc/static/paper_files/icml/2020/3992-Paper.pdf
AUTHORS: Yi Su, Maria Dimakopoulou, Akshay Krishnamurthy, Miroslav Dudik
HIGHLIGHT: We propose a new framework for designing estimators for off-policy evaluation in contextual bandits.

659, TITLE: Fast Adaptation to New Environments via Policy-Dynamics Value Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/3993-Paper.pdf
AUTHORS: Roberta Raileanu, Max Goldstein, Arthur Szlam, Facebook Rob Fergus
HIGHLIGHT: We introduce Policy-Dynamics Value Functions (PD-VF), a novel approach for rapidly adapting to dynamics different from those previously seen in training.

660, TITLE: Neural Clustering Processes
https://proceedings.icml.cc/static/paper_files/icml/2020/3997-Paper.pdf
AUTHORS: Ari Pakman, Yueqi Wang, Catalin Mitelut, JinHyung Lee, Department of Statistics Liam Paninski
HIGHLIGHT: In this work we introduce deep network architectures trained with labeled samples from any generative model of clustered datasets.

661, TITLE: Topologically Densified Distributions
https://proceedings.icml.cc/static/paper_files/icml/2020/4001-Paper.pdf
AUTHORS: Christoph Hofer, Florian Graf, Marc Niethammer, Roland Kwitt
HIGHLIGHT: We study regularization in the context of small sample-size learning with over-parametrized neural networks.

662, TITLE: Low-loss connection of weight vectors: distribution-based approaches
https://proceedings.icml.cc/static/paper_files/icml/2020/4015-Paper.pdf
AUTHORS: Ivan Anokhin, Dmitry Yarotsky
HIGHLIGHT: We describe and compare experimentally a panel of methods used to connect two low-loss points by a low-loss curve on this surface.

663, TITLE: Graph Filtration Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4020-Paper.pdf
AUTHORS: Christoph Hofer, Florian Graf, Bastian Rieck, Marc Niethammer, Roland Kwitt
HIGHLIGHT: We propose an approach to learning with graph-structured data in the problem domain of graph classification.

664, TITLE: Differentiable Product Quantization for Learning Compact Embedding Layers
https://proceedings.icml.cc/static/paper_files/icml/2020/4025-Paper.pdf
AUTHORS: Ting Chen, Lala Li, Yizhou Sun

HIGHLIGHT: In this work, we propose a generic and end-to-end learnable compression framework termed differentiable product quantization (DPQ).

665, TITLE: Scalable Exact Inference in Multi-Output Gaussian Processes
https://proceedings.icml.cc/static/paper_files/icml/2020/4027-Paper.pdf
AUTHORS: Wessel Bruinsma, Eric Perim Martins, William Tebbutt, Scott Hosking, Arno Solin, Richard Turner
HIGHLIGHT: We propose the use of a sufficient statistic of the data to accelerate inference and learning in MOGPs with orthogonal bases.

666, TITLE: Lower Complexity Bounds for Finite-Sum Convex-Concave Minimax Optimization Problems
https://proceedings.icml.cc/static/paper_files/icml/2020/4031-Paper.pdf
AUTHORS: Guangzeng Xie, Luo Luo, yijiang lian, Zhihua Zhang
HIGHLIGHT: This paper studies the lower bound complexity for minimax optimization problem whose objective function is the average of n individual smooth convex-concave functions.

667, TITLE: Near-optimal Regret Bounds for Stochastic Shortest Path
https://proceedings.icml.cc/static/paper_files/icml/2020/4035-Paper.pdf
AUTHORS: Aviv Rosenberg, Alon Cohen, Yishay Mansour, Haim Kaplan
HIGHLIGHT: In this work we remove this dependence on the minimum cost---we give an algorithm that guarantees a regret bound of $\widetilde{O}(B^{3/2} S \sqrt{A K})$, where B is an upper bound on the expected cost of the optimal policy, S is the number of states, A is the number of actions and K is the total number of episodes.

668, TITLE: The Usual Suspects? Reassessing Blame for VAE Posterior Collapse
https://proceedings.icml.cc/static/paper_files/icml/2020/4042-Paper.pdf
AUTHORS: Bin Dai, Ziyu Wang, David Wipf
HIGHLIGHT: In particular, we prove that even small nonlinear perturbations of affine VAE decoder models can produce such minima, and in deeper models, analogous minima can force the VAE to behave like an aggressive truncation operator, provably discarding information along all latent dimensions in certain circumstances.

669, TITLE: It's Not What Machines Can Learn, It's What We Cannot Teach
https://proceedings.icml.cc/static/paper_files/icml/2020/4045-Paper.pdf
AUTHORS: Gal Yehuda, Moshe Gabel, Assaf Schuster
HIGHLIGHT: In this work we offer a different perspective on this question.

670, TITLE: Guided Learning of Nonconvex Models through Successive Functional Gradient Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/4056-Paper.pdf
AUTHORS: Rie Johnson, Tong Zhang
HIGHLIGHT: This paper presents a framework of successive functional gradient optimization for training nonconvex models such as neural networks, where training is driven by mirror descent in a function space.

671, TITLE: A Markov Decision Process Model for Socio-Economic Systems Impacted by Climate Change
https://proceedings.icml.cc/static/paper_files/icml/2020/4061-Paper.pdf
AUTHORS: Salman Sadiq Shuvo, Yasin Yilmaz, Alan Bush, Mark Hafen
HIGHLIGHT: In this work, we propose a Markov decision process (MDP) formulation for an agent (government) which interacts with the environment (nature and residents) to deal with the impacts of climate change, in particular sea level rise.

672, TITLE: Can Stochastic Zeroth-Order Frank-Wolfe Method Converge Faster for Non-Convex Problems?
https://proceedings.icml.cc/static/paper_files/icml/2020/4063-Paper.pdf
AUTHORS: Hongchang Gao, Heng Huang
HIGHLIGHT: To address the problem of lacking gradient in many applications, we propose two new stochastic zeroth-order Frank-Wolfe algorithms and theoretically proved that they have a faster convergence rate than existing methods for non-convex problems.

673, TITLE: Distance Metric Learning with Joint Representation Diversification
https://proceedings.icml.cc/static/paper_files/icml/2020/4066-Paper.pdf
AUTHORS: Xu Chu, Yang Lin, Xiting Wang, Xin Gao, Qi Tong, Hailong Yu, Yasha Wang
HIGHLIGHT: In contrast, we propose not to penalize intra-class distances explicitly and use a Joint Representation Similarity (JRS) regularizer that focuses on penalizing inter-class distributional similarities in a DML framework.

674, TITLE: Meta-Learning with Shared Amortized Variational Inference

https://proceedings.icml.cc/static/paper_files/icml/2020/4070-Paper.pdf
AUTHORS: Ekaterina Iakovleva, Karteek Alahari, Jakob Verbeek
HIGHLIGHT: In the context of an empirical Bayes model for meta-learning where a subset of model parameters is treated as latent variables, we propose a novel scheme for amortized variational inference.

675, TITLE: Causal Effect Identifiability under Partial-Observability
https://proceedings.icml.cc/static/paper_files/icml/2020/4071-Paper.pdf
AUTHORS: Sanghack Lee, Elias Bareinboim
HIGHLIGHT: In this paper, we study the causal effect identifiability problem when the available distributions may be associated with different sets of variables, which we refer to as identification under partial-observability.

676, TITLE: Continuous Graph Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/4075-Paper.pdf
AUTHORS: Louis-Pascal Xhonneux, Meng Qu, Jian Tang
HIGHLIGHT: We propose continuous graph neural networks (CGNN), which generalise existing graph neural networks with discrete dynamics in that they can be viewed as a specific discretisation scheme.

677, TITLE: Restarted Bayesian Online Change-point Detector achieves Optimal Detection Delay
https://proceedings.icml.cc/static/paper_files/icml/2020/4076-Paper.pdf
AUTHORS: REDA ALAMI, Odalric-Ambrym Maillard, Raphaël Féraud
HIGHLIGHT: In this paper, we consider the problem of sequential change-point detection where both the change-points and the distributions before and after the change are assumed to be unknown.

678, TITLE: Robust learning with the Hilbert-Schmidt independence criterion
https://proceedings.icml.cc/static/paper_files/icml/2020/4081-Paper.pdf
AUTHORS: Daniel Greenfeld, Uri Shalit
HIGHLIGHT: We investigate the use of a non-parametric independence measure, the Hilbert-Schmidt Independence Criterion (HSIC), as a loss-function for learning robust regression and classification models.

679, TITLE: Bayesian Experimental Design for Implicit Models by Mutual Information Neural Estimation
https://proceedings.icml.cc/static/paper_files/icml/2020/4094-Paper.pdf
AUTHORS: Steven Kleinegesse, Michael Gutmann
HIGHLIGHT: In this paper, we propose a new approach to Bayesian experimental design for implicit models that leverages recent advances in neural MI estimation to deal with these issues.

680, TITLE: Fast Differentiable Sorting and Ranking
https://proceedings.icml.cc/static/paper_files/icml/2020/4126-Paper.pdf
AUTHORS: Mathieu Blondel, Olivier Teboul, Quentin Berthet, Josip Djolonga
HIGHLIGHT: In this paper, we propose the first differentiable sorting and ranking operators with $O(n \log n)$ time and $O(n)$ space complexity.

681, TITLE: Learning for Dose Allocation in Adaptive Clinical Trials with Safety Constraints
https://proceedings.icml.cc/static/paper_files/icml/2020/4129-Paper.pdf
AUTHORS: Cong Shen, Zhiyang Wang, Sofia Villar, Mihaela van der Schaar
HIGHLIGHT: We present a novel adaptive clinical trial methodology, called Safe Efficacy Exploration Dose Allocation (SEEDA), that aims at maximizing the cumulative efficacies while satisfying the toxicity safety constraint with high probability.

682, TITLE: Tuning-free Plug-and-Play Proximal Algorithm for Inverse Imaging Problems
https://proceedings.icml.cc/static/paper_files/icml/2020/4134-Paper.pdf
AUTHORS: Kaixuan Wei, Angelica I Aviles-Rivero, Jingwei Liang, Ying Fu, Carola-Bibiane Schönlieb, Hua Huang
HIGHLIGHT: In this work, we present a tuning-free PnP proximal algorithm, which can automatically determine the internal parameters including the penalty parameter, the denoising strength and the terminal time.

683, TITLE: Consistent Estimators for Learning to Defer to an Expert
https://proceedings.icml.cc/static/paper_files/icml/2020/4138-Paper.pdf
AUTHORS: Hussein Mozannar, David Sontag
HIGHLIGHT: In this paper we explore how to learn predictors that can either predict or choose to defer the decision to a downstream expert.

684, TITLE: A Graph to Graphs Framework for Retrosynthesis Prediction

https://proceedings.icml.cc/static/paper_files/icml/2020/4152-Paper.pdf
AUTHORS: Chence Shi, Minkai Xu, Hongyu Guo, Ming Zhang, Jian Tang
HIGHLIGHT: In this paper, we propose a novel template-free approach called G2Gs by transforming a target molecular graph into a set of reactant molecular graphs.

685, TITLE: Fast computation of Nash Equilibria in Imperfect Information Games
https://proceedings.icml.cc/static/paper_files/icml/2020/4157-Paper.pdf
AUTHORS: Remi Munos, Julien Perolat, Jean-Baptiste Lespiau, Mark Rowland, Bart De Vylder, Marc Lanctot, Finbarr Timbers, Daniel Hennes, Shayegan Omidshafiei, Audrunas Gruslys, Mohammad Gheshlaghi Azar, Edward Lockhart, Karl Tuyls
HIGHLIGHT: We introduce and analyze a class of algorithms, called Mirror Ascent against an Improved Opponent (MAIO), for computing Nash equilibria in two-player zero-sum games, both in normal form and in sequential imperfect information form.

686, TITLE: Invariant Rationalization
https://proceedings.icml.cc/static/paper_files/icml/2020/4158-Paper.pdf
AUTHORS: Shiyu Chang, Yang Zhang, Mo Yu, Tommi Jaakkola
HIGHLIGHT: Instead, we introduce a game-theoretic invariant rationalization criterion where the rationales are constrained to enable the same predictor to be optimal across different environments.

687, TITLE: Accelerated Stochastic Gradient-free and Projection-free Methods
https://proceedings.icml.cc/static/paper_files/icml/2020/4168-Paper.pdf
AUTHORS: Feihu Huang, Lue Tao, Songcan Chen
HIGHLIGHT: In the paper, we propose a class of accelerated stochastic gradient-free and projection-free (a.k.a., zeroth-order Frank Wolfe) methods to solve the problem of constrained stochastic and finite-sum nonconvex optimization.

688, TITLE: Efficient Optimistic Exploration in Linear-Quadratic Regulators via Lagrangian Relaxation
https://proceedings.icml.cc/static/paper_files/icml/2020/4171-Paper.pdf
AUTHORS: Marc Abeille, Alessandro Lazaric
HIGHLIGHT: Inspired by the extended value iteration algorithm used in optimistic algorithms for finite MDPs, we propose to relax the optimistic optimization of \ofulq and cast it into a constrained \textit{extended} LQR problem, where an additional control variable implicitly selects the system dynamics within a confidence interval.

689, TITLE: Implicit Regularization of Random Feature Models
https://proceedings.icml.cc/static/paper_files/icml/2020/4184-Paper.pdf
AUTHORS: Arthur Jacot, berfin simsek, Francesco Spadaro, Clement Hongler, Franck Gabriel
HIGHLIGHT: We investigate, by means of random matrix theory, the connection between Gaussian RF models and Kernel Ridge Regression (KRR).

690, TITLE: Missing Data Imputation using Optimal Transport
https://proceedings.icml.cc/static/paper_files/icml/2020/4195-Paper.pdf
AUTHORS: Boris Muzellec, Julie Josse, Claire Boyer, Marco Cuturi
HIGHLIGHT: We propose practical methods to minimize these losses using end-to-end learning, that can exploit or not parametric assumptions on the underlying distributions of values.

691, TITLE: Unsupervised Speech Decomposition via Triple Information Bottleneck
https://proceedings.icml.cc/static/paper_files/icml/2020/4198-Paper.pdf
AUTHORS: Kaizhi Qian, Yang Zhang, Shiyu Chang, Mark Hasegawa-Johnson, David Cox
HIGHLIGHT: In this paper, we propose SpeechFlow, which can blindly decompose speech into its four components by introducing three carefully designed information bottlenecks.

692, TITLE: Provable Representation Learning for Imitation Learning via Bi-level Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/4201-Paper.pdf
AUTHORS: Sanjeev Arora, Simon Du, Sham Kakade, Yuping Luo, Nikunj Umesh Saunshi
HIGHLIGHT: We formulate representation learning as a bi-level optimization problem where the "outer" optimization tries to learn the joint representation and the "inner" optimization encodes the imitation learning setup and tries to learn task-specific parameters.

693, TITLE: Convergence of a Stochastic Gradient Method with Momentum for Non-Smooth Non-Convex Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/4205-Paper.pdf
AUTHORS: Vien Mai, Mikael Johansson
HIGHLIGHT: Our key innovation is the construction of a special Lyapunov function for which the proven complexity can be achieved without any tunning of the momentum parameter.

694, TITLE: XTREME: A Massively Multilingual Multi-task Benchmark for Evaluating Cross-lingual Generalisation
https://proceedings.icml.cc/static/paper_files/icml/2020/4220-Paper.pdf
AUTHORS: Junjie Hu, Sebastian Ruder, Aditya Siddhant, Graham Neubig, Orhan Firat, Melvin Johnson
HIGHLIGHT: To this end, we introduce the Cross-lingual TRansfer Evaluation of Multilingual Encoders (XTREME) benchmark, a multi-task benchmark for evaluating the cross-lingual generalization capabilities of multilingual representations across 40 languages and 9 tasks.

695, TITLE: Fair k-Centers via Maximum Matching
https://proceedings.icml.cc/static/paper_files/icml/2020/4221-Paper.pdf
AUTHORS: Matthew Jones, Thy Nguyen, Huy Nguyen
HIGHLIGHT: This paper combines the best parts of each algorithm , by presenting a linear-time algorithm with a guaranteed 3-approximation factor, and provides empirical evidence of both the algorithm's runtime and effectiveness.

696, TITLE: Efficiently sampling functions from Gaussian process posteriors
https://proceedings.icml.cc/static/paper_files/icml/2020/4232-Paper.pdf
AUTHORS: James Wilson, Viacheslav Borovitskiy, Alexander Terenin, Peter Mostowsky, Marc Deisenroth
HIGHLIGHT: Building off of this factorization, we propose decoupled sampling, an easy-to-use and general-purpose approach for fast posterior sampling.

697, TITLE: Characterizing Distribution Equivalence and Structure Learning for Cyclic and Acyclic Directed Graphs
https://proceedings.icml.cc/static/paper_files/icml/2020/4241-Paper.pdf
AUTHORS: AmirEmad Ghassami, Alan Yang, Negar Kiyavash, Kun Zhang
HIGHLIGHT: We propose analytic as well as graphical methods for characterizing the equivalence of two structures.

698, TITLE: Inverse Active Sensing: Modeling and Understanding Timely Decision-Making
https://proceedings.icml.cc/static/paper_files/icml/2020/4242-Paper.pdf
AUTHORS: Daniel Jarrett, Mihaela van der Schaar
HIGHLIGHT: In this paper, we develop an expressive, unified framework for the general setting of evidence-based decision-making under endogenous, context-dependent time pressure---which requires negotiating (subjective) tradeoffs between accuracy, speediness, and cost of information.

699, TITLE: On Second-Order Group Influence Functions for Black-Box Predictions
https://proceedings.icml.cc/static/paper_files/icml/2020/4261-Paper.pdf
AUTHORS: Samyadeep Basu, Xuchen You, Soheil Feizi
HIGHLIGHT: In this paper, we address this issue and propose second-order influence functions for identifying influential groups in test-time predictions.

700, TITLE: Safe Imitation Learning via Fast Bayesian Reward Inference from Preferences
https://proceedings.icml.cc/static/paper_files/icml/2020/4269-Paper.pdf
AUTHORS: Daniel Brown, Scott Niekum, Russell Coleman, Ravi Srinivasan
HIGHLIGHT: We propose a highly efficient Bayesian reward learning algorithm that scales to high-dimensional imitation learning problems by first pre-training a low-dimensional feature encoding via self-supervised tasks and then leveraging preferences over demonstrations to perform fast Bayesian inference via sampling.

701, TITLE: Randomly Projected Additive Gaussian Processes for Regression
https://proceedings.icml.cc/static/paper_files/icml/2020/4272-Paper.pdf
AUTHORS: Ian Delbridge, David Bindel, Andrew Wilson
HIGHLIGHT: Surprisingly, we find that as the number of random projections increases, the predictive performance of this approach quickly converges to the performance of a kernel operating on the original full dimensional inputs, over a wide range of data sets, even if we are projecting into a single dimension.

702, TITLE: Attentive Group Equivariant Convolutional Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/4274-Paper.pdf
AUTHORS: David Romero, Erik Bekkers, Jakub Tomczak, Mark Hoogendoorn
HIGHLIGHT: In this paper, we present attentive group equivariant convolutions, a generalization of the group convolution, in which attention is applied during the course of convolution to accentuate meaningful symmetry combinations and suppress non-plausible, misleading ones.

703, TITLE: Learning Compound Tasks without Task-specific Knowledge via Imitation and Self-supervised Learning

https://proceedings.icml.cc/static/paper_files/icml/2020/4283-Paper.pdf
AUTHORS: Sang-Hyun Lee, Seung-Woo Seo
HIGHLIGHT: In this paper, we propose an imitation learning method that can learn compound tasks without task-specific knowledge.

704, TITLE: Confidence Sets and Hypothesis Testing in a Likelihood-Free Inference Setting
https://proceedings.icml.cc/static/paper_files/icml/2020/4284-Paper.pdf
AUTHORS: Niccolo Dalmasso, Rafael Izbicki, Ann Lee
HIGHLIGHT: In this paper, we present ACORE (Approximate Computation via Odds Ratio Estimation), a frequentist approach to LFI that first formulates the classical likelihood ratio test (LRT) as a parametrized classification problem, and then uses the equivalence of tests and confidence sets to build confidence regions for parameters of interest.

705, TITLE: Curvature-corrected learning dynamics in deep neural networks
https://proceedings.icml.cc/static/paper_files/icml/2020/4285-Paper.pdf
AUTHORS: Dongsung Huh
HIGHLIGHT: We introduce partially curvature-corrected learning rule, which provides most of the benefit of full curvature correction in terms of convergence speed with superior numerical stability while preserving the core property of gradient descent under block-diagonal approximations.

706, TITLE: Tightening Exploration in Upper Confidence Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4290-Paper.pdf
AUTHORS: Hippolyte Bourel, Odalric-Ambrym Maillard, Mohammad Sadegh Talebi
HIGHLIGHT: Motivated by practical efficiency, we present UCRL3, following the lines of UCRL2, but with two key modifications: First, it uses state-of-the-art time-uniform concentration inequalities to compute confidence sets on the reward and transition distributions for each state-action pair. To further tighten exploration, we introduce an adaptive computation of the support of each transition distributions.

707, TITLE: Bootstrap Latent-Predictive Representations for Multitask Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4302-Paper.pdf
AUTHORS: Zhaohan Guo, Bernardo Avila Pires, Mohammad Gheshlaghi Azar, Bilal Piot, Florent Altché, Jean-Bastien Grill, Remi Munos
HIGHLIGHT: Here we introduce Predictions of Bootstrapped Latents (PBL), a simple and flexible self-supervised representation learning algorithm for multitask deep RL.

708, TITLE: Discriminative Adversarial Search for Abstractive Summarization
https://proceedings.icml.cc/static/paper_files/icml/2020/4307-Paper.pdf
AUTHORS: Thomas Scialom, Paul-Alexis Dray, Sylvain Lamprier, Benjamin Piwowarski, Jacopo Staiano
HIGHLIGHT: We introduce a novel approach for sequence decoding, Discriminative Adversarial Search (DAS), which has the desirable properties of alleviating the effects of exposure bias without requiring external metrics.

709, TITLE: A Swiss Army Knife for Minimax Optimal Transport
https://proceedings.icml.cc/static/paper_files/icml/2020/4328-Paper.pdf
AUTHORS: Sofien Dhouib, Ievgen Redko, Tanguy Kerdoncuff, Rémi Emonet, Marc Sebban
HIGHLIGHT: In this paper, we propose a general formulation of a minimax OT problem that can tackle these restrictions by jointly optimizing the cost matrix and the transport plan, allowing us to define a robust distance between distributions.

710, TITLE: Invariant Causal Prediction for Block MDPs
https://proceedings.icml.cc/static/paper_files/icml/2020/4334-Paper.pdf
AUTHORS: Clare Lyle, Amy Zhang, Angelos Filos, Shagun Sodhani, Marta Kwiatkowska, Yarin Gal, Doina Precup, Joelle Pineau
HIGHLIGHT: In this work we propose a method for learning state abstractions which generalize to novel observation distributions in the multi-environment RL setting.

711, TITLE: Involutive MCMC: One Way to Derive Them All
https://proceedings.icml.cc/static/paper_files/icml/2020/4339-Paper.pdf
AUTHORS: Kirill Neklyudov, Max Welling, Evgenii Egorov, Dmitry Vetrov
HIGHLIGHT: Building upon this, we describe a wide range of MCMC algorithms in terms of iMCMC, and formulate a number of "tricks" which one can use as design principles for developing new MCMC algorithms.

712, TITLE: Adversarial Learning Guarantees for Linear Hypotheses and Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/4342-Paper.pdf

AUTHORS: Pranjal Awasthi, Natalie Frank, Mehryar Mohri
HIGHLIGHT: In order to make progress on this, we focus on the problem of understanding generalization in adversarial settings, via the lens of Rademacher complexity.

713, TITLE: Deep Reinforcement Learning with Smooth Policy
https://proceedings.icml.cc/static/paper_files/icml/2020/4344-Paper.pdf
AUTHORS: Qianli Shen, Yan Li, Haoming Jiang, Zhaoran Wang, Tuo Zhao
HIGHLIGHT: In this paper, we develop a new training framework --- \textbf{S}mooth \textbf{R}egularized \textbf{R}einforcement \textbf{L}earning ($\textbf{SR}^2\textbf{L}$), where the policy is trained with smoothness-inducing regularization.

714, TITLE: On the Power of Compressed Sensing with Generative Models
https://proceedings.icml.cc/static/paper_files/icml/2020/4345-Paper.pdf
AUTHORS: Akshay Kamath, Eric Price, Sushrut Karmalkar
HIGHLIGHT: In this paper, we prove results that (i)establish the difficulty of this task and show that existing bounds are tight and (ii) demonstrate that the latter task is a generalization of the former.

715, TITLE: Laplacian Regularized Few-Shot Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4348-Paper.pdf
AUTHORS: Imtiaz Ziko, Jose Dolz, Eric Granger, Ismail Ben Ayed
HIGHLIGHT: We propose a Laplacian-regularization objective for few-shot tasks, which integrates two types of potentials: (1) unary potentials assigning query samples to the nearest class prototype and (2) pairwise Laplacian potentials encouraging nearby query samples to have consistent predictions.

716, TITLE: Neural Datalog Through Time: Informed Temporal Modeling via Logical Specification
https://proceedings.icml.cc/static/paper_files/icml/2020/4356-Paper.pdf
AUTHORS: Hongyuan Mei, Guanghui Qin, Minjie Xu, Jason Eisner
HIGHLIGHT: To exploit known structure, we propose using a deductive database to track facts over time, where each fact has a time-varying state- a vector computed by a neural net whose topology is determined by the fact's provenance and experience.

717, TITLE: Up or Down? Adaptive Rounding for Post-Training Quantization
https://proceedings.icml.cc/static/paper_files/icml/2020/4365-Paper.pdf
AUTHORS: Markus Nagel, Rana Ali Amjad, Marinus van Baalen, Christos Louizos, Tijmen Blankevoort
HIGHLIGHT: In this paper, we propose AdaRound, a better weight-rounding mechanism for post-training quantization that adapts to the data and the task loss.

718, TITLE: A quantile-based approach for hyperparameter transfer learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4367-Paper.pdf
AUTHORS: David Salinas, Huibin Shen, Valerio Perrone
HIGHLIGHT: In this work, we introduce a novel approach to achieve transfer learning across different datasets as well as different objectives.

719, TITLE: Inductive Bias-driven Reinforcement Learning For Efficient Schedules in Heterogeneous Clusters
https://proceedings.icml.cc/static/paper_files/icml/2020/4373-Paper.pdf
AUTHORS: Subho Banerjee, Saurabh Jha, Zbigniew Kalbarczyk, Ravishankar Iyer
HIGHLIGHT: This paper addresses the challenge in two ways: (i) a domain-driven Bayesian reinforcement learning (RL) model for scheduling, which inherently models the resource dependencies identified from the system architecture; and (ii) a sampling-based technique which allows the computation of gradients of a Bayesian model without performing full probabilistic inference.

720, TITLE: Adversarial Robustness for Code
https://proceedings.icml.cc/static/paper_files/icml/2020/4379-Paper.pdf
AUTHORS: Pavol Bielik, Martin Vechev
HIGHLIGHT: In this work we address this gap by: (i) developing adversarial attacks for code (a domain with discrete and highly structured inputs), (ii) showing that, similar to other domains, neural models for code are highly vulnerable to adversarial attacks, and (iii) developing a set of novel techniques that enable training robust and accurate models of code.

721, TITLE: The Boomerang Sampler
https://proceedings.icml.cc/static/paper_files/icml/2020/4401-Paper.pdf
AUTHORS: Joris Bierkens, Sebastiano Grazzi, Kengo Kamatani, Gareth Roberts
HIGHLIGHT: This paper introduces the boomerang sampler as a novel class of continuous-time non-reversible Markov chain Monte Carlo algorithms.

722, TITLE: Weakly-Supervised Disentanglement Without Compromises
https://proceedings.icml.cc/static/paper_files/icml/2020/4405-Paper.pdf
AUTHORS: Francesco Locatello, Ben Poole, Gunnar Raetsch, Bernhard Schölkopf, Olivier Bachem, Michael Tschannen
HIGHLIGHT: First, we theoretically show that only knowing how many factors have changed, but not which ones, is sufficient to learn disentangled representations. Second, we provide practical algorithms that learn disentangled representations from pairs of images without requiring annotation of groups, individual factors, or the number of factors that have changed.

723, TITLE: Predictive Sampling with Forecasting Autoregressive Models
https://proceedings.icml.cc/static/paper_files/icml/2020/4409-Paper.pdf
AUTHORS: Auke Wiggers, Emiel Hoogeboom
HIGHLIGHT: In this paper, we introduce the predictive sampling algorithm: a procedure that exploits the fast inference property of ARMs in order to speed up sampling, while keeping the model intact.

724, TITLE: InfoGAN-CR: Disentangling Generative Adversarial Networks with Contrastive Regularizers
https://proceedings.icml.cc/static/paper_files/icml/2020/4410-Paper.pdf
AUTHORS: Zinan Lin, Kiran Thekumparampil, Giulia Fanti, Sewoong Oh
HIGHLIGHT: We propose an unsupervised model selection scheme based on medoids.

725, TITLE: TrajectoryNet: A Dynamic Optimal Transport Network for Modeling Cellular Dynamics
https://proceedings.icml.cc/static/paper_files/icml/2020/4414-Paper.pdf
AUTHORS: Alexander Tong, Jessie Huang, Guy Wolf, David van Dijk, Smita Krishnaswamy
HIGHLIGHT: We present {\em TrajectoryNet}, which controls the continuous paths taken between distributions.

726, TITLE: The role of regularization in classification of high-dimensional noisy Gaussian mixture
https://proceedings.icml.cc/static/paper_files/icml/2020/4431-Paper.pdf
AUTHORS: Francesca Mignacco, Florent Krzakala, Yue Lu, Pierfrancesco Urbani, Lenka Zdeborova
HIGHLIGHT: We provide a rigorous analysis of the generalization error of regularized convex classifiers, including ridge, hinge and logistic regression, in the high-dimensional limit where the number n of samples and their dimension d goes to infinity while their ratio is fixed to $\alpha=n/d$.

727, TITLE: Normalizing Flows on Tori and Spheres
https://proceedings.icml.cc/static/paper_files/icml/2020/4436-Paper.pdf
AUTHORS: Danilo J. Rezende, George Papamakarios, Sebastien Racaniere, Michael Albergo, Gurtej Kanwar, Phiala Shanahan, Kyle Cranmer
HIGHLIGHT: In this paper, we propose and compare expressive and numerically stable flows on such spaces.

728, TITLE: Structured Linear Contextual Bandits: A Sharp and Geometric Smoothed Analysis
https://proceedings.icml.cc/static/paper_files/icml/2020/4457-Paper.pdf
AUTHORS: Vidyashankar Sivakumar, Steven Wu, Arindam Banerjee
HIGHLIGHT: In this work, we consider a smoothed setting for structured linear contextual bandits where the adversarial contexts are perturbed by Gaussian noise and the unknown parameter θ^* has structure, e.g., sparsity, group sparsity, low rank, etc.

729, TITLE: Simple and sharp analysis of k-means||
https://proceedings.icml.cc/static/paper_files/icml/2020/4459-Paper.pdf
AUTHORS: Vaclav Rozhon
HIGHLIGHT: We present a truly simple analysis of k-means|| (Bahmani et al., PVLDB 2012) -- a distributed variant of the k-means++ algorithm (Arthur and Vassilvitskii, SODA 2007) -- and improve its round complexity from O(log (Var X)), where Var X is the variance of the input data set, to O(log (Var X) / log log (Var X)), which we show to be tight.

730, TITLE: Efficient proximal mapping of the path-norm regularizer of shallow networks
https://proceedings.icml.cc/static/paper_files/icml/2020/4462-Paper.pdf
AUTHORS: Fabian Latorre, Paul Rolland, Shaul Nadav Hallak, Volkan Cevher
HIGHLIGHT: We demonstrate two new important properties of the path-norm regularizer for shallow neural networks.

731, TITLE: Regularized Optimal Transport is Ground Cost Adversarial
https://proceedings.icml.cc/static/paper_files/icml/2020/4482-Paper.pdf
AUTHORS: François-Pierre Paty, Marco Cuturi

HIGHLIGHT: In this paper, we adopt a more geometrical point of view, and show using Fenchel duality that any convex regularization of OT can be interpreted as ground cost adversarial.

732, TITLE: Automatic Shortcut Removal for Self-Supervised Representation Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4487-Paper.pdf
AUTHORS: Matthias Minderer, Olivier Bachem, Neil Houlsby, Michael Tschannen
HIGHLIGHT: Here, we propose a general framework for removing shortcut features automatically.

733, TITLE: Fair Learning with Private Demographic Data
https://proceedings.icml.cc/static/paper_files/icml/2020/4489-Paper.pdf
AUTHORS: Hussein Mozannar, Mesrob Ohannessian, Nati Srebro
HIGHLIGHT: We give a scheme that allows individuals to release their sensitive information privately while still allowing any downstream entity to learn non-discriminatory predictors.

734, TITLE: Deep Divergence Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4491-Paper.pdf
AUTHORS: Kubra Cilingir, Rachel Manzelli, Brian Kulis
HIGHLIGHT: In this paper, we introduce deep Bregman divergences, which are based on learning and parameterizing functional Bregman divergences using neural networks, and which unify and extend these existing lines of work.

735, TITLE: A new regret analysis for Adam-type algorithms
https://proceedings.icml.cc/static/paper_files/icml/2020/4498-Paper.pdf
AUTHORS: Ahmet Alacaoglu, Yura Malitsky, Panayotis Mertikopoulos, Volkan Cevher
HIGHLIGHT: In this paper, we focus on a theory-practice gap for Adam and its variants (AMSgrad, AdamNC, etc.).

736, TITLE: Accelerated Message Passing for Entropy-Regularized MAP Inference
https://proceedings.icml.cc/static/paper_files/icml/2020/4505-Paper.pdf
AUTHORS: Jonathan Lee, Aldo Pacchiano, Peter Bartlett, Michael Jordan
HIGHLIGHT: In this paper, we present randomized methods for accelerating these algorithms by leveraging techniques that underlie classical accelerated gradient methods.

737, TITLE: Dissecting Non-Vacuous Generalization Bounds based on the Mean-Field Approximation
https://proceedings.icml.cc/static/paper_files/icml/2020/4506-Paper.pdf
AUTHORS: Konstantinos Pitas
HIGHLIGHT: We show empirically that this approach gives negligible gains when modelling the posterior as a Gaussian with diagonal covariance---known as the mean-field approximation.

738, TITLE: (Individual) Fairness for k-Clustering
https://proceedings.icml.cc/static/paper_files/icml/2020/4507-Paper.pdf
AUTHORS: Sepideh Mahabadi, Ali Vakilian
HIGHLIGHT: In this work, we show how to get an approximately \emph{optimal} such fair k-clustering.

739, TITLE: Relaxing Bijectivity Constraints with Continuously Indexed Normalising Flows
https://proceedings.icml.cc/static/paper_files/icml/2020/4509-Paper.pdf
AUTHORS: Rob Cornish, Anthony Caterini, George Deligiannidis, Arnaud Doucet
HIGHLIGHT: To address this, we propose continuously indexed flows (CIFs), which replace the single bijection used by normalising flows with a continuously indexed family of bijections, and which intuitively allow rerouting mass that would be misplaced by a single bijection.

740, TITLE: Gamification of Pure Exploration for Linear Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/4512-Paper.pdf
AUTHORS: Rémy Degenne, Pierre Menard, Xuedong Shang, Michal Valko
HIGHLIGHT: We investigate an active \emph{pure-exploration} setting, that includes \emph{best-arm identification}, in the context of \emph{linear stochastic bandits}.

741, TITLE: Growing Adaptive Multi-hyperplane Machines
https://proceedings.icml.cc/static/paper_files/icml/2020/4516-Paper.pdf
AUTHORS: Nemanja Djuric, Zhuang Wang, Slobodan Vucetic
HIGHLIGHT: In this paper we show that this performance gap is not due to limited representability of MM model, as it can represent arbitrary concepts.

742, TITLE:	Generative Teaching Networks: Accelerating Neural Architecture Search by Learning to Generate Synthetic Training Data
https://proceedings.icml.cc/static/paper_files/icml/2020/4522-Paper.pdf
AUTHORS:	Felipe Petroski Such, Aditya Rawal, Joel Lehman, Kenneth Stanley, Jeffrey Clune
HIGHLIGHT:	This paper introduces GTNs, discusses their potential, and showcases that they can substantially accelerate learning.

743, TITLE:	Structured Prediction with Partial Labelling through the Infimum Loss
https://proceedings.icml.cc/static/paper_files/icml/2020/4526-Paper.pdf
AUTHORS:	Vivien Cabannnes, Francis Bach, Alessandro Rudi
HIGHLIGHT:	This paper provides a unified framework based on structured prediction and on the concept of {\em infimum loss} to deal with partial labelling over a wide family of learning problems and loss functions.

744, TITLE:	ControlVAE: Controllable Variational Autoencoder
https://proceedings.icml.cc/static/paper_files/icml/2020/4532-Paper.pdf
AUTHORS:	Huajie Shao, Shuochao Yao, Dachun Sun, Aston Zhang, Shengzhong Liu, Dongxin Liu, Jun Wang, Tarek Abdelzaher
HIGHLIGHT:	To address these issues, we propose a novel controllable variational autoencoder framework, ControlVAE, that combines a controller, inspired by automatic control theory, with the basic VAE to improve the performance of resulting generative models.

745, TITLE:	On Semi-parametric Inference for BART
https://proceedings.icml.cc/static/paper_files/icml/2020/4533-Paper.pdf
AUTHORS:	Veronika Rockova
HIGHLIGHT:	In this work, we continue the theoretical investigation of BART initiated recently by Rockova and van der Pas (2017).

746, TITLE:	Simple and Scalable Epistemic Uncertainty Estimation Using a Single Deep Deterministic Neural Network
https://proceedings.icml.cc/static/paper_files/icml/2020/4538-Paper.pdf
AUTHORS:	Joost van Amersfoort, Lewis Smith, Yee Whye Teh, Yarin Gal
HIGHLIGHT:	We propose a method for training a deterministic deep model that can find and reject out of distribution data points at test time with a single forward pass.

747, TITLE:	Ordinal Non-negative Matrix Factorization for Recommendation
https://proceedings.icml.cc/static/paper_files/icml/2020/4539-Paper.pdf
AUTHORS:	Olivier Gouvert, Thomas Oberlin, Cedric Fevotte
HIGHLIGHT:	We introduce a new non-negative matrix factorization (NMF) method for ordinal data, called OrdNMF.

748, TITLE:	NetGAN without GAN: From Random Walks to Low-Rank Approximations
https://proceedings.icml.cc/static/paper_files/icml/2020/4540-Paper.pdf
AUTHORS:	Luca Rendsburg, Holger Heidrich, Ulrike von Luxburg
HIGHLIGHT:	In this paper, we investigate the implicit bias of NetGAN.

749, TITLE:	On the Iteration Complexity of Hypergradient Computations
https://proceedings.icml.cc/static/paper_files/icml/2020/4542-Paper.pdf
AUTHORS:	Riccardo Grazzi, Saverio Salzo, Massimiliano Pontil, Luca Franceschi
HIGHLIGHT:	We present a unified analysis which allows for the first time to quantitatively compare these methods, providing explicit bounds for their iteration complexity.

750, TITLE:	Skew-Fit: State-Covering Self-Supervised Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4543-Paper.pdf
AUTHORS:	Vitchyr Pong, Murtaza Dalal, Steven Lin, Ashvin Nair, Shikhar Bahl, Sergey Levine
HIGHLIGHT:	In this paper, we propose a formal exploration objective for goal-reaching policies that maximizes state coverage.

751, TITLE:	Stochastic Optimization for Regularized Wasserstein Estimators
https://proceedings.icml.cc/static/paper_files/icml/2020/4567-Paper.pdf
AUTHORS:	Marin Ballu, Quentin Berthet, Francis Bach

HIGHLIGHT: In this work, we introduce an algorithm to solve a regularized version of this problem of Wasserstein estimators, with a time per step which is sublinear in the natural dimensions of the problem.

752, TITLE: LP-SparseMAP: Differentiable Relaxed Optimization for Sparse Structured Prediction
https://proceedings.icml.cc/static/paper_files/icml/2020/4569-Paper.pdf
AUTHORS: Vlad Niculae, Andre Filipe Torres Martins
HIGHLIGHT: In this paper, we introduce LP-SparseMAP, an extension of SparseMAP addressing this limitation via a local polytope relaxation.

753, TITLE: Problems with Shapley-value-based explanations as feature importance measures
https://proceedings.icml.cc/static/paper_files/icml/2020/4594-Paper.pdf
AUTHORS: Indra Kumar, Suresh Venkatasubramanian, Carlos Scheidegger, Sorelle Friedler
HIGHLIGHT: We show that mathematical problems arise when Shapley values are used for feature importance and that the solutions to mitigate these necessarily induce further complexity, such as the need for causal reasoning.

754, TITLE: Model-free Reinforcement Learning in Infinite-horizon Average-reward Markov Decision Processes
https://proceedings.icml.cc/static/paper_files/icml/2020/4595-Paper.pdf
AUTHORS: Chen-Yu Wei, Mehdi Jafarnia, Haipeng Luo, Hiteshi Sharma, Rahul Jain
HIGHLIGHT: In this paper, two model-free algorithms are introduced for learning infinite-horizon average-reward Markov Decision Processes (MDPs).

755, TITLE: Near-linear time Gaussian process optimization with adaptive batching and resparsification
https://proceedings.icml.cc/static/paper_files/icml/2020/4596-Paper.pdf
AUTHORS: Daniele Calandriello, Luigi Carratino, Alessandro Lazaric, Michal Valko, Lorenzo Rosasco
HIGHLIGHT: In this paper, we introduce BBKB (Batch Budgeted Kernel Bandits), the first no-regret GP optimization algorithm that provably runs in near-linear time and selects candidates in batches.

756, TITLE: Parallel Algorithm for Non-Monotone DR-Submodular Maximization
https://proceedings.icml.cc/static/paper_files/icml/2020/4609-Paper.pdf
AUTHORS: Alina Ene, Huy Nguyen
HIGHLIGHT: In this work, we give a new parallel algorithm for the problem of maximizing a non-monotone diminishing returns submodular function subject to a cardinality constraint.

757, TITLE: Structure Adaptive Algorithms for Stochastic Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/4610-Paper.pdf
AUTHORS: Rémy Degenne, Han Shao, Wouter Koolen
HIGHLIGHT: Our aim is to develop methods that are \emph{flexible} (in that they easily adapt to different structures), \emph{powerful} (in that they perform well empirically and/or provably match instance-dependent lower bounds) and \emph{efficient} in that the per-round computational burden is small.

758, TITLE: Spectrum Dependent Learning Curves in Kernel Regression and Wide Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/4620-Paper.pdf
AUTHORS: Blake Bordelon, Abdulkadir Canatar, Cengiz Pehlevan
HIGHLIGHT: We derive analytical expressions for learning curves for kernel regression, and use them to evaluate how the test loss of a trained neural network depends on the number of samples.

759, TITLE: Preference modelling with context-dependent salient features
https://proceedings.icml.cc/static/paper_files/icml/2020/4621-Paper.pdf
AUTHORS: Amanda Bower, Laura Balzano
HIGHLIGHT: Formalizing this framework, we propose the \textit{salient feature preference model} and prove a sample complexity result for learning the parameters of our model and the underlying ranking with maximum likelihood estimation.

760, TITLE: Infinite attention: NNGP and NTK for deep attention networks
https://proceedings.icml.cc/static/paper_files/icml/2020/4625-Paper.pdf
AUTHORS: Jiri Hron, Yasaman Bahri, Jascha Sohl-Dickstein, Roman Novak
HIGHLIGHT: We provide a rigorous extension of these results to NNs involving attention layers, showing that unlike single-head attention, which induces non-Gaussian behaviour, multi-head attention architectures behave as GPs as the number of heads tends to infinity.

761, TITLE: Fast Learning of Graph Neural Networks with Guaranteed Generalizability: One-hidden-layer Case

https://proceedings.icml.cc/static/paper_files/icml/2020/4631-Paper.pdf
AUTHORS: shuai zhang, Meng Wang, Sijia Liu, Pin-Yu Chen, Jinjun Xiong
HIGHLIGHT: In this paper, we provide a theoretically-grounded generalizability analysis of GNNs with one hidden layer for both regression and binary classification problems.

762, TITLE: Efficient Domain Generalization via Common-Specific Low-Rank Decomposition
https://proceedings.icml.cc/static/paper_files/icml/2020/4649-Paper.pdf
AUTHORS: Vihari Piratla, Praneeth Netrapalli, Sunita Sarawagi
HIGHLIGHT: We present CSD (Common Specific Decomposition), for this setting, which jointly learns a common component (which generalizes to new domains) and a domain specific component (which overfits on training domains).

763, TITLE: Identifying the Reward Function by Anchor Actions
https://proceedings.icml.cc/static/paper_files/icml/2020/4651-Paper.pdf
AUTHORS: Sinong Geng, Houssam Nassif, Carlos Manzanares, Max Reppen, Ronnie Sircar
HIGHLIGHT: We propose a reward function estimation framework for inverse reinforcement learning with deep energy-based policies.

764, TITLE: No-Regret and Incentive-Compatible Online Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4656-Paper.pdf
AUTHORS: Rupert Freeman, David Pennock, Chara Podimata, Jennifer Wortman Vaughan
HIGHLIGHT: Our goal is twofold. First, we want the learning algorithm to be no-regret with respect to the best fixed expert in hindsight. Second, we want incentive compatibility, a guarantee that each expert's best strategy is to report his true beliefs about the realization of each event.

765, TITLE: Probing Emergent Semantics in Predictive Agents via Question Answering
https://proceedings.icml.cc/static/paper_files/icml/2020/4662-Paper.pdf
AUTHORS: Abhishek Das, Federico Carnevale, Hamza Merzic, Laura Rimell, Rosalia Schneider, Josh Abramson, Alden Hung, Arun Ahuja, Stephen Clark, Greg Wayne, Feilx Hill
HIGHLIGHT: We propose question-answering as a general paradigm to decode and understand the representations that such agents develop, applying our method to two recent approaches to predictive modelling - action-conditional CPC (Guo et al., 2018) and SimCore (Gregor et al., 2019).

766, TITLE: Meta-learning with Stochastic Linear Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/4667-Paper.pdf
AUTHORS: Leonardo Cella, Alessandro Lazaric, Massimiliano Pontil
HIGHLIGHT: We investigate meta-learning procedures in the setting of stochastic linear bandits tasks.

767, TITLE: A Unified Theory of Decentralized SGD with Changing Topology and Local Updates
https://proceedings.icml.cc/static/paper_files/icml/2020/4675-Paper.pdf
AUTHORS: Anastasiia Koloskova, Nicolas Loizou, Sadra Boreiri, Martin Jaggi, Sebastian Stich
HIGHLIGHT: In this paper we introduce a unified convergence analysis that covers a large variety of decentralized SGD methods which so far have required different intuitions, have different applications, and which have been developed separately in various communities.

768, TITLE: AdaScale SGD: A User-Friendly Algorithm for Distributed Training
https://proceedings.icml.cc/static/paper_files/icml/2020/4682-Paper.pdf
AUTHORS: Tyler Johnson, Pulkit Agrawal, Haijie Gu, Carlos Guestrin
HIGHLIGHT: We propose AdaScale SGD, an algorithm that reliably adapts learning rates to large-batch training.

769, TITLE: Kinematic State Abstraction and Provably Efficient Rich-Observation Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4686-Paper.pdf
AUTHORS: Dipendra Misra, Mikael Henaff, Akshay Krishnamurthy, John Langford
HIGHLIGHT: We present an algorithm, HOMER, for exploration and reinforcement learning in rich observation environments that are summarizable by an unknown latent state space.

770, TITLE: Logistic Regression for Massive Data with Rare Events
https://proceedings.icml.cc/static/paper_files/icml/2020/4690-Paper.pdf
AUTHORS: HaiYing Wang
HIGHLIGHT: This paper studies binary logistic regression for rare events data, or imbalanced data, where the number of events (observations in one class, often called cases) is significantly smaller than the number of nonevents (observations in the other class, often called controls).

771, TITLE: Automated Synthetic-to-Real Generalization
https://proceedings.icml.cc/static/paper_files/icml/2020/4697-Paper.pdf
AUTHORS: Wuyang Chen, Zhiding Yu, Zhangyang Wang, Anima Anandkumar
HIGHLIGHT: We treat this as a learning without forgetting problem and propose a learning-to-optimize (L2O) method to automate layer-wise learning rates.

772, TITLE: Online Learning with Dependent Stochastic Feedback Graphs
https://proceedings.icml.cc/static/paper_files/icml/2020/4700-Paper.pdf
AUTHORS: Corinna Cortes, Giulia DeSalvo, Claudio Gentile, Mehryar Mohri, Ningshan Zhang
HIGHLIGHT: We study a challenging scenario where feedback graphs vary stochastically with time and, more importantly, where graphs and losses are dependent.

773, TITLE: Sparse Sinkhorn Attention
https://proceedings.icml.cc/static/paper_files/icml/2020/4710-Paper.pdf
AUTHORS: Yi Tay, Dara Bahri, Liu Yang, Don Metzler, Da-Cheng Juan
HIGHLIGHT: We propose Sparse Sinkhorn Attention, a new efficient and sparse method for learning to attend.

774, TITLE: Online Continual Learning from Imbalanced Data
https://proceedings.icml.cc/static/paper_files/icml/2020/4727-Paper.pdf
AUTHORS: Aristotelis Chrysakis, Marie-Francine Moens
HIGHLIGHT: More importantly, we introduce a new memory population approach, which we call class-balancing reservoir sampling (CBRS).

775, TITLE: Differentially Private Set Union
https://proceedings.icml.cc/static/paper_files/icml/2020/4729-Paper.pdf
AUTHORS: Pankaj Gulhane, Sivakanth Gopi, Janardhan Kulkarni, Judy Hanwen Shen, Milad Shokouhi, Sergey Yekhanin
HIGHLIGHT: We design two new algorithms, one using Laplace Noise and other Gaussian noise, as specific instances of policies satisfying the contractive properties.

776, TITLE: The continuous categorical: a novel simplex-valued exponential family
https://proceedings.icml.cc/static/paper_files/icml/2020/4730-Paper.pdf
AUTHORS: Elliott Gordon-Rodriguez, Gabriel Loaiza-Ganem, John Cunningham
HIGHLIGHT: We resolve these limitations by introducing a novel exponential family of distributions for modeling simplex-valued data \u2013 the continuous categorical, which arises as a nontrivial multivariate generalization of the recently discovered continuous Bernoulli.

777, TITLE: Minimax-Optimal Off-Policy Evaluation with Linear Function Approximation
https://proceedings.icml.cc/static/paper_files/icml/2020/4735-Paper.pdf
AUTHORS: Yaqi Duan, Zeyu Jia, Mengdi Wang
HIGHLIGHT: This paper studies the statistical theory of batch data reinforcement learning with function approximation.

778, TITLE: Enhanced POET: Open-ended Reinforcement Learning through Unbounded Invention of Learning Challenges and their Solutions
https://proceedings.icml.cc/static/paper_files/icml/2020/4745-Paper.pdf
AUTHORS: Rui Wang, Joel Lehman, Aditya Rawal, Jiale Zhi, Yulun Li, Jeffrey Clune, Kenneth Stanley
HIGHLIGHT: Here we introduce and empirically validate two new innovations to the original algorithm, as well as two external innovations designed to help elucidate its full potential.

779, TITLE: Set Functions for Time Series
https://proceedings.icml.cc/static/paper_files/icml/2020/4750-Paper.pdf
AUTHORS: Max Horn, Michael Moor, Christian Bock, Bastian Rieck, Karsten Borgwardt
HIGHLIGHT: This paper proposes a novel approach for classifying irregularly-sampled time series with unaligned measurements, focusing on high scalability and data efficiency.

780, TITLE: Individual Calibration with Randomized Forecasting
https://proceedings.icml.cc/static/paper_files/icml/2020/4753-Paper.pdf
AUTHORS: Shengjia Zhao, Tengyu Ma, Stefano Ermon
HIGHLIGHT: We design a training objective to enforce individual calibration and use it to train randomized regression functions.

781, TITLE: Bayesian Differential Privacy for Machine Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4758-Paper.pdf
AUTHORS: Aleksei Triastcyn, Boi Faltings
HIGHLIGHT: We propose Bayesian differential privacy (BDP), which takes into account the data distribution to provide more practical privacy guarantees.

782, TITLE: Causal Modeling for Fairness In Dynamical Systems
https://proceedings.icml.cc/static/paper_files/icml/2020/4770-Paper.pdf
AUTHORS: Elliot Creager, David Madras, Toniann Pitassi, Richard Zemel
HIGHLIGHT: We discuss causal directed acyclic graphs (DAGs) as a unifying framework for the recent literature on fairness in such dynamical systems.

783, TITLE: Learning General-Purpose Controllers via Locally Communicating Sensorimotor Modules
https://proceedings.icml.cc/static/paper_files/icml/2020/4772-Paper.pdf
AUTHORS: Wenlong Huang, Igor Mordatch, Deepak Pathak
HIGHLIGHT: We propose a policy expressed as a collection of identical modular neural network components for each of the agent's actuators.

784, TITLE: Visual Grounding of Learned Physical Models
https://proceedings.icml.cc/static/paper_files/icml/2020/4780-Paper.pdf
AUTHORS: Yunzhu Li, Toru Lin, Kexin Yi, Daniel Bear, Daniel Yamins, Jiajun Wu, Josh Tenenbaum, Antonio Torralba
HIGHLIGHT: In this work, we present a neural model that simultaneously reasons about physics and make future predictions based on visual and dynamics priors.

785, TITLE: Task-Oriented Active Perception and Planning in Environments with Partially Known Semantics
https://proceedings.icml.cc/static/paper_files/icml/2020/4782-Paper.pdf
AUTHORS: Mahsa Ghasemi, Erdem Bulgur, Ufuk Topcu
HIGHLIGHT: We develop a planning strategy that takes the semantic uncertainties into account and by doing so provides probabilistic guarantees on the task success.

786, TITLE: Test-Time Training for Generalization under Distribution Shifts
https://proceedings.icml.cc/static/paper_files/icml/2020/4786-Paper.pdf
AUTHORS: Yu Sun, Xiaolong Wang, Zhuang Liu, John Miller, Alexei Efros, University of California Moritz Hardt
HIGHLIGHT: We introduce a general approach, called test-time training, for improving the performance of predictive models when training and test data come from different distributions.

787, TITLE: AutoGAN-Distiller: Searching to Compress Generative Adversarial Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/4787-Paper.pdf
AUTHORS: Yonggan Fu, Wuyang Chen, Haotao Wang, Haoran Li, Yingyan Lin, Zhangyang Wang
HIGHLIGHT: Inspired by the recent success of AutoML in deep compression, we introduce AutoML to GAN compression and develop an AutoGAN-Distiller (AGD) framework.

788, TITLE: Associative Memory in Iterated Overparameterized Sigmoid Autoencoders
https://proceedings.icml.cc/static/paper_files/icml/2020/4796-Paper.pdf
AUTHORS: Yibo Jiang, Cengiz Pehlevan
HIGHLIGHT: In this work, we theoretically analyze this behavior for sigmoid networks by leveraging recent developments in deep learning theories, especially the Neural Tangent Kernel (NTK) theory.

789, TITLE: Adaptive Reward-Poisoning Attacks against Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4819-Paper.pdf
AUTHORS: Xuezhou Zhang, Yuzhe Ma, Adish Singla, Jerry Zhu
HIGHLIGHT: We categorize such attacks by the infinity-norm constraint on δ_t: We provide a lower threshold below which reward-poisoning attack is infeasible and RL is certified to be safe; we provide a corresponding upper threshold above which the attack is feasible.

790, TITLE: Planning to Explore via Latent Disagreement
https://proceedings.icml.cc/static/paper_files/icml/2020/4828-Paper.pdf
AUTHORS: Ramanan Sekar, Oleh Rybkin, Kostas Daniilidis, Pieter Abbeel, Danijar Hafner, Deepak Pathak

HIGHLIGHT: This work focuses on task-agnostic exploration, where an agent explores a visual environment without yet knowing the tasks it will later be asked to solve.

791, TITLE: Defense Through Diverse Directions
https://proceedings.icml.cc/static/paper_files/icml/2020/4833-Paper.pdf
AUTHORS: Christopher Bender, Yang Li, Yifeng Shi, Michael K. Reiter, Junier Oliva
HIGHLIGHT: In this work we develop a novel Bayesian neural network methodology to achieve strong adversarial robustness without the need for online adversarial training.

792, TITLE: Beyond Synthetic Noise: Deep Learning on Controlled Noisy Labels
https://proceedings.icml.cc/static/paper_files/icml/2020/4834-Paper.pdf
AUTHORS: Lu Jiang, Di Huang, Mason Liu, Weilong Yang
HIGHLIGHT: First, we establish the first benchmark of controlled real label noise (obtained from image search). This new benchmark will enable us to study the image search label noise in a controlled setting for the first time. The second contribution is a simple but highly effective method to overcome both synthetic and real noisy labels.

793, TITLE: Confidence-Calibrated Adversarial Training: Generalizing to Unseen Attacks
https://proceedings.icml.cc/static/paper_files/icml/2020/4835-Paper.pdf
AUTHORS: David Stutz, Matthias Hein, Bernt Schiele
HIGHLIGHT: Our confidence-calibrated adversarial training (CCAT) tackles this problem by biasing the model towards low confidence predictions on adversarial examples.

794, TITLE: Online Control of the False Coverage Rate and False Sign Rate
https://proceedings.icml.cc/static/paper_files/icml/2020/4837-Paper.pdf
AUTHORS: Asaf Weinstein, Aaditya Ramdas
HIGHLIGHT: We propose a novel solution to the problem which only requires the scientist to be able to construct a marginal CI at any given level.

795, TITLE: Online Convex Optimization in the Random Order Model
https://proceedings.icml.cc/static/paper_files/icml/2020/4841-Paper.pdf
AUTHORS: Dan Garber, Gal Korcia, Kfir Levy
HIGHLIGHT: In this work we consider a natural random-order version of the OCO model, in which the adversary can choose the set of loss functions, but does not get to choose the order in which they are supplied to the learner; Instead, they are observed in uniformly random order.

796, TITLE: A Flexible Latent Space Model for Multilayer Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/4843-Paper.pdf
AUTHORS: Xuefei Zhang, Songkai Xue, Ji Zhu
HIGHLIGHT: This paper proposes a flexible latent space model for multilayer networks for the purpose of capturing such characteristics.

797, TITLE: Estimation of Bounds on Potential Outcomes For Decision Making
https://proceedings.icml.cc/static/paper_files/icml/2020/4845-Paper.pdf
AUTHORS: Maggie Makar, Fredrik Johansson, John Guttag, David Sontag
HIGHLIGHT: Our theoretical analysis highlights a tradeoff between the complexity of the learning task and the confidence with which the resulting bounds cover the true potential outcomes. Guided by our theoretical findings, we develop an algorithm for learning upper and lower bounds on the potential outcomes under treatment and non-treatment.

798, TITLE: Deep Gaussian Markov Random Fields
https://proceedings.icml.cc/static/paper_files/icml/2020/4849-Paper.pdf
AUTHORS: Per Sidén, Fredrik Lindsten
HIGHLIGHT: We establish a formal connection between GMRFs and convolutional neural networks (CNNs).

799, TITLE: Generalization Error of Generalized Linear Models in High Dimensions
https://proceedings.icml.cc/static/paper_files/icml/2020/4852-Paper.pdf
AUTHORS: Melikasadat Emami, Mojtaba Sahraee-Ardakan, Parthe Pandit, Sundeep Rangan, Alyson Fletcher
HIGHLIGHT: We provide a general framework to characterize the asymptotic generalization error for single-layer neural networks (i.e., generalized linear models) with arbitrary non-linearities, making it applicable to regression as well as classification problems.

800, TITLE: Poisson Learning: Graph Based Semi-Supervised Learning At Very Low Label Rates
https://proceedings.icml.cc/static/paper_files/icml/2020/4874-Paper.pdf
AUTHORS: Jeff Calder, Brendan Cook, Matthew Thorpe, Dejan Slepcev
HIGHLIGHT: We propose a new framework, called Poisson learning, for graph based semi-supervised learning at very low label rates.

801, TITLE: Sequential Transfer in Reinforcement Learning with a Generative Model
https://proceedings.icml.cc/static/paper_files/icml/2020/4876-Paper.pdf
AUTHORS: Andrea Tirinzoni, Riccardo Poiani, Marcello Restelli
HIGHLIGHT: In this work, we focus on the second objective when the agent has access to a generative model of state-action pairs.

802, TITLE: Finite-Time Convergence in Continuous-Time Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/4879-Paper.pdf
AUTHORS: Orlando Romero, mouhacine Benosman
HIGHLIGHT: In this paper, we investigate a Lyapunov-like differential inequality that allows us to establish finite-time stability of a continuous-time state-space dynamical system represented via a multivariate ordinary differential equation or differential inclusion.

803, TITLE: Feature Quantization Improves GAN Training
https://proceedings.icml.cc/static/paper_files/icml/2020/4902-Paper.pdf
AUTHORS: Yang Zhao, Chunyuan Li, Ping Yu, Jianfeng Gao, Changyou Chen
HIGHLIGHT: In this work, we propose feature quantizatoin (FQ) for the discriminator, to embed both true and fake data samples into a shared discrete space.

804, TITLE: Temporal Logic Point Processes
https://proceedings.icml.cc/static/paper_files/icml/2020/4907-Paper.pdf
AUTHORS: Shuang Li, Lu Wang, Ruizhi Zhang, xiaofu Chang, Xuqin Liu, Yao Xie, Yuan Qi, Le Song
HIGHLIGHT: We propose a modeling framework for event data, which excels in small data regime with the ability to incorporate domain knowledge.

805, TITLE: Hallucinative Topological Memory for Zero-Shot Visual Planning
https://proceedings.icml.cc/static/paper_files/icml/2020/4910-Paper.pdf
AUTHORS: Thanard Kurutach, Kara Liu, Aviv Tamar, Pieter Abbeel, Christine Tung
HIGHLIGHT: Here, instead, we propose a simple VP method that plans directly in image space and displays competitive performance.

806, TITLE: Learning Attentive Meta-Transfer
https://proceedings.icml.cc/static/paper_files/icml/2020/4915-Paper.pdf
AUTHORS: Jaesik Yoon, Gautam Singh, Sungjin Ahn
HIGHLIGHT: To resolve, we propose a new attention mechanism, Recurrent Memory Reconstruction (RMR), and demonstrate that providing an imaginary context that is recurrently updated and reconstructed with interaction is crucial in achieving effective attention for meta-transfer learning.

807, TITLE: Optimizing Dynamic Structures with Bayesian Generative Search
https://proceedings.icml.cc/static/paper_files/icml/2020/4921-Paper.pdf
AUTHORS: Minh Hoang, Carleton Kingsford
HIGHLIGHT: This paper instead proposes \textbf{DTERGENS}, a novel generative search framework that constructs and optimizes a high-performance composite kernel expressions generator.

808, TITLE: Amortized Finite Element Analysis for Fast PDE-Constrained Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/4931-Paper.pdf
AUTHORS: Tianju Xue, Alex Beatson, Sigrid Adriaenssens , Ryan Adams
HIGHLIGHT: In this paper we propose amortized finite element analysis (AmorFEA), in which a neural network learns to produce accurate PDE solutions, while preserving many of the advantages of traditional finite element methods.

809, TITLE: Preselection Bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/4941-Paper.pdf
AUTHORS: Viktor Bengs, Eyke Hüllermeier
HIGHLIGHT: In this paper, we introduce the Preselection Bandit problem, in which the learner preselects a subset of arms (choice alternatives) for a user, which then chooses the final arm from this subset.

810, TITLE: Peer Loss Functions: Learning from Noisy Labels without Knowing Noise Rates
https://proceedings.icml.cc/static/paper_files/icml/2020/4950-Paper.pdf
AUTHORS: Yang Liu, Hongyi Guo
HIGHLIGHT: In this work, we introduce a new family of loss functions that we name as \emph{peer loss} functions, which enables learning from noisy labels that does not require a priori specification of the noise rates.Our approach uses a standard empirical risk minimization (ERM) framework with peer loss functions.

811, TITLE: Rank Aggregation from Pairwise Comparisons in the Presence of Adversarial Corruptions
https://proceedings.icml.cc/static/paper_files/icml/2020/4955-Paper.pdf
AUTHORS: Prathamesh Patil, Arpit Agarwal, Shivani Agarwal, Sanjeev Khanna
HIGHLIGHT: In this paper, we initiate the study of robustness in rank aggregation under the popular Bradley-Terry-Luce (BTL) model for pairwise comparisons.

812, TITLE: Extrapolation for Large-batch Training in Deep Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/4956-Paper.pdf
AUTHORS: Tao LIN, Lingjing Kong, Sebastian Stich, Martin Jaggi
HIGHLIGHT: To alleviate these drawbacks, we propose to use instead computationally efficient extrapolation (extragradient) to stabilize the optimization trajectory while still benefiting from smoothing to avoid sharp minima.

813, TITLE: VideoOneNet: Bidirectional Convolutional Recurrent OneNet with Trainable Data Steps for Video Processing
https://proceedings.icml.cc/static/paper_files/icml/2020/4967-Paper.pdf
AUTHORS: Zoltán Milacski, Barnabás Póczos, Andras Lorincz
HIGHLIGHT: In this work, we make two contributions, both facilitating end-to-end learning using backpropagation.

814, TITLE: Bio-Inspired Hashing for Unsupervised Similarity Search
https://proceedings.icml.cc/static/paper_files/icml/2020/4985-Paper.pdf
AUTHORS: Chaitanya Ryali, John Hopfield, Leopold Grinberg, Dmitry Krotov
HIGHLIGHT: Building on inspiration from FlyHash and the ubiquity of sparse expansive representations in neurobiology, our work proposes a novel hashing algorithm BioHash that produces sparse high dimensional hash codes in a data-driven manner.

815, TITLE: MetaFun: Meta-Learning with Iterative Functional Updates
https://proceedings.icml.cc/static/paper_files/icml/2020/4986-Paper.pdf
AUTHORS: Jin Xu, Jean-Francois Ton, Hyunjik Kim, Adam Kosiorek, Yee Whye Teh
HIGHLIGHT: We develop a functional encoder-decoder approach to supervised meta-learning, where labeled data is encoded into an infinite-dimensional functional representation rather than a finite-dimensional one.

816, TITLE: Learning and Simulation in Generative Structured World Models
https://proceedings.icml.cc/static/paper_files/icml/2020/4995-Paper.pdf
AUTHORS: Zhixuan Lin, Yi-Fu Wu, Skand Peri, Bofeng Fu, Jindong Jiang, Sungjin Ahn
HIGHLIGHT: In this paper, we introduce Generative Structured World Models (G-SWM).

817, TITLE: Random Hypervolume Scalarizations for Provable Multi-Objective Black Box Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/4996-Paper.pdf
AUTHORS: Richard Zhang, Daniel Golovin
HIGHLIGHT: In this paper, we consider multi-objective optimization, where $f(x)$ outputs a vector of possibly competing objectives and the goal is to converge to the Pareto frontier.

818, TITLE: SGD Learns One-Layer Networks in WGANs
https://proceedings.icml.cc/static/paper_files/icml/2020/4998-Paper.pdf
AUTHORS: Qi Lei, Jason Lee, Alexandros Dimakis, Constantinos Daskalakis
HIGHLIGHT: In this paper, we show that, when the generator is a one-layer network, stochastic gradient descent-ascent converges to a global solution with polynomial time and sample complexity.

819, TITLE: Implicit Class-Conditioned Domain Alignment for Unsupervised Domain Adaptation
https://proceedings.icml.cc/static/paper_files/icml/2020/5006-Paper.pdf
AUTHORS: Xiang Jiang, Qicheng Lao, Stan Matwin, Mohammad Havaei
HIGHLIGHT: We present an approach for unsupervised domain adaptation---with a strong focus on practical considerations of within-domain class imbalance and between-domain class distribution shift---from a class-conditioned domain alignment perspective.

820, TITLE: Interference and Generalization in Temporal Difference Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5012-Paper.pdf
AUTHORS: Emmanuel Bengio, Joelle Pineau, Doina Precup
HIGHLIGHT: We study the link between generalization and interference in temporal-difference (TD) learning.

821, TITLE: CoMic: Co-Training and Mimicry for Reusable Skills
https://proceedings.icml.cc/static/paper_files/icml/2020/5013-Paper.pdf
AUTHORS: Leonard Hasenclever, Fabio Pardo, Raia Hadsell, Nicolas Heess, Josh Merel
HIGHLIGHT: We study the problem of learning reusable humanoid skills by imitating motion capture data and co-training with complementary tasks.

822, TITLE: Provably Efficient Model-based Policy Adaptation
https://proceedings.icml.cc/static/paper_files/icml/2020/5014-Paper.pdf
AUTHORS: Yuda Song, Aditi Mavalankar, Wen Sun, Sicun Gao
HIGHLIGHT: We propose new model-based mechanisms that are able to make online adaptation in unseen target environments, by combining ideas from no-regret online learning and adaptive control.

823, TITLE: Optimizer Benchmarking Needs to Account for Hyperparameter Tuning
https://proceedings.icml.cc/static/paper_files/icml/2020/5017-Paper.pdf
AUTHORS: Prabhu Teja Sivaprasad, Florian Mai, Thijs Vogels, Martin Jaggi, Francois Fleuret
HIGHLIGHT: In this work, we argue that a fair assessment of optimizers' performance must take the computational cost of hyperparameter tuning into account, i.e., how easy it is to find good hyperparameter configurations using an automatic hyperparameter search.

824, TITLE: From Local SGD to Local Fixed Point Methods for Federated Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5019-Paper.pdf
AUTHORS: Grigory Malinovsky, Dmitry Kovalev, Elnur Gasanov, Laurent CONDAT, Peter Richtarik
HIGHLIGHT: In this work we consider the generic problem of finding a fixed point of an average of operators, or an approximation thereof, in a distributed setting.

825, TITLE: Unraveling Meta-Learning: Understanding Feature Representations for Few-Shot Tasks
https://proceedings.icml.cc/static/paper_files/icml/2020/5020-Paper.pdf
AUTHORS: Micah Goldblum, Liam Fowl, Renkun Ni, Steven Reich, Valeriia Cherepanova, Tom Goldstein
HIGHLIGHT: We develop a better understanding of the underlying mechanics of meta-learning and the difference between models trained using meta-learning and models which are trained classically.

826, TITLE: Federated Learning with Only Positive Labels
https://proceedings.icml.cc/static/paper_files/icml/2020/5034-Paper.pdf
AUTHORS: Felix Xinnan Yu, Ankit Singh Rawat, Aditya Menon, Sanjiv Kumar
HIGHLIGHT: To address this problem, we propose a generic framework for training with only positive labels, namely Federated Averaging with Spreadout (FedAwS), where the server imposes a geometric regularizer after each round to encourage classes spread out in the embedding space.

827, TITLE: Causal Inference using Gaussian Processes with Structured Latent Confounders
https://proceedings.icml.cc/static/paper_files/icml/2020/5045-Paper.pdf
AUTHORS: Sam Witty, Kenta Takatsu, David Jensen, Vikash Mansinghka
HIGHLIGHT: This paper shows how to model latent confounders that have this structure and thereby improve estimates of causal effects.

828, TITLE: T-Basis: a Compact Representation for Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/5049-Paper.pdf
AUTHORS: Anton Obukhov, Maxim Rakhuba, Menelaos Kanakis, Stamatios Georgoulis, Dengxin Dai, Luc Van Gool
HIGHLIGHT: We introduce T-Basis, a novel concept for a compact representation of a set of tensors, each of an arbitrary shape, which is often seen in Neural Networks.

829, TITLE: Familywise Error Rate Control by Interactive Unmasking
https://proceedings.icml.cc/static/paper_files/icml/2020/5050-Paper.pdf
AUTHORS: Boyan Duan, Aaditya Ramdas, Larry Wasserman
HIGHLIGHT: We propose a method for multiple hypothesis testing with familywise error rate (FWER) control, called the i-FWER test.

830, TITLE: Learning to Branch for Multi-Task Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5057-Paper.pdf
AUTHORS: Pengsheng Guo, Chen-Yu Lee, Daniel Ulbricht
HIGHLIGHT: In this work, we present an automated multi-task learning algorithm that learns where to share or branch within a network, designing an effective network topology that is directly optimized for multiple objectives across tasks.

831, TITLE: Augmenting Continuous Time Bayesian Networks with Clocks
https://proceedings.icml.cc/static/paper_files/icml/2020/5059-Paper.pdf
AUTHORS: Nicolai Engelmann, Dominik Linzner, Heinz Koeppl
HIGHLIGHT: In this work, we lift its restriction to exponential survival times to arbitrary distributions.

832, TITLE: IPBoost - Non-Convex Boosting via Integer Programming
https://proceedings.icml.cc/static/paper_files/icml/2020/5068-Paper.pdf
AUTHORS: Sebastian Pokutta, Marc Pfetsch
HIGHLIGHT: In this paper we explore non-convex boosting in classification by means of integer programming and demonstrate real-world practicability of the approach while circumvent- ing shortcomings of convex boosting approaches.

833, TITLE: On Efficient Constructions of Checkpoints
https://proceedings.icml.cc/static/paper_files/icml/2020/5071-Paper.pdf
AUTHORS: Yu Chen, Zhenming LIU, Bin Ren, Xin Jin
HIGHLIGHT: In this paper, we propose a lossy compression scheme for checkpoint constructions (called LC-Checkpoint).

834, TITLE: Feature Selection using Stochastic Gates
https://proceedings.icml.cc/static/paper_files/icml/2020/5085-Paper.pdf
AUTHORS: Yutaro Yamada, Ofir Lindenbaum, Sahand Negahban, Yuval Kluger
HIGHLIGHT: In this study, we propose a method for feature selection in non-linear function estimation problems.

835, TITLE: How to Train Your Neural ODE: the World of Jacobian and Kinetic Regularization
https://proceedings.icml.cc/static/paper_files/icml/2020/5090-Paper.pdf
AUTHORS: Chris Finlay, Joern-Henrik Jacobsen, Levon Nurbekyan, Adam Oberman
HIGHLIGHT: In this paper, we overcome this apparent difficulty by introducing a theoretically-grounded combination of both optimal transport and stability regularizations which encourage neural ODEs to prefer simpler dynamics out of all the dynamics that solve a problem well.

836, TITLE: Evaluating Lossy Compression Rates of Deep Generative Models
https://proceedings.icml.cc/static/paper_files/icml/2020/5098-Paper.pdf
AUTHORS: Sicong Huang, Alireza Makhzani, Yanshuai Cao, Roger Grosse
HIGHLIGHT: In this work, we argue that the log-likelihood metric by itself cannot represent all the different performance characteristics of generative models, and propose to use rate distortion curves to evaluate and compare deep generative models.

837, TITLE: Mix-n-Match : Ensemble and Compositional Methods for Uncertainty Calibration in Deep Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5123-Paper.pdf
AUTHORS: Jize Zhang, Bhavya Kailkhura, T. Yong-Jin Han
HIGHLIGHT: We introduce the following desiderata for uncertainty calibration: (a) accuracy-preserving, (b) data-efficient, and (c) high expressive power.

838, TITLE: Learning Adversarially Robust Representations via Worst-Case Mutual Information Maximization
https://proceedings.icml.cc/static/paper_files/icml/2020/5124-Paper.pdf
AUTHORS: Sicheng Zhu, Xiao Zhang, David Evans
HIGHLIGHT: We develop a general definition of representation vulnerability that captures the maximum change of mutual information between the input and output distributions, under the worst-case input distribution perturbation. We prove a theorem that establishes a lower bound on the minimum adversarial risk that can be achieved for any downstream classifier based on this definition.

839, TITLE: Stochastic Regret Minimization in Extensive-Form Games
https://proceedings.icml.cc/static/paper_files/icml/2020/5132-Paper.pdf
AUTHORS: Gabriele Farina, Christian Kroer, Tuomas Sandholm
HIGHLIGHT: In this paper we develop a new framework for developing stochastic regret minimization methods.

840, TITLE: Simultaneous Inference for Massive Data: Distributed Bootstrap
https://proceedings.icml.cc/static/paper_files/icml/2020/5135-Paper.pdf
AUTHORS: Yang Yu, Shih-Kang Chao, Guang Cheng
HIGHLIGHT: In this paper, we propose a bootstrap method applied to massive data processed distributedly in a large number of machines.

841, TITLE: Stabilizing Differentiable Architecture Search via Perturbation-based Regularization
https://proceedings.icml.cc/static/paper_files/icml/2020/5139-Paper.pdf
AUTHORS: Xiangning Chen, Cho-Jui Hsieh
HIGHLIGHT: Based on this observation, we propose a perturbation-based regularization, named SmoothDARTS (SDARTS), to smooth the loss landscape and improve the generalizability of DARTS.

842, TITLE: Boosting Frank-Wolfe by Chasing Gradients
https://proceedings.icml.cc/static/paper_files/icml/2020/5153-Paper.pdf
AUTHORS: Cyrille Combettes, Sebastian Pokutta
HIGHLIGHT: We propose to speed up the Frank-Wolfe algorithm by better aligning the descent direction with that of the negative gradient via a subroutine.

843, TITLE: Concise Explanations of Neural Networks using Adversarial Training
https://proceedings.icml.cc/static/paper_files/icml/2020/5160-Paper.pdf
AUTHORS: Prasad Chalasani, Jiefeng Chen, Amrita Roy Chowdhury, Xi Wu, Somesh Jha
HIGHLIGHT: Our first contribution is a theoretical exploration of how these two properties (when using IG-based attributions) are related to adversarial training, for a class of 1-layer networks (which includes logistic regression models for binary and multi-class classification); for these networks we show that (a) adversarial training using an ℓ_∞-bounded adversary produces models with sparse attribution vectors, and (b) natural model-training while encouraging stable explanations (via an extra term in the loss function), is equivalent to adversarial training.

844, TITLE: Quantum Boosting
https://proceedings.icml.cc/static/paper_files/icml/2020/5169-Paper.pdf
AUTHORS: Srinivasan Arunachalam, Reevu Maity
HIGHLIGHT: In this paper, we show how quantum techniques can improve the time complexity of classical AdaBoost.

845, TITLE: Information-Theoretic Local Minima Characterization and Regularization
https://proceedings.icml.cc/static/paper_files/icml/2020/5176-Paper.pdf
AUTHORS: Zhiwei Jia, Hao Su
HIGHLIGHT: Specifically, based on the observed Fisher information we propose a metric both strongly indicative of generalizability of local minima and effectively applied as a practical regularizer.

846, TITLE: Kernel interpolation with continuous volume sampling
https://proceedings.icml.cc/static/paper_files/icml/2020/5177-Paper.pdf
AUTHORS: Ayoub Belhadji, Rémi Bardenet, Pierre Chainais
HIGHLIGHT: We introduce and analyse continuous volume sampling (VS), the continuous counterpart -for choosing node locations- of a discrete distribution introduced in (Deshpande & Vempala, 2006).

847, TITLE: Efficient Identification in Linear Structural Causal Models with Auxiliary Cutsets
https://proceedings.icml.cc/static/paper_files/icml/2020/5178-Paper.pdf
AUTHORS: Daniel Kumor, Carlos Cinelli, Elias Bareinboim
HIGHLIGHT: We develop a a new polynomial-time algorithm for identification in linear Structural Causal Models that subsumes previous non-exponential identification methods when applied to direct effects, and unifies several disparate approaches to identification in linear systems.

848, TITLE: Partial Trace Regression and Low-Rank Kraus Decomposition
https://proceedings.icml.cc/static/paper_files/icml/2020/5187-Paper.pdf
AUTHORS: Hachem Kadri, Stephane Ayache, Riikka Huusari, alain rakotomamonjy, Ralaivola Liva
HIGHLIGHT: We here introduce a yet more general model, namely the partial trace regression model, a family of linear mappings from matrix-valued inputs to matrix-valued outputs; this model subsumes the trace regression model and thus the linear regression model.

849, TITLE: Constant Curvature Graph Convolutional Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/5188-Paper.pdf
AUTHORS: Gregor Bachmann, Gary Becigneul, Octavian Ganea

HIGHLIGHT: Here, we bridge this gap by proposing mathematically grounded generalizations of graph convolutional networks (GCN) to (products of) constant curvature spaces.

850, TITLE: Educating Text Autoencoders: Latent Representation Guidance via Denoising
https://proceedings.icml.cc/static/paper_files/icml/2020/5206-Paper.pdf
AUTHORS: Tianxiao Shen, Jonas Mueller, Regina Barzilay, Tommi Jaakkola
HIGHLIGHT: To remedy this issue, we augment adversarial autoencoders with a denoising objective where original sentences are reconstructed from perturbed versions (referred as DAAE). We prove that this simple modification guides the latent space geometry of the resulting model by encouraging the encoder to map similar texts to similar latent representations.

851, TITLE: Generalization via Derandomization
https://proceedings.icml.cc/static/paper_files/icml/2020/5208-Paper.pdf
AUTHORS: Jeffrey Negrea, Daniel Roy, Gintare Karolina Dziugaite
HIGHLIGHT: We propose to study the generalization error of a learned predictor $h^\wedge$ in terms of that of a surrogate (potentially randomized) classifier that is coupled to $h^\wedge$ and designed to trade empirical risk for control of generalization error.

852, TITLE: Inductive Relation Prediction by Subgraph Reasoning
https://proceedings.icml.cc/static/paper_files/icml/2020/5209-Paper.pdf
AUTHORS: Komal Teru, Etienne Denis, Will Hamilton
HIGHLIGHT: Here, we propose a graph neural network based relation prediction framework, GraIL, that reasons over local subgraph structures and has a strong inductive bias to learn entity-independent relational semantics.

853, TITLE: Logarithmic Regret for Online Control with Adversarial Noise
https://proceedings.icml.cc/static/paper_files/icml/2020/5224-Paper.pdf
AUTHORS: Dylan Foster, Max Simchowitz
HIGHLIGHT: We propose a novel analysis that combines a new variant of the performance difference lemma with techniques from optimal control, allowing us to reduce online control to online prediction with delayed feedback.

854, TITLE: Multiresolution Tensor Learning for Efficient and Interpretable Spatial Analysis
https://proceedings.icml.cc/static/paper_files/icml/2020/5234-Paper.pdf
AUTHORS: Jung Yeon Park, Kenneth Carr, Stephan Zheng, Yisong Yue, Rose Yu
HIGHLIGHT: We develop a novel Multiresolution Tensor Learning (MRTL) algorithm for efficiently learning interpretable spatial patterns.

855, TITLE: Customizing ML Predictions for Online Algorithms
https://proceedings.icml.cc/static/paper_files/icml/2020/5246-Paper.pdf
AUTHORS: Keerti Anand, Rong Ge, Debmalya Panigrahi
HIGHLIGHT: In this paper, we ask the complementary question: can we redesign ML algorithms to provide better predictions for online algorithms?

856, TITLE: Maximum Entropy Gain Exploration for Long Horizon Multi-goal Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5247-Paper.pdf
AUTHORS: Silviu Pitis, Harris Chan, Stephen Zhao, Bradly Stadie, Jimmy Ba
HIGHLIGHT: We propose to optimize this objective by having the agent pursue past achieved goals in sparsely explored areas of the goal space, which focuses exploration on the frontier of the achievable goal set.

857, TITLE: Recht-Re Noncommutative Arithmetic-Geometric Mean Conjecture is False
https://proceedings.icml.cc/static/paper_files/icml/2020/5263-Paper.pdf
AUTHORS: Zehua Lai, Lek-Heng Lim
HIGHLIGHT: We will show that the Recht--Re conjecture is false for general n.

858, TITLE: Predictive Multiplicity in Classification
https://proceedings.icml.cc/static/paper_files/icml/2020/5265-Paper.pdf
AUTHORS: Charles Marx, Flavio Calmon, Berk Ustun
HIGHLIGHT: In this paper, we define predictive multiplicity as the ability of a prediction problem to admit competing models with conflicting predictions.

859, TITLE: Word-Level Speech Recognition With a Letter to Word Encoder
https://proceedings.icml.cc/static/paper_files/icml/2020/5269-Paper.pdf
AUTHORS: Ronan Collobert, Awni Hannun, Gabriel Synnaeve

HIGHLIGHT: We propose a direct-to-word sequence model which uses a word network to learn word embeddings from letters.

860, TITLE: Reducing Sampling Error in Batch Temporal Difference Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5271-Paper.pdf
AUTHORS: Brahma Pavse, Ishan Durugkar, Josiah Hanna, Peter Stone
HIGHLIGHT: To address this limitation, we introduce \textit{policy sampling error corrected}-TD(0) (PSEC-TD(0)).

861, TITLE: Adaptive Sampling for Estimating Probability Distributions
https://proceedings.icml.cc/static/paper_files/icml/2020/5282-Paper.pdf
AUTHORS: Shubhanshu Shekhar, Tara Javidi, Mohammad Ghavamzadeh
HIGHLIGHT: We consider the problem of allocating a fixed budget of samples to a finite set of discrete distributions to learn them uniformly well (minimizing the maximum error) in terms of four common distance measures: ℓ_2^2, ℓ_1, f-divergence, and separation distance.

862, TITLE: Adversarial Filters of Dataset Biases
https://proceedings.icml.cc/static/paper_files/icml/2020/5308-Paper.pdf
AUTHORS: Ronan Le Bras, Swabha Swayamdipta, Chandra Bhagavatula, Rowan Zellers, Matthew Peters, Ashish Sabharwal, Yejin Choi
HIGHLIGHT: We investigate one recently proposed approach, AFLite, which adversarially filters such dataset biases, as a means to mitigate the prevalent overestimation of machine performance. We provide a theoretical understanding for AFLite, by situating it in the generalized framework for optimum bias reduction.

863, TITLE: Black-Box Variational Inference as a Parametric Approximation to Langevin Dynamics
https://proceedings.icml.cc/static/paper_files/icml/2020/5310-Paper.pdf
AUTHORS: Matthew Hoffman, Yian Ma
HIGHLIGHT: In this paper, we analyze gradient-based MCMC and VI procedures and find theoretical and empirical evidence that these procedures are not as different as one might think.

864, TITLE: Faster Graph Embeddings via Coarsening
https://proceedings.icml.cc/static/paper_files/icml/2020/5316-Paper.pdf
AUTHORS: Matthew Fahrbach, Gramoz Goranci, Sushant Sachdeva, Richard Peng, Chi Wang
HIGHLIGHT: To address this, we present an efficient graph coarsening approach, based on Schur complements, for computing the embedding of the relevant vertices.

865, TITLE: Efficient non-conjugate Gaussian process factor models for spike countdata using polynomial approximations
https://proceedings.icml.cc/static/paper_files/icml/2020/5317-Paper.pdf
AUTHORS: Stephen Keeley, David Zoltowski, Jonathan Pillow, Spencer Smith, Yiyi Yu
HIGHLIGHT: Here we address this obstacle by introduc-ing a fast, approximate inference method fornon-conjugate GPFA models.

866, TITLE: Multigrid Neural Memory
https://proceedings.icml.cc/static/paper_files/icml/2020/5318-Paper.pdf
AUTHORS: Tri Huynh, Michael Maire, Matthew Walter
HIGHLIGHT: We introduce a radical new approach to endowing neural networks with access to long-term and large-scale memory.

867, TITLE: Cautious Adaptation For Reinforcement Learning in Safety-Critical Settings
https://proceedings.icml.cc/static/paper_files/icml/2020/5322-Paper.pdf
AUTHORS: Jesse Zhang, Brian Cheung, Chelsea Finn, Sergey Levine, Dinesh Jayaraman
HIGHLIGHT: Building on this intuition, we propose risk-averse domain adaptation (RADA).

868, TITLE: Adversarial Nonnegative Matrix Factorization
https://proceedings.icml.cc/static/paper_files/icml/2020/5336-Paper.pdf
AUTHORS: lei luo, yanfu Zhang, Heng Huang
HIGHLIGHT: To overcome this limitation, we propose a novel Adversarial NMF (ANMF) approach in which an adversary can exercise some control over the perturbed data generation process.

869, TITLE: Aligned Cross Entropy for Non-Autoregressive Machine Translation
https://proceedings.icml.cc/static/paper_files/icml/2020/5339-Paper.pdf

AUTHORS: Marjan Ghazvininejad, Vladimir Karpukhin, Luke Zettlemoyer, Omer Levy
HIGHLIGHT: In this paper, we propose aligned cross entropy (AXE) as an alternate loss function for training of non-autoregressive models.

870, TITLE: Model-Agnostic Characterization of Fairness Trade-offs
https://proceedings.icml.cc/static/paper_files/icml/2020/5341-Paper.pdf
AUTHORS: Joon Kim, Jiahao Chen, Ameet Talwalkar
HIGHLIGHT: We propose a diagnostic to enable practitioners to explore these trade-offs without training a single model.

871, TITLE: A Distributional Framework For Data Valuation
https://proceedings.icml.cc/static/paper_files/icml/2020/5343-Paper.pdf
AUTHORS: Amirata Ghorbani, Michael Kim, James Zou
HIGHLIGHT: To address these limitations, we propose a novel framework -- distributional Shapley -- where the value of a point is defined in the context of an underlying data distribution.

872, TITLE: Supervised Quantile Normalization for Low Rank Matrix Factorization
https://proceedings.icml.cc/static/paper_files/icml/2020/5349-Paper.pdf
AUTHORS: Marco Cuturi, Olivier Teboul, Jonathan Niles-Weed, Jean-Philippe Vert
HIGHLIGHT: We propose in this work to learn these normalization operators jointly with the factorization itself.

873, TITLE: AR-DAE: Towards Unbiased Neural Entropy Gradient Estimation
https://proceedings.icml.cc/static/paper_files/icml/2020/5352-Paper.pdf
AUTHORS: Jae Hyun Lim, Aaron Courville, Christopher Pal, Chin-Wei Huang
HIGHLIGHT: In this paper, we propose the amortized residual denoising autoencoder (AR-DAE) to approximate the gradient of the log density function, which can be used to estimate the gradient of entropy.

874, TITLE: Bridging the Gap Between f-GANs and Wasserstein GANs
https://proceedings.icml.cc/static/paper_files/icml/2020/5361-Paper.pdf
AUTHORS: Jiaming Song, Stefano Ermon
HIGHLIGHT: To overcome this limitation, we propose an new training objective where we additionally optimize over a set of importance weights over the generated samples.

875, TITLE: "Other-Play" for Zero-Shot Coordination
https://proceedings.icml.cc/static/paper_files/icml/2020/5369-Paper.pdf
AUTHORS: Hengyuan Hu, Alexander Peysakhovich, Adam Lerer, Jakob Foerster
HIGHLIGHT: We introduce a novel learning algorithm called other-play (OP), that enhances self-play by looking for more robust strategies.

876, TITLE: Correlation Clustering with Asymmetric Classification Errors
https://proceedings.icml.cc/static/paper_files/icml/2020/5386-Paper.pdf
AUTHORS: Jafar Jafarov, Sanchit Kalhan, Konstantin Makarychev, Yury Makarychev
HIGHLIGHT: We study the correlation clustering problem under the following assumption: Every "similar" edge e has weight $w_e \in [\alpha w, w]$ and every "dissimilar" edge e has weight $w_e \geq \alpha w$ (where $\alpha \leq 1$ and $w > 0$ is a scaling parameter).

877, TITLE: An Optimistic Perspective on Offline Deep Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5394-Paper.pdf
AUTHORS: Rishabh Agarwal, Dale Schuurmans, Mohammad Norouzi
HIGHLIGHT: To enhance generalization in the offline setting, we present Random Ensemble Mixture (REM), a robust Q-learning algorithm that enforces optimal Bellman consistency on random convex combinations of multiple Q-value estimates.

878, TITLE: Neural Topic Modeling with Continual Lifelong Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5399-Paper.pdf
AUTHORS: Pankaj Gupta, Yatin Chaudhary, Thomas Runkler, Hinrich Schuetze
HIGHLIGHT: To address the problem, we propose a lifelong learning framework for neural topic modeling that can continuously process streams of document collections, accumulate topics and guide future topic modeling tasks by knowledge transfer from several sources to better deal with the sparse data.

879, TITLE: Learning and Evaluating Contextual Embedding of Source Code
https://proceedings.icml.cc/static/paper_files/icml/2020/5401-Paper.pdf

AUTHORS:	Aditya Kanade, Petros Maniatis, Gogul Balakrishnan, Kensen Shi
HIGHLIGHT:	In this paper, we alleviate this gap by curating a code-understanding benchmark and evaluating a learned contextual embedding of source code.

880, TITLE:	Uncertainty quantification for nonconvex tensor completion: Confidence intervals, heteroscedasticity and optimality
https://proceedings.icml.cc/static/paper_files/icml/2020/5403-Paper.pdf
AUTHORS:	Changxiao Cai, H. Vincent Poor, Yuxin Chen
HIGHLIGHT:	We study the distribution and uncertainty of nonconvex optimization for noisy tensor completion --- the problem of estimating a low-rank tensor given incomplete and corrupted observations of its entries.

881, TITLE:	Learning with Good Feature Representations in Bandits and in RL with a Generative Model
https://proceedings.icml.cc/static/paper_files/icml/2020/5409-Paper.pdf
AUTHORS:	Gellért Weisz, Tor Lattimore, Csaba Szepesvari
HIGHLIGHT:	Thus, features are useful when the approximation error is small relative to the dimensionality of the features. The idea is applied to stochastic bandits and reinforcement learning with a generative model where the learner has access to d-dimensional linear features that approximate the action-value functions for all policies to an accuracy of \u03b5.

882, TITLE:	Angular Visual Hardness
https://proceedings.icml.cc/static/paper_files/icml/2020/5423-Paper.pdf
AUTHORS:	Beidi Chen, Weiyang Liu, Zhiding Yu, Jan Kautz, Anshumali Shrivastava, Animesh Garg, Anima Anandkumar
HIGHLIGHT:	In this paper, we propose angular visual hardness (AVH), a score given by the normalized angular distance between the sample feature embedding and the target classifier to measure sample hardness.

883, TITLE:	Learning the Stein Discrepancy for Training and Evaluating Energy-Based Models without Sampling
https://proceedings.icml.cc/static/paper_files/icml/2020/5430-Paper.pdf
AUTHORS:	Will Grathwohl, Kuan-Chieh Wang, Joern-Henrik Jacobsen, David Duvenaud, Richard Zemel
HIGHLIGHT:	We present a new method for evaluating and training unnormalized density models.

884, TITLE:	Variance Reduction and Quasi-Newton for Particle-Based Variational Inference
https://proceedings.icml.cc/static/paper_files/icml/2020/5434-Paper.pdf
AUTHORS:	Michael Zhu, Chang Liu, Jun Zhu
HIGHLIGHT:	In this paper, we find that existing ParVI approaches converge insufficiently fast under sample quality metrics, and we propose a novel variance reduction and quasi-Newton preconditioning framework for all ParVIs, by leveraging the Riemannian structure of the Wasserstein space and advanced Riemannian optimization algorithms.

885, TITLE:	Better depth-width trade-offs for neural networks through the lens of dynamical systems
https://proceedings.icml.cc/static/paper_files/icml/2020/5441-Paper.pdf
AUTHORS:	Evangelos Chatziafratis, Ioannis Panageas, Sai Ganesh Nagarajan
HIGHLIGHT:	In this work, we strengthen the connection with dynamical systems and we improve the existing width lower bounds along several aspects.

886, TITLE:	Stochastic Coordinate Minimization with Progressive Precision for Stochastic Convex Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/5461-Paper.pdf
AUTHORS:	Sudeep Salgia, Qing Zhao, Sattar Vakili
HIGHLIGHT:	A framework based on iterative coordinate minimization (CM) is developed for stochastic convex optimization.

887, TITLE:	Fundamental Tradeoffs between Invariance and Sensitivity to Adversarial Perturbations
https://proceedings.icml.cc/static/paper_files/icml/2020/5465-Paper.pdf
AUTHORS:	Florian Tramer, Jens Behrmann, Nicholas Carlini, Nicolas Papernot, Joern-Henrik Jacobsen
HIGHLIGHT:	We demonstrate fundamental tradeoffs between these two types of adversarial examples.

888, TITLE:	Learning From Strategic Agents: Accuracy, Improvement, and Causality
https://proceedings.icml.cc/static/paper_files/icml/2020/5468-Paper.pdf
AUTHORS:	Yonadav Shavit, Benjamin Edelman, Brian Axelrod
HIGHLIGHT:	As our main contribution, we provide the first algorithms for learning accuracy-optimizing, improvement-optimizing, and causal-precision-optimizing linear regression models directly from data, without prior knowledge of agents' possible actions.

889, TITLE:	Causal Structure Discovery from Distributions Arising from Mixtures of DAGs

https://proceedings.icml.cc/static/paper_files/icml/2020/5473-Paper.pdf
AUTHORS: Basil Saeed, Snigdha Panigrahi, Caroline Uhler
HIGHLIGHT: Since the mixing variable is latent, we consider causal structure discovery algorithms such as FCI that can deal with latent variables.

890, TITLE: Explainable and Discourse Topic-aware Neural Language Understanding
https://proceedings.icml.cc/static/paper_files/icml/2020/5492-Paper.pdf
AUTHORS: Yatin Chaudhary, Pankaj Gupta, Hinrich Schuetze
HIGHLIGHT: We present a novel neural composite language model that exploits both the latent and explainable topics along with topical discourse at sentence-level in a joint learning framework of topic and language models.

891, TITLE: Understanding Contrastive Representation Learning through Geometry on the Hypersphere
https://proceedings.icml.cc/static/paper_files/icml/2020/5503-Paper.pdf
AUTHORS: Tongzhou Wang, Phillip Isola
HIGHLIGHT: In this work, we identify two key properties related to the contrastive loss: (1) alignment (closeness) of features from positive pairs, and (2) uniformity of the induced distribution of the (normalized) features on the hypersphere.

892, TITLE: On Learning Language-Invariant Representations for Universal Machine Translation
https://proceedings.icml.cc/static/paper_files/icml/2020/5505-Paper.pdf
AUTHORS: Han Zhao, Junjie Hu, Andrej Risteski
HIGHLIGHT: In this paper, we take one step towards better understanding of universal machine translation by first proving an impossibility theorem in the general case.

893, TITLE: Compressive sensing with un-trained neural networks: Gradient descent finds a smooth approximation
https://proceedings.icml.cc/static/paper_files/icml/2020/5509-Paper.pdf
AUTHORS: Reinhard Heckel, Mahdi Soltanolkotabi
HIGHLIGHT: For signal recovery from a few measurements, however, un-trained convolutional networks have an intriguing self-regularizing property: Even though the network can perfectly fit any image, the network recovers a natural image from few measurements when trained with gradient descent until convergence. In this paper, we demonstrate this property numerically and study it theoretically.

894, TITLE: Representing Unordered Data Using Multiset Automata and Complex Numbers
https://proceedings.icml.cc/static/paper_files/icml/2020/5513-Paper.pdf
AUTHORS: Justin DeBenedetto, David Chiang
HIGHLIGHT: We propose to represent multisets using complex-weighted multiset automata and show how the multiset representations of certain existing neural architectures can be viewed as special cases of ours.

895, TITLE: Mutual Transfer Learning for Massive Data
https://proceedings.icml.cc/static/paper_files/icml/2020/5517-Paper.pdf
AUTHORS: Ching-Wei Cheng, Xingye Qiao, Guang Cheng
HIGHLIGHT: In this article, we study a new paradigm called mutual transfer learning where among many heterogeneous data domains, every data domain could potentially be the target of interest, and it could also be a useful source to help the learning in other data domains.

896, TITLE: The Differentiable Cross-Entropy Method
https://proceedings.icml.cc/static/paper_files/icml/2020/5518-Paper.pdf
AUTHORS: Brandon Amos, Denis Yarats
HIGHLIGHT: We study the Cross-Entropy Method (CEM) for the non-convex optimization of a continuous and parameterized objective function and introduce a differentiable variant that enables us to differentiate the output of CEM with respect to the objective function's parameters.

897, TITLE: A Sample Complexity Separation between Non-Convex and Convex Meta-Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5528-Paper.pdf
AUTHORS: Nikunj Umesh Saunshi, Yi Zhang, Mikhail Khodak, Sanjeev Arora
HIGHLIGHT: This work shows that convex-case analysis might be insufficient to understand the success of meta-learning, and that even for non-convex models it is important to look inside the optimization black-box, specifically at properties of the optimization trajectory.

898, TITLE: On the Convergence of Nesterov's Accelerated Gradient Method in Stochastic Settings
https://proceedings.icml.cc/static/paper_files/icml/2020/5529-Paper.pdf
AUTHORS: Mahmoud Assran, Michael Rabbat

HIGHLIGHT: We study Nesterov's accelerated gradient method in the stochastic approximation setting (unbiased gradients with bounded variance) and the finite sum setting (where randomness is due to sampling mini-batches).

899, TITLE: The Buckley-Osthus model and the block preferential attachment model: statistical analysis and application
https://proceedings.icml.cc/static/paper_files/icml/2020/5537-Paper.pdf
AUTHORS: Wenpin Tang, Xin Guo, Fengmin Tang
HIGHLIGHT: This paper is concerned with statistical estimation of two preferential attachment models: the Buckley-Osthus model and the block preferential attachment model.

900, TITLE: Representations for Stable Off-Policy Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5540-Paper.pdf
AUTHORS: Dibya Ghosh, Marc Bellemare
HIGHLIGHT: In this paper, we formally show that there are indeed nontrivial state representations under which the canonical SARSA algorithm is stable, even when learning off-policy.

901, TITLE: Piecewise Linear Regression via a Difference of Convex Functions
https://proceedings.icml.cc/static/paper_files/icml/2020/5543-Paper.pdf
AUTHORS: Ali Siahkamari, Aditya Gangrade, Brian Kulis, Venkatesh Saligrama
HIGHLIGHT: We present a new piecewise linear regression methodology that utilises fitting a \emph{difference of convex} functions (DC functions) to the data.

902, TITLE: On the consistency of top-k surrogate losses
https://proceedings.icml.cc/static/paper_files/icml/2020/5564-Paper.pdf
AUTHORS: Forest Yang, Sanmi Koyejo
HIGHLIGHT: Based on the top-k calibration analysis, we propose a rich class of top-k calibrated Bregman divergence surrogates.

903, TITLE: Collapsed Amortized Variational Inference for Switching Nonlinear Dynamical Systems
https://proceedings.icml.cc/static/paper_files/icml/2020/5565-Paper.pdf
AUTHORS: Zhe Dong, Bryan Seybold, Kevin Murphy, Hung Bui
HIGHLIGHT: We propose an efficient inference method for switching nonlinear dynamical systems.

904, TITLE: Boosting Deep Neural Network Efficiency with Dual-Module Inference
https://proceedings.icml.cc/static/paper_files/icml/2020/5569-Paper.pdf
AUTHORS: Liu Liu, Lei Deng, Zhaodong Chen, yuke wang, Shuangchen Li, Jingwei Zhang, Yihua Yang, Zhenyu Gu, Yufei Ding, Yuan Xie
HIGHLIGHT: We propose a big-little dual-module inference to dynamically skip unnecessary memory access and computation to speedup DNN inference.

905, TITLE: Time-Consistent Self-Supervision for Semi-Supervised Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5578-Paper.pdf
AUTHORS: Tianyi Zhou, Shengjie Wang, Jeff Bilmes
HIGHLIGHT: In this paper, we study the dynamics of neural net outputs in SSL and show that selecting and using first the unlabeled samples with more consistent outputs over the course of training (i.e., "time-consistency") can improve the final test accuracy and save computation.

906, TITLE: Selective Dyna-style Planning Under Limited Model Capacity
https://proceedings.icml.cc/static/paper_files/icml/2020/5608-Paper.pdf
AUTHORS: Zaheer SM, Samuel Sokota, Erin Talvitie, Martha White
HIGHLIGHT: In this paper, we investigate the idea of using an imperfect model selectively.

907, TITLE: A Pairwise Fair and Community-preserving Approach to k-Center Clustering
https://proceedings.icml.cc/static/paper_files/icml/2020/5612-Paper.pdf
AUTHORS: Brian Brubach, Darshan Chakrabarti, John Dickerson, Samir Khuller, Aravind Srinivasan, Leonidas Tsepenekas
HIGHLIGHT: To explore the practicality of our fairness goals, we devise an approach for extending existing k-center algorithms to satisfy these fairness constraints.

908, TITLE: How recurrent networks implement contextual processing in sentiment analysis
https://proceedings.icml.cc/static/paper_files/icml/2020/5618-Paper.pdf
AUTHORS: Niru Maheswaranathan, David Sussillo

HIGHLIGHT: Here, we propose general methods for reverse engineering recurrent neural networks (RNNs) to identify and elucidate contextual processing.

909, TITLE: Smaller, more accurate regression forests using tree alternating optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/5621-Paper.pdf
AUTHORS: Arman Zharmagambetov, Miguel Carreira-Perpinan
HIGHLIGHT: We instead use the recently proposed Tree Alternating Optimization (TAO) algorithm. This is able to learn an oblique tree, where each decision node tests for a linear combination of features, and which has much higher accuracy than axis-aligned trees.

910, TITLE: Divide and Conquer: Leveraging Intermediate Feature Representations for Quantized Training of Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/5636-Paper.pdf
AUTHORS: Ahmed T. Elthakeb, Prannoy Pilligundla, FatemehSadat Mireshghallah, Alexander Cloninger, Hadi Esmaeilzadeh
HIGHLIGHT: This paper sets out to harvest these rich intermediate representations for quantization with minimal accuracy loss while significantly reducing the memory footprint and compute intensity of the DNN.

911, TITLE: From Sets to Multisets: Provable Variational Inference for Probabilistic Integer Submodular Models
https://proceedings.icml.cc/static/paper_files/icml/2020/5642-Paper.pdf
AUTHORS: Aytunc Sahin, Yatao Bian, Joachim Buhmann, Andreas Krause
HIGHLIGHT: We study central properties of this extension and formulate a new probabilistic model which is defined through integer submodular functions.

912, TITLE: Empirical Study of the Benefits of Overparameterization in Learning Latent Variable Models
https://proceedings.icml.cc/static/paper_files/icml/2020/5645-Paper.pdf
AUTHORS: Rares-Darius Buhai, Yoni Halpern, Yoon Kim, Andrej Risteski, David Sontag
HIGHLIGHT: We discuss benefits to different metrics of success (recovering the parameters of the ground-truth model, held-out log-likelihood), sensitivity to variations of the training algorithm, and behavior as the amount of overparameterization increases.

913, TITLE: Improving the Gating Mechanism of Recurrent Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/5650-Paper.pdf
AUTHORS: Albert Gu, Caglar Gulcehre, Thomas Paine, Matthew Hoffman, Razvan Pascanu
HIGHLIGHT: We address this problem by deriving two synergistic modifications to the standard gating mechanism that are easy to implement, introduce no additional hyperparameters, and improve learnability of the gates when they are close to saturation.

914, TITLE: Efficient and Scalable Bayesian Neural Nets with Rank-1 Factors
https://proceedings.icml.cc/static/paper_files/icml/2020/5657-Paper.pdf
AUTHORS: Mike Dusenberry, Ghassen Jerfel, Yeming Wen, Yian Ma, Jasper Snoek, Katherine Heller, Balaji Lakshminarayanan, Dustin Tran
HIGHLIGHT: To tackle this challenge, we propose a rank-1 parameterization of BNNs, where each weight matrix involves only a distribution on a rank-1 subspace.

915, TITLE: Analyzing the effect of neural network architecture on training performance
https://proceedings.icml.cc/static/paper_files/icml/2020/5664-Paper.pdf
AUTHORS: Karthik Abinav Sankararaman, Soham De, Zheng Xu, W. Ronny Huang, Tom Goldstein
HIGHLIGHT: In this paper we study how neural network architecture affects the speed of training.

916, TITLE: Born-again Tree Ensembles
https://proceedings.icml.cc/static/paper_files/icml/2020/5666-Paper.pdf
AUTHORS: Thibaut Vidal, Maximilian Schiffer
HIGHLIGHT: Against this background, we study born-again tree ensembles, i.e., the process of constructing a single decision tree of minimum size that reproduces the exact same behavior as a given tree ensemble.

917, TITLE: Accountable Off-Policy Evaluation via a Kernelized Bellman Statistics
https://proceedings.icml.cc/static/paper_files/icml/2020/5668-Paper.pdf
AUTHORS: Yihao Feng, Tongzheng Ren, Ziyang Tang, Qiang Liu
HIGHLIGHT: In this work, we investigate the statistical properties of the kernel loss, which allows us to find a feasible set that contains the true value function with high probability.

918, TITLE: Improving Transformer Optimization Through Better Initialization
https://proceedings.icml.cc/static/paper_files/icml/2020/5691-Paper.pdf
AUTHORS: Xiao Shi Huang, Felipe Perez, Jimmy Ba, Maksims Volkovs
HIGHLIGHT: In this work our contributions are two-fold. We first investigate and empirically validate the source of optimization problems in encoder-decoder Transformer architecture.We then propose a new weight initialization scheme with theoretical justification, which enables training without warmup or layer normalization.

919, TITLE: Learning to Simulate and Design for Structural Engineering
https://proceedings.icml.cc/static/paper_files/icml/2020/5700-Paper.pdf
AUTHORS: Kai-Hung Chang, Chin-Yi Cheng
HIGHLIGHT: In this work, we propose an end-to-end learning pipeline to solve the size design optimization problem, which is to design the optimal cross-sections for columns and beams, given the design objectives and building code as constraints.

920, TITLE: Few-shot Relation Extraction via Bayesian Meta-learning on Task Graphs
https://proceedings.icml.cc/static/paper_files/icml/2020/5706-Paper.pdf
AUTHORS: Meng Qu, Tianyu Gao, Louis-Pascal Xhonneux, Jian Tang
HIGHLIGHT: We propose a novel Bayesian meta-learning approach to effectively learn the posterior distributions of the prototype vectors of tasks, where the initial prior of the prototype vectors is parameterized with a graph neural network on the global task graph.

921, TITLE: Optimal Differential Privacy Composition for Exponential Mechanisms
https://proceedings.icml.cc/static/paper_files/icml/2020/5709-Paper.pdf
AUTHORS: Jinshuo Dong, David Durfee, Ryan Rogers
HIGHLIGHT: We consider precise composition bounds of the overall privacy loss for exponential mechanisms, one of the fundamental classes of mechanisms in DP.

922, TITLE: Scaling up Hybrid Probabilistic Inference with Logical and Arithmetic Constraints via Message Passing
https://proceedings.icml.cc/static/paper_files/icml/2020/5711-Paper.pdf
AUTHORS: Zhe Zeng, Paolo Morettin, Fanqi Yan, Antonio Vergari, Guy Van den Broeck
HIGHLIGHT: To narrow this gap, we derive a factorized formalism of WMI enabling us to devise a scalable WMI solver based on message passing, MP-WMI.

923, TITLE: Accelerating Large-Scale Inference with Anisotropic Vector Quantization
https://proceedings.icml.cc/static/paper_files/icml/2020/5722-Paper.pdf
AUTHORS: Ruiqi Guo, Quan Geng, David Simcha, Felix Chern, Philip Sun, Erik Lindgren, Sanjiv Kumar
HIGHLIGHT: Based on the observation that for a given query, the database points that have the largest inner products are more relevant, we develop a family of anisotropic quantization loss functions.

924, TITLE: Convolutional dictionary learning based auto-encoders for natural exponential-family distributions
https://proceedings.icml.cc/static/paper_files/icml/2020/5733-Paper.pdf
AUTHORS: Bahareh Tolooshams, Andrew Song, Simona Temereanca, Demba Ba
HIGHLIGHT: We introduce a class of auto-encoder neural networks tailored to data from the natural exponential family (e.g., count data).

925, TITLE: Strength from Weakness: Fast Learning Using Weak Supervision
https://proceedings.icml.cc/static/paper_files/icml/2020/5736-Paper.pdf
AUTHORS: Joshua Robinson, Stefanie Jegelka, Suvrit Sra
HIGHLIGHT: We study generalization properties of weakly supervised learning.

926, TITLE: NADS: Neural Architecture Distribution Search for Uncertainty Awareness
https://proceedings.icml.cc/static/paper_files/icml/2020/5738-Paper.pdf
AUTHORS: Randy Ardywibowo, Shahin Boluki, Xinyu Gong, Zhangyang Wang, Xiaoning Qian
HIGHLIGHT: To address these problems, we first seek to identify guiding principles for designing uncertainty-aware architectures, by proposing Neural Architecture Distribution Search (NADS).

927, TITLE: Approximating Stacked and Bidirectional Recurrent Architectures with the Delayed Recurrent Neural Network
https://proceedings.icml.cc/static/paper_files/icml/2020/5744-Paper.pdf
AUTHORS: Javier Turek, Shailee Jain, Vy Vo, Mihai Capota, Alexander Huth, Theodore Willke
HIGHLIGHT: In this work, we explore the delayed-RNN, which is a single-layer RNN that has a delay between the input and output.

928, TITLE: Balancing Competing Objectives with Noisy Data: Score-Based Classifiers for Welfare-Aware Machine Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5746-Paper.pdf
AUTHORS: Esther Rolf, Max Simchowitz, Sarah Dean, Lydia T. Liu, Daniel Bjorkegren, University of California Moritz Hardt, Joshua Blumenstock
HIGHLIGHT: In this paper, we study algorithmic policies which explicitly trade off between a private objective (such as profit) and a public objective (such as social welfare).

929, TITLE: Time-aware Large Kernel Convolutions
https://proceedings.icml.cc/static/paper_files/icml/2020/5762-Paper.pdf
AUTHORS: Vasileios Lioutas, Yuhong Guo
HIGHLIGHT: In this paper, we introduce Time-aware Large Kernel (TaLK) Convolutions, a novel adaptive convolution operation that learns to predict the size of a summation kernel instead of using a fixed-sized kernel matrix.

930, TITLE: Amortised Learning by Wake-Sleep
https://proceedings.icml.cc/static/paper_files/icml/2020/5769-Paper.pdf
AUTHORS: Li Kevin Wenliang, Theodore Moskovitz, Heishiro Kanagawa, Maneesh Sahani
HIGHLIGHT: Here, we propose an alternative approach that we call amortised learning. Rather than computing an approximation to the posterior over latents, we use a wake-sleep Monte-Carlo strategy to learn a function that directly estimates the maximum-likelihood parameter updates.

931, TITLE: Fair Generative Modeling via Weak Supervision
https://proceedings.icml.cc/static/paper_files/icml/2020/5778-Paper.pdf
AUTHORS: Kristy Choi, Aditya Grover, Trisha Singh, Rui Shu, Stefano Ermon
HIGHLIGHT: We present a weakly supervised algorithm for overcoming dataset bias for deep generative models.

932, TITLE: Multi-Step Greedy Reinforcement Learning Algorithms
https://proceedings.icml.cc/static/paper_files/icml/2020/5786-Paper.pdf
AUTHORS: Manan Tomar, Yonathan Efroni, Mohammad Ghavamzadeh
HIGHLIGHT: In this paper, we explore the benefits of multi-step greedy policies in model-free RL when employed using the multi-step Dynamic Programming algorithms: κ-Policy Iteration (κ-PI) and κ-Value Iteration (κ-VI).

933, TITLE: Linear Mode Connectivity and the Lottery Ticket Hypothesis
https://proceedings.icml.cc/static/paper_files/icml/2020/5787-Paper.pdf
AUTHORS: Jonathan Frankle, Gintare Karolina Dziugaite, Daniel Roy, Michael Carbin
HIGHLIGHT: We introduce "instability analysis," which assesses whether a neural network optimizes to the same, linearly connected minimum under different samples of SGD noise.

934, TITLE: Superpolynomial Lower Bounds for Learning One-Layer Neural Networks using Gradient Descent
https://proceedings.icml.cc/static/paper_files/icml/2020/5791-Paper.pdf
AUTHORS: Surbhi Goel, Aravind Gollakota, Zhihan Jin, Sushrut Karmalkar, Adam Klivans
HIGHLIGHT: We give the first superpolynomial lower bounds for learning one-layer neural networks with respect to the Gaussian distribution for a broad class of algorithms.

935, TITLE: Learnable Group Transform For Time-Series
https://proceedings.icml.cc/static/paper_files/icml/2020/5795-Paper.pdf
AUTHORS: Romain Cosentino, Behnaam Aazhang
HIGHLIGHT: We propose a novel approach to filter bank learning for time-series by considering spectral decompositions of signals defined as a Group Transform.

936, TITLE: Optimistic bounds for multi-output learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5808-Paper.pdf
AUTHORS: Henry Reeve, Ata Kaban
HIGHLIGHT: We investigate the challenge of multi-output learning, where the goal is to learn a vector-valued function based on a supervised data set.

937, TITLE: Detecting Out-of-Distribution Examples with Gram Matrices
https://proceedings.icml.cc/static/paper_files/icml/2020/5813-Paper.pdf
AUTHORS: Chandramouli Shama Sastry, Sageev Oore

HIGHLIGHT: In this paper, we propose to detect OOD examples by identifying inconsistencies between activity patterns and predicted class.

938, TITLE: On Variational Learning of Controllable Representations for Text without Supervision
https://proceedings.icml.cc/static/paper_files/icml/2020/5816-Paper.pdf
AUTHORS: Peng Xu, Jackie Chi Kit Cheung, Yanshuai Cao
HIGHLIGHT: In this work, we find that sequence VAEs trained on text fail to properly decode when the latent codes are manipulated, because the modified codes often land in holes or vacant regions in the aggregated posterior latent space, where the decoding network fails to generalize.

939, TITLE: Model-Based Reinforcement Learning with Value-Targeted Regression
https://proceedings.icml.cc/static/paper_files/icml/2020/5817-Paper.pdf
AUTHORS: Zeyu Jia, Lin Yang, Csaba Szepesvari, Mengdi Wang, Alex Ayoub
HIGHLIGHT: In this paper we focus on finite-horizon episodic RL where the transition model admits a nonlinear parametrization P_{θ}, a special case of which is the linear parameterization: $P_{\theta} = \sum_{i=1}^{d} (\theta)_{i} P_{i}$.

940, TITLE: Two Routes to Scalable Credit Assignment without Weight Symmetry
https://proceedings.icml.cc/static/paper_files/icml/2020/5826-Paper.pdf
AUTHORS: Daniel Kunin, Aran Nayebi, Javier Sagastuy-Brena, Surya Ganguli, Jonathan Bloom, Daniel Yamins
HIGHLIGHT: Our analysis indicates the underlying mathematical reason for this instability, allowing us to identify a more robust local learning rule that better transfers without metaparameter tuning.

941, TITLE: Predicting deliberative outcomes
https://proceedings.icml.cc/static/paper_files/icml/2020/5832-Paper.pdf
AUTHORS: Vikas Garg, Tommi Jaakkola
HIGHLIGHT: We extend structured prediction to deliberative outcomes.

942, TITLE: Black-box Certification and Learning under Adversarial Perturbations
https://proceedings.icml.cc/static/paper_files/icml/2020/5833-Paper.pdf
AUTHORS: Hassan Ashtiani, Vinayak Pathak, Ruth Urner
HIGHLIGHT: We formally study the problem of classification under adversarial perturbations, both from the learner's perspective, and from the viewpoint of a third-party who aims at certifying the robustness of a given black-box classifier.

943, TITLE: When deep denoising meets iterative phase retrieval
https://proceedings.icml.cc/static/paper_files/icml/2020/5838-Paper.pdf
AUTHORS: Yaotian Wang, Xiaohang Sun, Jason Fleischer
HIGHLIGHT: Here, we combine iterative methods from phase retrieval with image statistics from deep denoisers, via regularization-by-denoising.

944, TITLE: The Neural Tangent Kernel in High Dimensions: Triple Descent and a Multi-Scale Theory of Generalization
https://proceedings.icml.cc/static/paper_files/icml/2020/5840-Paper.pdf
AUTHORS: Ben Adlam, Jeffrey Pennington
HIGHLIGHT: We provide a precise high-dimensional asymptotic analysis of generalization under kernel regression with the Neural Tangent Kernel, which characterizes the behavior of wide neural networks optimized with gradient descent.

945, TITLE: A Sequential Self Teaching Approach for Improving Generalization in Sound Event Recognition
https://proceedings.icml.cc/static/paper_files/icml/2020/5853-Paper.pdf
AUTHORS: Anurag Kumar, Vamsi Krishna Ithapu
HIGHLIGHT: In this paper, we propose a sequential self-teaching approach to learn sounds.

946, TITLE: On the Global Convergence Rates of Softmax Policy Gradient Methods
https://proceedings.icml.cc/static/paper_files/icml/2020/5857-Paper.pdf
AUTHORS: Jincheng Mei, Chenjun Xiao, Csaba Szepesvari, Dale Schuurmans
HIGHLIGHT: We make three contributions toward better understanding policy gradient methods.

947, TITLE: Source Separation with Deep Generative Priors
https://proceedings.icml.cc/static/paper_files/icml/2020/5859-Paper.pdf
AUTHORS: Vivek Jayaram, John Thickstun

HIGHLIGHT: This paper introduces a Bayesian approach to source separation that uses deep generative models as priors over the components of a mixture of sources, and Langevin dynamics to sample from the posterior distribution of sources given a mixture.

948, TITLE: Non-Autoregressive Neural Text-to-Speech
https://proceedings.icml.cc/static/paper_files/icml/2020/5861-Paper.pdf
AUTHORS: Kainan Peng, Wei Ping, Zhao Song, Kexin Zhao
HIGHLIGHT: In this work, we propose ParaNet, a non-autoregressive seq2seq model that converts text to spectrogram.

949, TITLE: Amortized Population Gibbs Samplers with Neural Sufficient Statistics
https://proceedings.icml.cc/static/paper_files/icml/2020/5881-Paper.pdf
AUTHORS: Hao Wu, Heiko Zimmermann, Eli Sennesh, Tuan Anh Le, Jan-Willem van de Meent
HIGHLIGHT: We develop amortized population Gibbs (APG) samplers, a class of scalable methods that frame structured variational inference as adaptive importance sampling.

950, TITLE: Neural Network Control Policy Verification With Persistent Adversarial Perturbation
https://proceedings.icml.cc/static/paper_files/icml/2020/5885-Paper.pdf
AUTHORS: Yuh-Shyang Wang, Tsui-Wei Weng, Luca Daniel
HIGHLIGHT: In this paper, we show how to combine recent works on static neural network certification tools with robust control theory to certify a neural network policy in a control loop.

951, TITLE: Circuit-Based Intrinsic Methods to Detect Overfitting
https://proceedings.icml.cc/static/paper_files/icml/2020/5901-Paper.pdf
AUTHORS: Satrajit Chatterjee, Alan Mishchenko
HIGHLIGHT: We propose a family of intrinsic methods called Counterfactual Simulation (CFS) which analyze the flow of training examples through the model by identifying and perturbing rare patterns.

952, TITLE: Inter-domain Deep Gaussian Processes with RKHS Fourier Features
https://proceedings.icml.cc/static/paper_files/icml/2020/5904-Paper.pdf
AUTHORS: Tim Rudner, Dino Sejdinovic, Yarin Gal
HIGHLIGHT: We propose Inter-domain Deep Gaussian Processes with RKHS Fourier Features, an extension of shallow inter-domain GPs that combines the advantages of inter-domain and deep Gaussian processes (DGPs) and demonstrate how to leverage existing approximate inference approaches to perform simple and scalable approximate inference on Inter-domain Deep Gaussian Processes.

953, TITLE: Estimating Q(s,s') with Deterministic Dynamics Gradients
https://proceedings.icml.cc/static/paper_files/icml/2020/5905-Paper.pdf
AUTHORS: Ashley Edwards, Himanshu Sahni, Rosanne Liu, Jane Hung, Ankit Jain, Rui Wang, Adrien Ecoffet, Thomas Miconi, Charles Isbell, Jason Yosinski
HIGHLIGHT: In this paper, we introduce a novel form of a value function, $Q(s, s')$, that expresses the utility of transitioning from a state s to a neighboring state s' and then acting optimally thereafter.

954, TITLE: On conditional versus marginal bias in multi-armed bandits
https://proceedings.icml.cc/static/paper_files/icml/2020/5908-Paper.pdf
AUTHORS: Jaehyeok Shin, Aaditya Ramdas, Alessandro Rinaldo
HIGHLIGHT: In this paper, we characterize the sign of the conditional bias of monotone functions of the rewards, including the sample mean.

955, TITLE: Implicit competitive regularization in GANs
https://proceedings.icml.cc/static/paper_files/icml/2020/5910-Paper.pdf
AUTHORS: Florian Schaefer, Hongkai Zheng, Anima Anandkumar
HIGHLIGHT: We argue that the performance of GANs is instead due to the implicit competitive regularization (ICR) arising from the simultaneous optimization of generator and discriminator.

956, TITLE: Graph-based, Self-Supervised Program Repair from Diagnostic Feedback
https://proceedings.icml.cc/static/paper_files/icml/2020/5912-Paper.pdf
AUTHORS: Michihiro Yasunaga, Percy Liang
HIGHLIGHT: Program repair is challenging for two reasons: First, it requires reasoning and tracking symbols across source code and diagnostic feedback. Second, labeled datasets available for program repair are relatively small. In this work, we propose novel solutions to these two challenges.

957, TITLE: Interpretable Off-Policy Evaluation in Reinforcement Learning by Highlighting Influential Transitions
https://proceedings.icml.cc/static/paper_files/icml/2020/5919-Paper.pdf
AUTHORS: Omer Gottesman, Joseph Futoma, Yao Liu, Sonali Parbhoo, Leo Celi, Emma Brunskill, Finale Doshi-Velez
HIGHLIGHT: In this paper we develop a method that could serve as a hybrid human-AI system, to enable human experts to analyze the validity of policy evaluation estimates.

958, TITLE: Communication-Efficient Federated Learning with Sketching
https://proceedings.icml.cc/static/paper_files/icml/2020/5927-Paper.pdf
AUTHORS: Daniel Rothchild, Ashwinee Panda, Enayat Ullah, Nikita Ivkin, Vladimir Braverman, Joseph Gonzalez, Ion Stoica, Raman Arora
HIGHLIGHT: In this paper we introduce a novel algorithm, called FedSketchedSGD, to overcome these challenges.

959, TITLE: Learning Fair Policies in Multi-Objective (Deep) Reinforcement Learning with Average and Discounted Rewards
https://proceedings.icml.cc/static/paper_files/icml/2020/5937-Paper.pdf
AUTHORS: Umer Siddique, Paul Weng, Matthieu Zimmer
HIGHLIGHT: In this paper, we formulate this novel RL problem, in which an objective function (generalized Gini index of utility vectors), which encodes a notion of fairness that we formally define, is optimized.

960, TITLE: Robust Black Box Explanations Under Distribution Shift
https://proceedings.icml.cc/static/paper_files/icml/2020/5945-Paper.pdf
AUTHORS: Himabindu Lakkaraju, Nino Arsov, Osbert Bastani
HIGHLIGHT: In this paper, we propose a novel framework for generating robust explanations of black box models based on adversarial training.

961, TITLE: Distributed Online Optimization over a Heterogeneous Network
https://proceedings.icml.cc/static/paper_files/icml/2020/5948-Paper.pdf
AUTHORS: Nima Eshraghi, Ben Liang
HIGHLIGHT: To address this issue, we consider a new algorithm termed Distributed Any-Batch Mirror Descent (DABMD), which is based on distributed Mirror Descent but uses a fixed per-round computing time to limit the waiting by fast nodes to receive information updates from slow nodes.

962, TITLE: ECLIPSE: An Extreme-Scale Linear Program Solver for Web-Applications
https://proceedings.icml.cc/static/paper_files/icml/2020/5950-Paper.pdf
AUTHORS: Kinjal Basu, Amol Ghoting, Rahul Mazumder, Yao Pan
HIGHLIGHT: In this work, we propose a distributed solver that solves a perturbation of the LP problems at scale.

963, TITLE: CURL: Contrastive Unsupervised Representation Learning for Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5951-Paper.pdf
AUTHORS: Michael Laskin, Pieter Abbeel, Aravind Srinivas
HIGHLIGHT: To that end, we propose a new model: Contrastive Unsupervised Representation Learning for Reinforcement Learning (CURL).

964, TITLE: Confidence-Aware Learning for Deep Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/5957-Paper.pdf
AUTHORS: Sangheum Hwang, Jooyoung Moon, Jihyo Kim, Younghak Shin
HIGHLIGHT: In this paper, we propose a method of training deep neural networks with a novel loss function, named Correctness Ranking Loss, which regularizes class probabilities explicitly to be better confidence estimates in terms of ordinal ranking according to confidence.

965, TITLE: Online Bayesian Moment Matching based SAT Solver Heuristics
https://proceedings.icml.cc/static/paper_files/icml/2020/5964-Paper.pdf
AUTHORS: Haonan Duan, Saeed Nejati, George Trimponias, Pascal Poupart, Vijay Ganesh
HIGHLIGHT: In this paper, we present a Bayesian Moment Matching (BMM) based method aimed at solving the initialization problem in Boolean SAT solvers.

966, TITLE: Retro*: Learning Retrosynthetic Planning with Neural Guided A* Search
https://proceedings.icml.cc/static/paper_files/icml/2020/5966-Paper.pdf
AUTHORS: Binghong Chen, Chengtao Li, Hanjun Dai, Le Song
HIGHLIGHT: In this paper, we propose Retro, a neural-based A-like algorithm that finds high-quality synthetic routes efficiently.

967, TITLE:	FedBoost: A Communication-Efficient Algorithm for Federated Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/5967-Paper.pdf
AUTHORS:	Jenny Hamer, Mehryar Mohri, Ananda Theertha Suresh
HIGHLIGHT:	In this work, we propose an alternative approach whereby an ensemble of pre-trained base predictors is trained via federated learning.

968, TITLE:	Sharp Composition Bounds for Gaussian Differential Privacy via Edgeworth Expansion
https://proceedings.icml.cc/static/paper_files/icml/2020/5996-Paper.pdf
AUTHORS:	Qinqing Zheng, Jinshuo Dong, Qi Long, Weijie Su
HIGHLIGHT:	To address this question, we introduce a family of analytical and sharp privacy bounds under composition using the Edgeworth expansion in the framework of the recently proposed f-differential privacy.

969, TITLE:	Fast and Three-rious: Speeding Up Weak Supervision with Triplet Methods
https://proceedings.icml.cc/static/paper_files/icml/2020/6012-Paper.pdf
AUTHORS:	Dan Fu, Mayee Chen, Frederic Sala, Sarah Hooper, Kayvon Fatahalian, Christopher Re
HIGHLIGHT:	In this work, we show that, for a class of latent variable models highly applicable to weak supervision, we can find a closed-form solution to model parameters, obviating the need for iterative solutions like stochastic gradient descent (SGD).

970, TITLE:	Spectral Frank-Wolfe Algorithm: Strict Complementarity and Linear Convergence
https://proceedings.icml.cc/static/paper_files/icml/2020/6015-Paper.pdf
AUTHORS:	Lijun Ding, Yingjie Fei, Qiantong Xu, Chengrun Yang
HIGHLIGHT:	We develop a novel variant of the classical Frank-Wolfe algorithm, which we call spectral Frank-Wolfe, for convex optimization over a spectrahedron.

971, TITLE:	Deep Molecular Programming: A Natural Implementation of Binary-Weight ReLU Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/6017-Paper.pdf
AUTHORS:	Marko Vasic, Cameron Chalk, Sarfraz Khurshid, David Soloveichik
HIGHLIGHT:	We discover a surprisingly tight connection between a popular class of neural networks (Binary-weight ReLU aka BinaryConnect) and a class of coupled chemical reactions that are absolutely robust to reaction rates.

972, TITLE:	Generative Pretraining From Pixels
https://proceedings.icml.cc/static/paper_files/icml/2020/6022-Paper.pdf
AUTHORS:	Mark Chen, Alec Radford, Rewon Child, Jeffrey Wu, Heewoo Jun, David Luan, Ilya Sutskever
HIGHLIGHT:	Inspired by progress in unsupervised representation learning for natural language, we examine whether similar models can learn useful representations for images.

973, TITLE:	Inferring DQN structure for high-dimensional continuous control
https://proceedings.icml.cc/static/paper_files/icml/2020/6024-Paper.pdf
AUTHORS:	Andrey Sakryukin, Chedy Raissi, Mohan Kankanhalli
HIGHLIGHT:	In this work, we show that the compositional structure of the action modules has a significant impact on model performance.

974, TITLE:	Subspace Fitting Meets Regression: The Effects of Supervision and Orthonormality Constraints on Double Descent of Generalization Errors
https://proceedings.icml.cc/static/paper_files/icml/2020/6043-Paper.pdf
AUTHORS:	Yehuda Dar, Paul Mayer, Lorenzo Luzi, Richard Baraniuk
HIGHLIGHT:	We study the linear subspace fitting problem in the overparameterized setting, where the estimated subspace can perfectly interpolate the training examples.

975, TITLE:	Learning Selection Strategies in Buchberger's Algorithm
https://proceedings.icml.cc/static/paper_files/icml/2020/6058-Paper.pdf
AUTHORS:	Dylan Peifer, Michael Stillman, Daniel Halpern-Leistner
HIGHLIGHT:	We introduce a new approach to Buchberger's algorithm that uses reinforcement learning agents to perform S-pair selection, a key step in the algorithm.

976, TITLE:	Estimating the Error of Randomized Newton Methods: A Bootstrap Approach
https://proceedings.icml.cc/static/paper_files/icml/2020/6067-Paper.pdf
AUTHORS:	Miles Lopes, Jessie X.T. Chen

HIGHLIGHT:		Motivated by these difficulties, we develop a bootstrap method for directly estimating the unknown error, which avoids excessive computation and offers greater reliability.

977, TITLE:		Spectral Subsampling MCMC for Stationary Time Series
https://proceedings.icml.cc/static/paper_files/icml/2020/6077-Paper.pdf
AUTHORS:		Robert Salomone, Matias Quiroz, Robert kohn, Mattias Villani, Minh-Ngoc Tran
HIGHLIGHT:		We propose a novel technique for speeding up MCMC for time series data by efficient data subsampling in the frequency domain.

978, TITLE:		Progressive Identification of True Labels for Partial-Label Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/6080-Paper.pdf
AUTHORS:		Jiaqi Lv, Miao Xu, LEI FENG, Gang Niu, Xin Geng, Masashi Sugiyama
HIGHLIGHT:		The goal of this paper is to propose a novel framework of partial-label learning without implicit assumptions on the model or optimization algorithm.

979, TITLE:		R2-B2: Recursive Reasoning-Based Bayesian Optimization for No-Regret Learning in Games
https://proceedings.icml.cc/static/paper_files/icml/2020/6082-Paper.pdf
AUTHORS:		Zhongxiang Dai, Yizhou Chen, Bryan Kian Hsiang Low, Patrick Jaillet , Teck-Hua Ho
HIGHLIGHT:		This paper presents a recursive reasoning formalism of Bayesian optimization (BO) to model the reasoning process in the interactions between boundedly rational, self-interested agents with unknown, complex, and costly-to-evaluate payoff functions in repeated games, which we call Recursive Reasoning-Based BO (R2-B2).

980, TITLE:		Graph Homomorphism Convolution
https://proceedings.icml.cc/static/paper_files/icml/2020/6084-Paper.pdf
AUTHORS:		Hoang Nguyen, Takanori Maehara
HIGHLIGHT:		In this paper, we study the graph classification problem from the graph homomorphism perspective.

981, TITLE:		Conditional Augmentation for Generative Modeling
https://proceedings.icml.cc/static/paper_files/icml/2020/6095-Paper.pdf
AUTHORS:		Heewoo Jun, Rewon Child, Mark Chen, John Schulman, Aditya Ramesh, Alec Radford, Ilya Sutskever
HIGHLIGHT:		We present conditional augmentation (CondAugment), a simple and powerful method of regularizing generative models.

982, TITLE:		PDO-eConvs: Partial Differential Operator Based Equivariant Convolutions
https://proceedings.icml.cc/static/paper_files/icml/2020/6096-Paper.pdf
AUTHORS:		Zhengyang Shen, Lingshen He, Zhouchen Lin, Jinwen Ma
HIGHLIGHT:		In this work, we deal with this issue from the connection between convolutions and partial differential operators (PDOs).

983, TITLE:		Abstraction Mechanisms Predict Generalization in Deep Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/6109-Paper.pdf
AUTHORS:		Alex Gain, Hava Siegelmann
HIGHLIGHT:		We approach this problem through the unconventional angle of \textit{cognitive abstraction mechanisms}, drawing inspiration from recent neuroscience work, allowing us to define the Cognitive Neural Activation metric (CNA) for DNNs, which is the correlation between information complexity (entropy) of given input and the concentration of higher activation values in deeper layers of the network.

984, TITLE:		Revisiting Fundamentals of Experience Replay
https://proceedings.icml.cc/static/paper_files/icml/2020/6110-Paper.pdf
AUTHORS:		William Fedus, Prajit Ramachandran, Rishabh Agarwal, Yoshua Bengio, Hugo Larochelle, Mark Rowland, Will Dabney
HIGHLIGHT:		We therefore present a systematic and extensive analysis of experience replay in Q-learning methods, focusing on two fundamental properties: the replay capacity and the ratio of learning updates to experience collected (replay ratio).

985, TITLE:		Go Wide, Then Narrow: Efficient Training of Deep Thin Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/6116-Paper.pdf
AUTHORS:		Denny Zhou, Mao Ye, Chen Chen, Mingxing Tan, Tianjian Meng, Xiaodan Song, Quoc Le, Qiang Liu, Dale Schuurmans
HIGHLIGHT:		We propose an efficient algorithm to train a very deep and thin network with theoretic guarantee.

986, TITLE: Meta-learning for Mixed Linear Regression
https://proceedings.icml.cc/static/paper_files/icml/2020/6124-Paper.pdf
AUTHORS: Weihao Kong, Raghav Somani, Zhao Song, Sham Kakade, Sewoong Oh
HIGHLIGHT: To this end, we introduce a novel spectral approach and show that we can efficiently utilize small data tasks with the help of $\tilde\Omega(k^{3/2})$ medium data tasks each with $\tilde\Omega(k^{1/2})$ examples.

987, TITLE: Efficiently Learning Adversarially Robust Halfspaces with Noise
https://proceedings.icml.cc/static/paper_files/icml/2020/6130-Paper.pdf
AUTHORS: Omar Montasser, Surbhi Goel, Ilias Diakonikolas, Nati Srebro
HIGHLIGHT: We study the problem of learning adversarially robust halfspaces in the distribution-independent setting.

988, TITLE: Bayesian Graph Neural Networks with Adaptive Connection Sampling
https://proceedings.icml.cc/static/paper_files/icml/2020/6133-Paper.pdf
AUTHORS: Arman Hasanzadeh, Ehsan Hajiramezanali, Shahin Boluki, Nick Duffield, Mingyuan Zhou, Krishna Narayanan, Xiaoning Qian
HIGHLIGHT: We propose a unified framework for adaptive connection sampling in graph neural networks (GNNs) that generalizes existing stochastic regularization methods for training GNNs.

989, TITLE: On the Theoretical Properties of the Network Jackknife
https://proceedings.icml.cc/static/paper_files/icml/2020/6137-Paper.pdf
AUTHORS: Qiaohui Lin, Robert Lunde, Purnamrita Sarkar
HIGHLIGHT: Under the sparse graphon model, we prove an Efron-Stein-type inequality, showing that the network jackknife leads to conservative estimates of the variance (in expectation) for any network functional that is invariant to node permutation.

990, TITLE: Thompson Sampling via Local Uncertainty
https://proceedings.icml.cc/static/paper_files/icml/2020/6144-Paper.pdf
AUTHORS: Zhendong Wang, Mingyuan Zhou
HIGHLIGHT: In this paper, we propose a new probabilistic modeling framework for Thompson sampling, where local latent variable uncertainty is used to sample the mean reward.

991, TITLE: Decision Trees for Decision-Making under the Predict-then-Optimize Framework
https://proceedings.icml.cc/static/paper_files/icml/2020/6150-Paper.pdf
AUTHORS: Adam Elmachtoub, Jason Cheuk Nam Liang, Ryan McNellis
HIGHLIGHT: This natural loss function is known in the literature as the Smart Predict-then-Optimize (SPO) loss, and we propose a tractable methodology called SPO Trees (SPOTs) for training decision trees under this loss.

992, TITLE: Representation Learning via Adversarially-Contrastive Optimal Transport
https://proceedings.icml.cc/static/paper_files/icml/2020/6155-Paper.pdf
AUTHORS: Anoop Cherian, Shuchin Aeron
HIGHLIGHT: In this paper, we study the problem of learning compact (low-dimensional) representations for sequential data that captures its implicit spatio-temporal cues.

993, TITLE: Neuro-Symbolic Visual Reasoning: Disentangling "Visual" from "Reasoning"
https://proceedings.icml.cc/static/paper_files/icml/2020/6156-Paper.pdf
AUTHORS: Saeed Amizadeh, Hamid Palangi, Oleksandr Polozov, Yichen Huang, Kazuhito Koishida
HIGHLIGHT: To address this, we propose (1) a framework to isolate and evaluate the reasoning aspect of VQA separately from its perception, and (2) a novel top-down calibration technique that allows the model to answer reasoning questions even with imperfect perception.

994, TITLE: Two Simple Ways to Learn Individual Fairness Metric from Data
https://proceedings.icml.cc/static/paper_files/icml/2020/6161-Paper.pdf
AUTHORS: Debarghya Mukherjee, Mikhail Yurochkin, Moulinath Banerjee, Yuekai Sun
HIGHLIGHT: In this paper, we present two simple algorithms that learn effective fair metrics from a variety of datasets.

995, TITLE: A Simple Framework for Contrastive Learning of Visual Representations
https://proceedings.icml.cc/static/paper_files/icml/2020/6165-Paper.pdf
AUTHORS: Ting Chen, Simon Kornblith, Mohammad Norouzi, Geoffrey Hinton
HIGHLIGHT: This paper presents a simple framework for contrastive representation learning.

996, TITLE: The Implicit and Explicit Regularization Effects of Dropout

https://proceedings.icml.cc/static/paper_files/icml/2020/6166-Paper.pdf
AUTHORS: Colin Wei, Sham Kakade, Tengyu Ma
HIGHLIGHT: This work observes that dropout introduces two distinct but entangled regularization effects: an explicit effect which occurs since dropout modifies the expected training objective, and an implicit effect from stochasticity in the dropout gradients.

997, TITLE: Variable-Bitrate Neural Compression via Bayesian Arithmetic Coding
https://proceedings.icml.cc/static/paper_files/icml/2020/6168-Paper.pdf
AUTHORS: Yibo Yang, Robert Bamler, Stephan Mandt
HIGHLIGHT: Here, we propose a new algorithm for compressing latent representations in deep probabilistic models, such as variational autoencoders, in post-processing.

998, TITLE: Orthogonalized SGD and Nested Architectures for Anytime Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/6169-Paper.pdf
AUTHORS: Chengcheng Wan, Henry (Hank) Hoffmann, Shan Lu, Michael Maire
HIGHLIGHT: We propose a novel variant of SGD customized for training network architectures that support anytime behavior: such networks produce a series of increasingly accurate outputs over time.

999, TITLE: Evaluating Machine Accuracy on ImageNet
https://proceedings.icml.cc/static/paper_files/icml/2020/6173-Paper.pdf
AUTHORS: Vaishaal Shankar, Rebecca Roelofs, Horia Mania, Alex Fang, Benjamin Recht, Ludwig Schmidt
HIGHLIGHT: We perform an in-depth evaluation of human accuracy on the ImageNet dataset.

1000, TITLE: Learning to Navigate in Synthetically Accessible Chemical Space Using Reinforcement Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/6186-Paper.pdf
AUTHORS: Sai Krishna Gottipati, Boris Sattarov, Sufeng Niu, Haoran Wei, Yashaswi Pathak, Shengchao Liu, Simon Blackburn, Karam Thomas, Connor Coley, Jian Tang, Sarath Chandar, Yoshua Bengio
HIGHLIGHT: In this work, we propose a novel reinforcement learning (RL) setup for drug discovery that addresses this challenge by embedding the concept of synthetic accessibility directly into the de novo compound design system.

1001, TITLE: Improved Bounds on Minimax Regret under Logarithmic Loss via Self-Concordance
https://proceedings.icml.cc/static/paper_files/icml/2020/6190-Paper.pdf
AUTHORS: Blair Bilodeau, Dylan Foster, Daniel Roy
HIGHLIGHT: We present a novel approach to bounding the minimax regret that exploits the self-concordance property of logarithmic loss.

1002, TITLE: Optimization Theory for ReLU Neural Networks Trained with Normalization Layers
https://proceedings.icml.cc/static/paper_files/icml/2020/6192-Paper.pdf
AUTHORS: Yonatan Dukler, Quanquan Gu, Guido Montufar
HIGHLIGHT: The analysis shows how the introduction of normalization layers changes the optimization landscape and in some settings enables faster convergence as compared with un-normalized neural networks.

1003, TITLE: Improving Molecular Design by Stochastic Iterative Target Augmentation
https://proceedings.icml.cc/static/paper_files/icml/2020/6209-Paper.pdf
AUTHORS: Kevin Yang, Wengong Jin, Kyle Swanson, Regina Barzilay, Tommi Jaakkola
HIGHLIGHT: In this paper, we propose a surprisingly effective self-training approach for iteratively creating additional molecular targets.

1004, TITLE: Don't Waste Your Bits! Squeeze Activations and Gradients for Deep Neural Networks via TinyScript
https://proceedings.icml.cc/static/paper_files/icml/2020/6210-Paper.pdf
AUTHORS: Fangcheng Fu, Yuzheng Hu, Yihan He, Jiawei Jiang, Yingxia Shao, Ce Zhang, Bin Cui
HIGHLIGHT: In this work, we introduce TinyScript, which applies a non-uniform quantization algorithm to both activations and gradients.

1005, TITLE: Robust One-Bit Recovery via ReLU Generative Networks: Near-Optimal Statistical Rate and Global Landscape Analysis
https://proceedings.icml.cc/static/paper_files/icml/2020/6234-Paper.pdf
AUTHORS: Shuang Qiu, Xiaohan Wei, Zhuoran Yang
HIGHLIGHT: We propose to recover the target $G(x\_0)$ solving an unconstrained empirical risk minimization (ERM).

1006, TITLE: Multi-objective Bayesian Optimization using Pareto-frontier Entropy

https://proceedings.icml.cc/static/paper_files/icml/2020/6243-Paper.pdf
AUTHORS: Shinya Suzuki, Shion Takeno, Tomoyuki Tamura, Kazuki Shitara, Masayuki Karasuyama
HIGHLIGHT: We propose a novel entropy-based MBO called Pareto-frontier entropy search (PFES) by considering the entropy of Pareto-frontier, which is an essential notion of the optimality of the multi-objective problem.

1007, TITLE: Closing the convergence gap of SGD without replacement
https://proceedings.icml.cc/static/paper_files/icml/2020/6245-Paper.pdf
AUTHORS: Shashank Rajput, Anant Gupta, Dimitris Papailiopoulos
HIGHLIGHT: In this paper, we close this gap and show that SGD without replacement achieves a rate of $\mathcal{O}\left(\frac{1}{T^2}+\frac{n^2}{T^3}\right)$ when the sum of the functions is a quadratic, and offer a new lower bound of $\Omega\left(\frac{n}{T^2}\right)$ for strongly convex functions that are sums of smooth functions.

1008, TITLE: Black-Box Methods for Restoring Monotonicity
https://proceedings.icml.cc/static/paper_files/icml/2020/6248-Paper.pdf
AUTHORS: Evangelia Gergatsouli, Brendan Lucier, Christos Tzamos
HIGHLIGHT: In this work we develop algorithms that are able to restore monotonicity in the parameters of interest.

1009, TITLE: Flexible and Efficient Long-Range Planning Through Curious Exploration
https://proceedings.icml.cc/static/paper_files/icml/2020/6249-Paper.pdf
AUTHORS: Aidan Curtis, Minjian Xin, Dilip Arumugam, Kevin Feigelis, Daniel Yamins
HIGHLIGHT: Here, we propose the Curious Sample Planner (CSP), which fuses elements of TAMP and DRL by combining a curiosity-guided sampling strategy with imitation learning to accelerate planning.

1010, TITLE: Sparse Convex Optimization via Adaptively Regularized Hard Thresholding
https://proceedings.icml.cc/static/paper_files/icml/2020/6264-Paper.pdf
AUTHORS: Kyriakos Axiotis, Maxim Sviridenko
HIGHLIGHT: We present a new Adaptively Regularized Hard Thresholding (ARHT) algorithm that makes significant progress on this problem by bringing the bound down to $\gamma=O(\kappa)$, which has been shown to be tight for a general class of algorithms including LASSO, OMP, and IHT.

1011, TITLE: On Thompson Sampling with Langevin Algorithms
https://proceedings.icml.cc/static/paper_files/icml/2020/6280-Paper.pdf
AUTHORS: Eric Mazumdar, Aldo Pacchiano, Yian Ma, Michael Jordan, Peter Bartlett
HIGHLIGHT: We propose a Markov Chain Monte Carlo (MCMC) method tailored to Thompson sampling to address this issue.

1012, TITLE: Strategic Classification is Causal Modeling in Disguise
https://proceedings.icml.cc/static/paper_files/icml/2020/6286-Paper.pdf
AUTHORS: John Miller, Smitha Milli, University of California Moritz Hardt
HIGHLIGHT: In this work, we develop a causal framework for strategic adaptation.

1013, TITLE: Multi-fidelity Bayesian Optimization with Max-value Entropy Search and its Parallelization
https://proceedings.icml.cc/static/paper_files/icml/2020/6289-Paper.pdf
AUTHORS: Shion Takeno, Hitoshi Fukuoka, Yuhki Tsukada, Toshiyuki Koyama, Motoki Shiga, Ichiro Takeuchi, Masayuki Karasuyama
HIGHLIGHT: In this paper, we focus on the information-based approach, which is a popular and empirically successful approach in BO.

1014, TITLE: Domain Aggregation Networks for Multi-Source Domain Adaptation
https://proceedings.icml.cc/static/paper_files/icml/2020/6292-Paper.pdf
AUTHORS: Junfeng Wen, Russell Greiner, Dale Schuurmans
HIGHLIGHT: In this paper, we develop a finite-sample generalization bound based on domain discrepancy and accordingly propose a theoretically justified optimization procedure.

1015, TITLE: Improving Robustness of Deep-Learning-Based Image Reconstruction
https://proceedings.icml.cc/static/paper_files/icml/2020/6293-Paper.pdf
AUTHORS: Ankit Raj, Yoram Bresler, Bo Li
HIGHLIGHT: In this paper, we propose to modify the training strategy of end-to-end deep-learning-based inverse problem solvers to improve robustness.

1016, TITLE: Outsourced Bayesian Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/6298-Paper.pdf
AUTHORS: Dmitrii Kharkovskii, Zhongxiang Dai, Bryan Kian Hsiang Low
HIGHLIGHT: This paper presents the outsourced-Gaussian process-upper confidence bound (O-GP-UCB) algorithm, which is the first algorithm for privacy-preserving Bayesian optimization (BO) in the outsourced setting with a provable performance guarantee.

1017, TITLE: Learning Near Optimal Policies with Low Inherent Bellman Error
https://proceedings.icml.cc/static/paper_files/icml/2020/6299-Paper.pdf
AUTHORS: Andrea Zanette, Alessandro Lazaric, Mykel Kochenderfer, Emma Brunskill
HIGHLIGHT: We study the exploration problem with approximate linear action-value functions in episodic reinforcement learning under the notion of low inherent Bellman error, a condition normally employed to show convergence of approximate value iteration.

1018, TITLE: Message Passing Least Squares: A Unified Framework for Fast and Robust Group Synchronization
https://proceedings.icml.cc/static/paper_files/icml/2020/6303-Paper.pdf
AUTHORS: Yunpeng Shi, Gilad Lerman
HIGHLIGHT: We propose an efficient algorithm for solving robust group synchronization given adversarially corrupted group ratios.

1019, TITLE: Optimal Estimator for Unlabeled Linear Regression
https://proceedings.icml.cc/static/paper_files/icml/2020/6318-Paper.pdf
AUTHORS: hang zhang, Ping Li
HIGHLIGHT: This paper proposes a one-step estimator which are optimal from both the computational and statistical sense.

1020, TITLE: Recovery of sparse signals from a mixture of linear samples
https://proceedings.icml.cc/static/paper_files/icml/2020/6319-Paper.pdf
AUTHORS: Arya Mazumdar, Soumyabrata Pal
HIGHLIGHT: In this work we address this query complexity problem and provide efficient algorithms that improves on the previously best known results.

1021, TITLE: Recurrent Hierarchical Topic-Guided RNN for Language Generation
https://proceedings.icml.cc/static/paper_files/icml/2020/6326-Paper.pdf
AUTHORS: Dandan Guo, Bo Chen, Ruiying Lu, Mingyuan Zhou
HIGHLIGHT: To simultaneously capture syntax and global semantics from a text corpus, we propose a new larger-context recurrent neural network (RNN)-based language model, which extracts recurrent hierarchical semantic structure via a dynamic deep topic model to guide natural language generation.

1022, TITLE: Predictive Coding for Locally-Linear Control
https://proceedings.icml.cc/static/paper_files/icml/2020/6329-Paper.pdf
AUTHORS: Rui Shu, Tung Nguyen, Yinlam Chow, Tuan Pham, Khoat Than, Mohammad Ghavamzadeh, Stefano Ermon, Hung Bui
HIGHLIGHT: In this paper, we propose a novel information-theoretic LCE approach and show theoretically that explicit next-observation prediction can be replaced with predictive coding.

1023, TITLE: Near Input Sparsity Time Kernel Embeddings via Adaptive Sampling
https://proceedings.icml.cc/static/paper_files/icml/2020/6331-Paper.pdf
AUTHORS: Amir Zandieh, David Woodruff
HIGHLIGHT: To accelerate kernel methods, we propose a near input sparsity time method for sampling the high-dimensional space implicitly defined by a kernel transformation.

1024, TITLE: Near-optimal sample complexity bounds for learning Latent $k-$polytopes and applications to Ad-Mixtures
https://proceedings.icml.cc/static/paper_files/icml/2020/6335-Paper.pdf
AUTHORS: Chiranjib Bhattacharyya, Ravindran Kannan
HIGHLIGHT: In this paper we show that $O^*(dk/m)$ samples are sufficient to learn each of $k-$ topic vectors of LDA, a popular Ad-mixture model, with vocabulary size d and $m\in \Omega(1)$ words per document, to any constant error in L_1 norm.

1025, TITLE: Population-Based Black-Box Optimization for Biological Sequence Design
https://proceedings.icml.cc/static/paper_files/icml/2020/6338-Paper.pdf

AUTHORS:	Christof Angermueller, David Belanger, Andreea Gane, Zelda Mariet, David Dohan, Kevin Murphy, Lucy Colwell , D. Sculley
HIGHLIGHT:	To improve robustness, we propose population-based optimization (P3BO), which generates batches of sequences by sampling from an ensemble of methods.

1026, TITLE:	Emergence of Separable Manifolds in Deep Language Representations
https://proceedings.icml.cc/static/paper_files/icml/2020/6348-Paper.pdf
AUTHORS:	Jonathan Mamou, Hang Le, Miguel del Rio Fernandez, Cory Stephenson, Hanlin Tang, Yoon Kim, SueYeon Chung
HIGHLIGHT:	In this work, we utilize mean-field theoretic manifold analysis, a recent technique from computational neuroscience, to analyze the high dimensional geometry of language representations from large-scale contextual embedding models.

1027, TITLE:	Stochastic Hamiltonian Gradient Methods for Smooth Games
https://proceedings.icml.cc/static/paper_files/icml/2020/6356-Paper.pdf
AUTHORS:	Nicolas Loizou, Hugo Berard, Alexia Jolicoeur-Martineau, Pascal Vincent, Simon Lacoste-Julien, Ioannis Mitliagkas
HIGHLIGHT:	We analyze the stochastic Hamiltonian method and a novel variance-reduced variant of it and provide the first set of last-iterate convergence guarantees for stochastic unbounded bilinear games.

1028, TITLE:	Understanding and Estimating the Adaptability of Domain-Invariant Representations
https://proceedings.icml.cc/static/paper_files/icml/2020/6358-Paper.pdf
AUTHORS:	Ching-Yao Chuang, Antonio Torralba, Stefanie Jegelka
HIGHLIGHT:	In this work, we aim to better understand and estimate the effect of domain-invariant representations on generalization to the target.

1029, TITLE:	Adversarial Mutual Information for Text Generation
https://proceedings.icml.cc/static/paper_files/icml/2020/6365-Paper.pdf
AUTHORS:	Boyuan Pan, Yazheng Yang, Kaizhao Liang, Bhavya Kailkhura, Zhongming Jin, Xian-Sheng Hua, Deng Cai, Bo Li
HIGHLIGHT:	In this paper, we propose Adversarial Mutual Information (AMI): a text generation framework which is formed as a novel saddle point (min-max) optimization aiming to identify joint interactions between the source and target.

1030, TITLE:	Bidirectional Model-based Policy Optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/6366-Paper.pdf
AUTHORS:	Hang Lai, Jian Shen, Weinan Zhang, Yong Yu
HIGHLIGHT:	We develop a novel method, called Bidirectional Model-based Policy Optimization (BMPO) to utilize both the forward model and backward model to generate short branched rollouts for policy optimization.

1031, TITLE:	Input-Sparsity Low Rank Approximation in Schatten Norm
https://proceedings.icml.cc/static/paper_files/icml/2020/6381-Paper.pdf
AUTHORS:	Yi Li, David Woodruff
HIGHLIGHT:	We give the first input-sparsity time algorithms for the rank-k low rank approximation problem in every Schatten norm.

1032, TITLE:	Do We Need Zero Training Loss After Achieving Zero Training Error?
https://proceedings.icml.cc/static/paper_files/icml/2020/6392-Paper.pdf
AUTHORS:	Takashi Ishida, Ikko Yamane, Tomoya Sakai, Gang Niu, Masashi Sugiyama
HIGHLIGHT:	We propose a direct solution called \emph{flooding} that intentionally prevents further reduction of the training loss when it reaches a reasonably small value, which we call the \emph{flooding level}.

1033, TITLE:	Learning and sampling of atomic interventions from observations
https://proceedings.icml.cc/static/paper_files/icml/2020/6395-Paper.pdf
AUTHORS:	Arnab Bhattacharyya, Sutanu Gayen, Saravanan Kandasamy, Ashwin Maran, Vinodchandran N. Variyam
HIGHLIGHT:	Our goal is to give algorithms with polynomial time and sample complexity in a non-parametric setting.

1034, TITLE:	Understanding and Mitigating the Tradeoff between Robustness and Accuracy
https://proceedings.icml.cc/static/paper_files/icml/2020/6401-Paper.pdf
AUTHORS:	Aditi Raghunathan, Sang Michael Xie, Fanny Yang, John Duchi, Percy Liang
HIGHLIGHT:	In this work, we precisely characterize the effect of augmentation on the standard error in linear regression when the optimal linear predictor has zero standard and robust error.

1035, TITLE: Combining Differentiable PDE Solvers and Graph Neural Networks for Fluid Flow Prediction
https://proceedings.icml.cc/static/paper_files/icml/2020/6414-Paper.pdf
AUTHORS: Filipe de Avila Belbute-Peres, Thomas Economon, Zico Kolter
HIGHLIGHT: In this work, we develop a hybrid (graph) neural network that combines a traditional graph convolutional network with an embedded differentiable fluid dynamics simulator inside the network itself.

1036, TITLE: From ImageNet to Image Classification: Contextualizing Progress on Benchmarks
https://proceedings.icml.cc/static/paper_files/icml/2020/6430-Paper.pdf
AUTHORS: Dimitris Tsipras, Shibani Santurkar, Logan Engstrom, Andrew Ilyas, Aleksander Madry
HIGHLIGHT: Overall, our results highlight a misalignment between the way we train our models and the task we actually expect them to solve, emphasizing the need for fine-grained evaluation techniques that go beyond average-case accuracy.

1037, TITLE: On Implicit Regularization in β-VAEs
https://proceedings.icml.cc/static/paper_files/icml/2020/6431-Paper.pdf
AUTHORS: Abhishek Kumar, Ben Poole
HIGHLIGHT: This analysis uncovers the regularizer implicit in the β-VAE objective, and leads to an approximation consisting of a deterministic autoencoding objective plus analytic regularizers that depend on the Hessian or Jacobian of the decoding model, unifying VAEs with recent heuristics proposed for training regularized autoencoders.

1038, TITLE: Data Amplification: Instance-Optimal Property Estimation
https://proceedings.icml.cc/static/paper_files/icml/2020/6444-Paper.pdf
AUTHORS: Yi Hao, Alon Orlitsky
HIGHLIGHT: We present novel linear-time-computable estimators that significantly ``amplify'' the effective amount of data available.

1039, TITLE: Provable guarantees for decision tree induction: the agnostic setting
https://proceedings.icml.cc/static/paper_files/icml/2020/6447-Paper.pdf
AUTHORS: Guy Blanc, Jane Lange, Li-Yang Tan
HIGHLIGHT: We give strengthened provable guarantees on the performance of widely employed and empirically successful {\sl top-down decision tree learning heuristics}.

1040, TITLE: Statistical Bias in Dataset Replication
https://proceedings.icml.cc/static/paper_files/icml/2020/6461-Paper.pdf
AUTHORS: Logan Engstrom, Andrew Ilyas, Shibani Santurkar, Dimitris Tsipras, Jacob Steinhardt, Aleksander Madry
HIGHLIGHT: In this paper, we highlight the importance of statistical modeling in dataset replication: we present unintuitive yet pervasive ways in which statistical bias, when left unmitigated, can skew results.

1041, TITLE: Towards Adaptive Residual Network Training: A Neural-ODE Perspective
https://proceedings.icml.cc/static/paper_files/icml/2020/6462-Paper.pdf
AUTHORS: chengyu dong, Liyuan Liu, Zichao Li, Jingbo Shang
HIGHLIGHT: Illuminated by these derivations, we propose an adaptive training algorithm for residual networks, LipGrow, which automatically increases network depth and accelerates model training.

1042, TITLE: Overparameterization hurts worst-group accuracy with spurious correlations
https://proceedings.icml.cc/static/paper_files/icml/2020/6478-Paper.pdf
AUTHORS: Shiori Sagawa, aditi raghunathan, Pang Wei Koh, Percy Liang
HIGHLIGHT: We show on two image datasets that in contrast to average accuracy, overparameterization hurts worst-group accuracy in the presence of spurious correlations.

1043, TITLE: A Nearly-Linear Time Algorithm for Exact Community Recovery in Stochastic Block Model
https://proceedings.icml.cc/static/paper_files/icml/2020/6486-Paper.pdf
AUTHORS: Peng Wang, Zirui Zhou, Anthony Man-Cho So
HIGHLIGHT: In this paper, we focus on the problem of exactly recovering the communities in a binary symmetric SBM, where a graph of n vertices is partitioned into two equal-sized communities and the vertices are connected with probability $p = \alpha\log(n)/n$ within communities and $q = \beta\log(n)/n$ across communities for some $\alpha>\beta>0$.

1044, TITLE: Online Multi-Kernel Learning with Graph-Structured Feedback
https://proceedings.icml.cc/static/paper_files/icml/2020/6490-Paper.pdf
AUTHORS: Pouya M Ghari, Yanning Shen

HIGHLIGHT: Leveraging the random feature approximation, we propose an online scalable multi-kernel learning approach with graph feedback, and prove that the proposed algorithm enjoys sublinear regret.

1045, TITLE: Is Local SGD Better than Minibatch SGD?
https://proceedings.icml.cc/static/paper_files/icml/2020/6502-Paper.pdf
AUTHORS: Blake Woodworth, Kumar Kshitij Patel, Sebastian Stich, Zhen Dai, Brian Bullins, H. Brendan McMahan, Ohad Shamir, Nati Srebro
HIGHLIGHT: We study local SGD (also known as parallel SGD and federated SGD), a natural and frequently used distributed optimization method.

1046, TITLE: On Lp-norm Robustness of Ensemble Decision Stumps and Trees
https://proceedings.icml.cc/static/paper_files/icml/2020/6513-Paper.pdf
AUTHORS: Yihan Wang, Huan Zhang, Hongge Chen, Duane Boning, Cho-Jui Hsieh
HIGHLIGHT: In this paper, we study the robustness verification and defense with respect to general ℓ_p norm perturbation for ensemble trees and stumps.

1047, TITLE: Sub-linear Memory Sketches for Near Neighbor Search on Streaming Data with RACE
https://proceedings.icml.cc/static/paper_files/icml/2020/6525-Paper.pdf
AUTHORS: Benjamin Coleman, Anshumali Shrivastava, Richard Baraniuk
HIGHLIGHT: We present the first sublinear memory sketch that can be queried to find the nearest neighbors in a dataset.

1048, TITLE: Understanding Self-Training for Gradual Domain Adaptation
https://proceedings.icml.cc/static/paper_files/icml/2020/6529-Paper.pdf
AUTHORS: Ananya Kumar, Tengyu Ma, Percy Liang
HIGHLIGHT: We consider gradual domain adaptation, where the goal is to adapt an initial classifier trained on a source domain given only unlabeled data that shifts gradually in distribution towards a target domain.

1049, TITLE: Concept Bottleneck Models
https://proceedings.icml.cc/static/paper_files/icml/2020/6530-Paper.pdf
AUTHORS: Pang Wei Koh, Thao Nguyen, Yew Siang Tang, Stephen Mussmann, Emma Pierson, Been Kim, Percy Liang
HIGHLIGHT: We seek to learn models that support interventions on high-level concepts: would the model predict severe arthritis if it thought there was a bone spur in the x-ray?

1050, TITLE: Optimal Bounds between f-Divergences and Integral Probability Metrics
https://proceedings.icml.cc/static/paper_files/icml/2020/6534-Paper.pdf
AUTHORS: Rohit Agrawal, Thibaut Horel
HIGHLIGHT: In this work, we systematically study the relationship between these two families from the perspective of convex duality.

1051, TITLE: Robustness to Spurious Correlations via Human Annotations
https://proceedings.icml.cc/static/paper_files/icml/2020/6535-Paper.pdf
AUTHORS: Megha Srivastava, Tatsunori Hashimoto, Percy Liang
HIGHLIGHT: We present a framework for making models robust to spurious correlations by leveraging humans' common sense knowledge of causality.

1052, TITLE: DROCC: Deep Robust One-Class Classification
https://proceedings.icml.cc/static/paper_files/icml/2020/6556-Paper.pdf
AUTHORS: Sachin Goyal, Aditi Raghunathan, Moksh Jain, Harsha Vardhan Simhadri, Prateek Jain
HIGHLIGHT: In this work, we propose Deep Robust One Class Classification (DROCC) method that is robust to such a collapse by training the network to distinguish the training points from their perturbations, generated adversarially.

1053, TITLE: Efficiently Solving MDPs with Stochastic Mirror Descent
https://proceedings.icml.cc/static/paper_files/icml/2020/6568-Paper.pdf
AUTHORS: Yujia Jin, Aaron Sidford
HIGHLIGHT: In this paper we present a unified framework based on primal-dual stochastic mirror descent for approximately solving infinite-horizon Markov decision processes (MDPs) given a generative model.

1054, TITLE: Handling the Positive-Definite Constraint in the Bayesian Learning Rule
https://proceedings.icml.cc/static/paper_files/icml/2020/6575-Paper.pdf
AUTHORS: Wu Lin, Mark Schmidt, Mohammad Emtiyaz Khan

HIGHLIGHT: In this paper, we fix this issue for the positive-definite constraint by proposing an improved rule that naturally handles the constraint.

1055, TITLE: A simpler approach to accelerated optimization: iterative averaging meets optimism
https://proceedings.icml.cc/static/paper_files/icml/2020/6589-Paper.pdf
AUTHORS: Pooria Joulani, Anant Raj, András György, Csaba Szepesvari
HIGHLIGHT: In this paper, we show that there is a simpler approach to obtaining accelerated rates: applying generic, well-known optimistic online learning algorithms and using the online average of their predictions to query the (deterministic or stochastic) first-order optimization oracle at each time step.

1056, TITLE: Training Binary Neural Networks using the Bayesian Learning Rule
https://proceedings.icml.cc/static/paper_files/icml/2020/6594-Paper.pdf
AUTHORS: Xiangming Meng, Roman Bachmann, Mohammad Emtiyaz Khan
HIGHLIGHT: In this paper, we propose such an approach using the Bayesian learning rule.

1057, TITLE: High-dimensional Robust Mean Estimation via Gradient Descent
https://proceedings.icml.cc/static/paper_files/icml/2020/6611-Paper.pdf
AUTHORS: Yu Cheng, Ilias Diakonikolas, Rong Ge, Mahdi Soltanolkotabi
HIGHLIGHT: In this work, we show that a natural non-convex formulation of the problem can be solved directly by gradient descent.

1058, TITLE: From Chaos to Order: Symmetry and Conservation Laws in Game Dynamics
https://proceedings.icml.cc/static/paper_files/icml/2020/6612-Paper.pdf
AUTHORS: Sai Ganesh Nagarajan, David Balduzzi, Georgios Piliouras
HIGHLIGHT: In this paper, we present basic \emph{mechanism design} tools for constructing games with predictable and controllable dynamics.

1059, TITLE: Hierarchically Decoupled Morphological Transfer
https://proceedings.icml.cc/static/paper_files/icml/2020/6616-Paper.pdf
AUTHORS: Donald Hejna, Lerrel Pinto, Pieter Abbeel
HIGHLIGHT: To this end, we propose a hierarchical decoupling of policies into two parts: an independently learned low-level policy and a transferable high-level policy.

1060, TITLE: Puzzle Mix: Exploiting Saliency and Local Statistics for Optimal Mixup
https://proceedings.icml.cc/static/paper_files/icml/2020/6618-Paper.pdf
AUTHORS: Jang-Hyun Kim, Wonho Choo, Hyun Oh Song
HIGHLIGHT: To this end, we propose Puzzle Mix, a mixup method for explicitly utilizing the saliency information and the underlying statistics of the natural examples.

1061, TITLE: Train Big, Then Compress: Rethinking Model Size for Efficient Training and Inference of Transformers
https://proceedings.icml.cc/static/paper_files/icml/2020/6626-Paper.pdf
AUTHORS: Zhuohan Li, Eric Wallace, Sheng Shen, Kevin Lin, Kurt Keutzer, Dan Klein, Joseph Gonzalez
HIGHLIGHT: We study the impact of model size in this setting, focusing on Transformer models for NLP tasks that are limited by compute: self-supervised pretraining and high-resource machine translation.

1062, TITLE: Interpolation between CNNs and ResNets
https://proceedings.icml.cc/static/paper_files/icml/2020/6627-Paper.pdf
AUTHORS: Zonghan Yang, Yang Liu, Chenglong Bao, Zuoqiang Shi
HIGHLIGHT: In this paper, we present a novel ODE model by adding a damping term.

1063, TITLE: Online metric algorithms with untrusted predictions
https://proceedings.icml.cc/static/paper_files/icml/2020/6657-Paper.pdf
AUTHORS: Antonios Antoniadis, Christian Coester, Marek Elias, Adam Polak, Bertrand Simon
HIGHLIGHT: In this paper, we propose a prediction setup for Metrical Task Systems (MTS), a broad class of online decision-making problems including, e.g., caching, k-server and convex body chasing.

1064, TITLE: Collaborative Machine Learning with Incentive-Aware Model Rewards
https://proceedings.icml.cc/static/paper_files/icml/2020/6668-Paper.pdf
AUTHORS: Rachael Hwee Ling Sim, Yehong Zhang, Bryan Kian Hsiang Low, Mun Choon Chan

HIGHLIGHT:	This paper proposes to value a party's contribution based on Shapley value and information gain on model parameters given its data.

1065, TITLE:	On Convergence-Diagnostic based Step Sizes for Stochastic Gradient Descent
https://proceedings.icml.cc/static/paper_files/icml/2020/6674-Paper.pdf
AUTHORS:	Scott Pesme, Aymeric Dieuleveut, Nicolas Flammarion
HIGHLIGHT:	In this paper, we show that efficiently detecting this transition and appropriately decreasing the step size can lead to fast convergence rates.

1066, TITLE:	Equivariant Flows: exact likelihood generative learning for symmetric densities.
https://proceedings.icml.cc/static/paper_files/icml/2020/6711-Paper.pdf
AUTHORS:	Jonas Köhler, Leon Klein, Frank Noe
HIGHLIGHT:	We provide a theoretical sufficient criterium showing that the distribution generated by \textit{equivariant} normalizing flows is invariant with respect to these symmetries by design.

1067, TITLE:	PoWER-BERT: Accelerating BERT Inference via Progressive Word-vector Elimination
https://proceedings.icml.cc/static/paper_files/icml/2020/6722-Paper.pdf
AUTHORS:	Saurabh Goyal, Anamitra Roy Choudhury, Venkatesan Chakaravarthy, Saurabh Raje, Yogish Sabharwal, Ashish Verma
HIGHLIGHT:	We develop a novel method, called PoWER-BERT, for improving the inference time of the popular BERT model, while maintaining the accuracy.

1068, TITLE:	Bayesian Sparsification of Deep C-valued Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/6728-Paper.pdf
AUTHORS:	Ivan Nazarov, Evgeny Burnaev
HIGHLIGHT:	To this end we extend Sparse Variational Dropout to complex-valued neural networks and verify the proposed Bayesian technique by conducting a large numerical study of the performance-compression trade-off of C-valued networks on two tasks: image recognition on MNIST-like and CIFAR10 datasets and music transcription on MusicNet.

1069, TITLE:	Minimally distorted Adversarial Examples with a Fast Adaptive Boundary Attack
https://proceedings.icml.cc/static/paper_files/icml/2020/6735-Paper.pdf
AUTHORS:	Francesco Croce, Matthias Hein
HIGHLIGHT:	We propose in this paper a new white-box adversarial attack wrt the l_p-norms for $p \in \{1,2,\infty\}$ aiming at finding the minimal perturbation necessary to change the class of a given input.

1070, TITLE:	A distributional view on multi objective policy optimization
https://proceedings.icml.cc/static/paper_files/icml/2020/6749-Paper.pdf
AUTHORS:	Abbas Abdolmaleki, Sandy Huang, Leonard Hasenclever, Michael Neunert, Martina Zambelli, Murilo Martins, Francis Song, Nicolas Heess, Raia Hadsell, Martin Riedmiller
HIGHLIGHT:	In this paper we propose a novel algorithm for multi-objective reinforcement learning that enables setting desired preferences for objectives in a scale-invariant way.

1071, TITLE:	On the Sample Complexity of Adversarial Multi-Source PAC Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/6805-Paper.pdf
AUTHORS:	Nikola Konstantinov, Elias Frantar, Dan Alistarh, Christoph H. Lampert
HIGHLIGHT:	In this work we show that, surprisingly, the same is not true in the multi-source setting, where the adversary can arbitrarily corrupt a fixed fraction of the data sources.

1072, TITLE:	Inducing and Exploiting Activation Sparsity for Fast Inference on Deep Neural Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/6820-Paper.pdf
AUTHORS:	Mark Kurtz, Justin Kopinsky, Rati Gelashvili, Alexander Matveev, John Carr, Michael Goin, William Leiserson, Sage Moore, Nir Shavit, Dan Alistarh
HIGHLIGHT:	In this paper, we present an in-depth analysis of methods for maximizing the sparsity of the activations in a trained neural network, and show that, when coupled with an efficient sparse-input convolution algorithm, we can leverage this sparsity for significant performance gains.

1073, TITLE:	Constructive universal distribution generation through deep ReLU networks
https://proceedings.icml.cc/static/paper_files/icml/2020/6831-Paper.pdf
AUTHORS:	Dmytro Perekrestenko, Stephan Müller, Helmut Bölcskei

HIGHLIGHT:		We present an explicit deep network construction that transforms uniformly distributed one-dimensional noise into an arbitrarily close approximation of any two-dimensional target distribution of finite differential entropy and Lipschitz-continuous pdf.

1074, TITLE:		Reliable evaluation of adversarial robustness with an ensemble of diverse parameter-free attacks
https://proceedings.icml.cc/static/paper_files/icml/2020/6846-Paper.pdf
AUTHORS:		Francesco Croce, Matthias Hein
HIGHLIGHT:		In this paper we first propose two extensions of the PGD-attack overcoming failures due to suboptimal step size and problems of the objective function. We then combine our novel attacks with two complementary existing ones to form a parameter-free, computationally affordable and user-independent ensemble of attacks to test adversarial robustness.

1075, TITLE:		Multiclass Neural Network Minimization via Tropical Newton Polytope Approximation
https://proceedings.icml.cc/static/paper_files/icml/2020/6849-Paper.pdf
AUTHORS:		Georgios Smyrnis, Petros Maragos
HIGHLIGHT:		In this work, we attempt to make use of methods stemming from a form of approximate division of such polynomials, which relies on the approximation of their Newton Polytopes, in order to minimize networks trained for multiclass classification problems.

1076, TITLE:		Finding trainable sparse networks through Neural Tangent Transfer
https://proceedings.icml.cc/static/paper_files/icml/2020/6851-Paper.pdf
AUTHORS:		Tianlin Liu, Friedemann Zenke
HIGHLIGHT:		In this article, we introduce Neural Tangent Transfer, a method that instead finds trainable sparse networks in a label-free manner.

1077, TITLE:		Towards a General Theory of Infinite-Width Limits of Neural Classifiers
https://proceedings.icml.cc/static/paper_files/icml/2020/6879-Paper.pdf
AUTHORS:		Eugene Golikov
HIGHLIGHT:		We propose a general framework that provides a link between these seemingly distinct limit theories.

1078, TITLE:		Controlling Overestimation Bias with Truncated Mixture of Continuous Distributional Quantile Critics
https://proceedings.icml.cc/static/paper_files/icml/2020/6884-Paper.pdf
AUTHORS:		Arsenii Kuznetsov, Pavel Shvechikov, Alexander Grishin, Dmitry Vetrov
HIGHLIGHT:		This paper investigates a novel way to alleviate the overestimation bias in a continuous control setting.

1079, TITLE:		Learning to Learn Kernels with Variational Random Features
https://proceedings.icml.cc/static/paper_files/icml/2020/6885-Paper.pdf
AUTHORS:		Xiantong Zhen, Haoliang Sun, Yingjun Du, Jun Xu, Yilong Yin, Ling Shao, Cees Snoek
HIGHLIGHT:		We introduce kernels with random Fourier features in the meta-learning framework for few-shot learning.

1080, TITLE:		Efficient Robustness Certificates for Discrete Data: Sparsity-Aware Randomized Smoothing for Graphs, Images and More
https://proceedings.icml.cc/static/paper_files/icml/2020/6890-Paper.pdf
AUTHORS:		Aleksandar Bojchevski, Johannes Klicpera, Stephan Günnemann
HIGHLIGHT:		We propose a model-agnostic certificate based on the randomized smoothing framework which subsumes earlier work and is tight, efficient, and sparsity-aware.

1081, TITLE:		Learning to Simulate Complex Physics with Graph Networks
https://proceedings.icml.cc/static/paper_files/icml/2020/6892-Paper.pdf
AUTHORS:		Alvaro Sanchez, Jonathan Godwin, Tobias Pfaff, Rex (Zhitao) Ying, Jure Leskovec, Peter Battaglia
HIGHLIGHT:		Here we present a general framework for learning simulation, and provide a single model implementation that yields state-of-the-art performance across a variety of challenging physical domains, involving fluids, rigid solids, and deformable materials interacting with one another.

1082, TITLE:		Small Data, Big Decisions: Model Selection in the Small-Data Regime
https://proceedings.icml.cc/static/paper_files/icml/2020/6899-Paper.pdf
AUTHORS:		Jorg Bornschein, Francesco Visin, Simon Osindero
HIGHLIGHT:		In contrast to most previous work, which typically considers the performance as a function of the model size, in this paper we empirically study the generalization performance as the size of the training set varies over multiple orders of magnitude.

1083, TITLE:		PolyGen: An Autoregressive Generative Model of 3D Meshes

https://proceedings.icml.cc/static/paper_files/icml/2020/6917-Paper.pdf
AUTHORS: Charlie Nash, Yaroslav Ganin, S. M. Ali Eslami, Peter Battaglia
HIGHLIGHT: We present an approach which models the mesh directly, predicting mesh vertices and faces sequentially using a Transformer-based architecture.

1084, TITLE: XtarNet: Learning to Extract Task-Adaptive Representation for Incremental Few-Shot Learning
https://proceedings.icml.cc/static/paper_files/icml/2020/6928-Paper.pdf
AUTHORS: Sung Whan Yoon, Jun Seo, Doyeon Kim, Jaekyun Moon
HIGHLIGHT: We propose XtarNet, which learns to extract task-adaptive representation (TAR) for facilitating incremental few-shot learning.