Open Problem 1

Mon, Aug 16, 09:30 – 09:40
MAIN TRACK

- Open Problem: Can Single-Shuffle SGD be Better than Reshuffling SGD and GD?
  Chulhee Yun (MIT) ; Suvrit Sra (Massachusetts Institute of Technology, USA) ;
  Ali Jadbabaie (Massachusetts Institute of Technology)

Minimally Supervised Learning (A)

Mon, Aug 16, 09:50 – 10:15
TRACK 1

- Exponential savings in agnostic active learning through abstention
  Nikita Puchkin (National Research University Higher School of Economics) ; Nikita Zhivotovskiy (ETH)

- Learning sparse mixtures of permutations from noisy information
  Anindya De (Columbia University) ; Ryan O'Donnell ; Rocco Servedio (Columbia University)

- The Bethe and Sinkhorn Permanents of Low Rank Matrices and Implications for Profile Maximum
  Likelihood
  Nima Anari (Stanford) ; Moses Charikar (Stanford University, California) ;
  Kirankumar Shiragur (Stanford University) ; Aaron Sidford (Stanford)

- Bounded Memory Active Learning through Enriched Queries
  Max Hopkins (University of California San Diego) ; Daniel Kane (University of California San Diego) ;
  Shachar Lovett (University of California San Diego) ; Michal Moshkovitz (UC San Diego)

- Adaptivity in Adaptive Submodularity
  Hossein Esfandiari (Google Research) ; Amin Karbasi (Yale) ; Vahab Mirrokni (Google)

Optimization (A)

Mon, Aug 16, 09:50 – 10:10
TRACK 2

- Optimizing Optimizers: Regret-optimal gradient descent algorithms
  Philippe Casgrain (ETH Zürich) ; Anastasis Kratsios (ETH Zürich)

- Frank-Wolfe with a Nearest Extreme Point Oracle
  Dan Garber (Technion) ; Noam Wolf (Technion)

- (Nearly) Dimension Independent Private ERM with AdaGrad Rates via Publicly Estimated Subspaces
  Peter Kairouz (Google) ; Monica Ribero Diaz (University of Texas at Austin) ; Keith Rush (Google Research) ;
  Abhradeep Thakurta (Google)

- Thinking Inside the Ball: Near-Optimal Minimization of the Maximal Loss
  Yair Carmon (Tel Aviv University) ; Arun Jambulapati (Stanford University) ; Yujia Jin (Stanford University) ;
  Aaron Sidford (Stanford)
Minimally Supervised Learning (B)

Mono, Aug 16, 10:20 – 10:40

TRACK 1

- Learning and testing junta distributions with sub cube conditioning
  Xi Chen (Columbia University); Rajesh Jayaram (Carnegie Mellon University); Amit Levi (University of Waterloo); Erik Waingarten

- Outlier-Robust Learning of Ising Models Under Dobrushin's Condition
  Ilias Diakonikolas (UW Madison); Daniel M. Kane (UCSD); Alistair Stewart (Web 3 Foundation); Yuxin Sun (University of Wisconsin - Madison)

- Breaking The Dimension Dependence in Sparse Distribution Estimation under Communication Constraints
  Wei-Ning Chen (Stanford University); Peter Kairouz (Google); Ayfer Ozgur (Stanford University)

- The Sample Complexity of Robust Covariance Testing
  Ilias Diakonikolas (UW Madison); Daniel Kane (UCSD)

Optimization (B)

Mono, Aug 16, 10:20 – 10:40

TRACK 2

- Projected Stochastic Gradient Langevin Algorithms for Constrained Sampling and Non-Convex Learning
  Andrew Lamperski (University of Minnesota)

- The Last-Iterate Convergence Rate of Optimistic Mirror Descent in Stochastic Variational Inequalities
  Waïss Azizian (Ecole Normale Supérieure de Paris); Franck Iutzeler (Univ. Grenoble Alpes); Jérôme Malick (CNRS); Panayotis Mertikopoulos (CNRS and Criteo AI Lab)

- The Min-Max Complexity of Distributed Stochastic Convex Optimization with Intermittent Communication
  Blake Woodworth (TTI-Chicago); Brian Bullins (TTI Chicago); Ohad Shamir (Weizmann Institute of Science); Nathan Srebro (Toyota Technical Institute of Chicago)

- A Local Convergence Theory for Mildly Over-Parameterized Two-Layer Neural Network
  Mo Zhou (Duke University); Rong Ge (Duke University); Chi Jin (Princeton University)

Online Learning, Game Theory 1 (A)

Mono, Aug 16, 11:10 – 11:30

TRACK 1

- Lazy OCO: Online Convex Optimization on a Switching Budget
  Uri Sherman (Tel Aviv University); Tomer Koren (Tel Aviv University and Google)

- Deterministic Finite-Memory Bias Estimation
  Tomer Berg (TAU); Or Ordentlich (HUJI); Ofer Shayevitz (Tel-Aviv University)

- Online Learning from Optimal Actions
  Yuri Fonseca (Columbia University)

- Online Learning with Simple Predictors and a Combinatorial Characterization of Minimax in 0/1 Games
  Steve Hanneke (Toyota Technological Institute at Chicago); Roi Livni (Tel Aviv University); Shay Moran (Technion)
Approximation and Complexity

Mon, Aug 16, 11:10 – 11:35
TRACK 2

- Reconstructing weighted voting schemes from partial information about their power indices
  Emmanouil Vlatakis-Gkaragkounis (Columbia University); Huck Bennett (University of Michigan); Anindya De (-); Rocco Servedio (Columbia University)

- Weak learning convex sets under normal distributions
  Anindya De (-); Rocco Servedio (Columbia University)

- Statistical Query Algorithms and Low Degree Tests Are Almost Equivalent
  Matthew Brennan (MIT); Guy Bresler (MIT); Sam Hopkins; Jerry Li (Microsoft); Tselil Schramm (Stanford University)

- A Dimension-free Computational Upper-bound for Smooth Optimal Transport Estimation
  Adrien Vacher (LIGM); Boris Muzellec (INRIA, Ecole Normale Superieure); Alessandro Rudi (INRIA, Ecole Normale Superieure); Francis Bach (INRIA - Ecole Normale Superieure); Francois-Xavier Vialard (University Paris-Est)

- Spectral Planting and the Hardness of Refuting Cuts, Colorability, and Communities in Random Graphs
  Afonso Bandeira (ETH); Jess Banks (UC Berkeley); Dmitriy Kunisky (New York University); Christopher Moore (Santa Fe); Alex Wein (NYU)

Online Learning, Game Theory 1 (B)

Mon, Aug 16, 11:35 – 11:55
TRACK 1

- Online Markov Decision Processes with Aggregate Bandit Feedback
  Alon Cohen (Technion and Google Inc.); Haim Kaplan (Tel Aviv University and Google); Tomer Koren (Tel Aviv University and Google); Yishay Mansour (Tel Aviv University)

- Optimal Dynamic Regret in Exp-Concave Online Learning
  Dheeraj Baby (University of California Santa Barbara); Yu-Xiang Wang (UC Santa Barbara)

- Exponential Weights Algorithms for Selective Learning
  Mingda Qiao (Stanford University); Gregory Valiant (Stanford University)

- Impossible Tuning Made Possible: A New Expert Algorithm and Its Applications
  Liyu Chen (USC); Haipeng Luo (USC); Chen-Yu Wei (University of Southern California)

Randomized Linear Algebra

Mon, Aug 16, 11:40 – 11:55
TRACK 2

- Sparse sketches with small inversion bias
  Michal Derezinski (UC Berkeley); Zhenyu Liao (University of California, Berkeley); Edgar Dobriban (University of Pennsylvania); Michael Mahoney (“University of California, Berkeley”)

- Exponentially Improved Dimensionality Reduction for l1: Subspace Embeddings and Independence Testing
Taisuke Yasuda (Carnegie Mellon University); David Woodruff (Carnegie Mellon University); Yi Li (Nanyang Technological University)

- **Average-Case Communication Complexity of Statistical Problems**
  Cyrus Rashtchian (UCSD); David Woodruff (Carnegie Mellon University); Peng Ye (Tsinghua University); Hanlin Zhu (Institute for Interdisciplinary Information Sciences, Tsinghua University)

### Keynote: Eva Tardos (Cornell University)

📅 Mon, Aug 16, 12:05 – 13:00
📍 MAIN TRACK

### Open Problem 2

📅 Tue, Aug 17, 09:35 – 09:45
📍 MAIN TRACK

- **Open Problem: Is There an Online Learning Algorithm That Learns Whenever Online Learning Is Possible?**
  Steve Hanneke (Toyota Technological Institute at Chicago)

### Neural Networks/Deep Learning (A)

📅 Tue, Aug 17, 09:50 – 10:15
📍 TRACK 1

- **Modeling from Features: a Mean-field Framework for Over-parameterized Deep Neural Networks**
  Cong Fang (University of Pennsylvania); Jason Lee (Princeton); Pengkun Yang (Tsinghua University); Tong Zhang (The Hong Kong University of Science and Technology)

- **Provable Memorization via Deep Neural Networks using Sub-linear Parameters**
  Sejun Park (KAIST); Jaeho Lee (KAIST); Chulhee Yun (MIT); Jinwoo Shin (KAIST)

- **The Effects of Mild Over-parameterization on the Optimization Landscape of Shallow ReLU Neural Networks**
  Itay Safran (Princeton University); Gilad Yehudai (Weizmann Institute of Science); Ohad Shamir (Weizmann Institute of Science)

- **Non-asymptotic approximations of neural networks by Gaussian processes**
  Ronen Eldan (Weizmann); Dan Mikulincer (Weizmann Institute); Tselil Schramm (Harvard University)

- **Size and Depth Separation in Approximating Benign Functions with Neural Networks**
  Gal Vardi (Weizmann Institute of Science); Daniel Reichman (Worcester Polytechnic Institute); Toniann Pitassi (University of Toronto); Ohad Shamir (Weizmann Institute of Science)

### Robustness, Privacy and Fairness (A)

📅 Tue, Aug 17, 09:50 – 10:15
📍 TRACK 2

- **Differentially Private Nonparametric Regression Under a Growth Condition**
  Noah Golowich (Massachusetts Institute of Technology)
• On Avoiding the Union Bound When Answering Multiple Differentially Private Queries
  Badih Ghazi (Google) ; Ravi Kumar (Google) ; Pasin Manurangsi (Google)

• Non-Euclidean Differentially Private Stochastic Convex Optimization
  Raef Bassily (The Ohio State University) ; Cristobal Guzman (PUC Chile) ;
  Anupama Nandi (The Ohio State University)

• The Sparse Vector Technique, Revisited
  Haim Kaplan (TAU, GOOGLE) ; Yishay Mansour (Tel Aviv University and Google Research) ;
  Uri Stemmer (Ben-Gurion University)

• Machine Unlearning via Algorithmic Stability
  Enayat Ullah (Johns Hopkins University) ; Tung Mai (Adobe Research) ; Anup Rao (Adobe Research) ;
  Ryan Rossi (Adobe Research) ; Raman Arora (Johns Hopkins University)

Neural Networks/Deep Learning (B)

① Tue, Aug 17, 10:20 – 10:40
📍 TRACK 1

• The Connection Between Approximation, Depth Separation and Learnability in Neural Networks
  Eran Malach (Hebrew University Jerusalem Israel) ; Gilad Yehudai (Weizmann Institute of Science) ;
  Shai Shalev-Schwartz (Hebrew University of Jerusalem) ; Ohad Shamir (Weizmann Institute of Science)

• Implicit Regularization in ReLU Networks with the Square Loss
  Gal Vardi (Weizmann Institute of Science) ; Ohad Shamir (Weizmann Institute of Science)

• On the Approximation Power of Two-Layer Networks of Random ReLUs
  Daniel Hsu (Columbia University) ; Clayton Sanford (Columbia) ; Rocco Servedio (Columbia University) ;
  Emmanouil Vlatakis-Gkaragkounis (Columbia University)

• When does gradient descent with logistic loss interpolate using deep networks with smoothed ReLU
  activations?
  Niladri Chatterji (UC Berkeley) ; Philip Long (Google) ; Peter Bartlett

Robustness, Privacy and Fairness (B))

① Tue, Aug 17, 10:20 – 10:40
📍 TRACK 2

• A Law of Robustness for Two-Layers Neural Networks
  Sebastien Bubeck (Microsoft Research) ; Yuanzhi Li (CMU) ;
  Dheeraj Nagaraj (Massachusetts Institute of Technology)

• Adversarially Robust Low Dimensional Representations
  Pranjal Awasthi (Rutgers University/Google) ; Vaggos Chatziafratis (Google) ;
  Xue Chen (George Mason University) ; Aravindan Vijayaraghavan

• Adversarially Robust Learning with Unknown Perturbation Sets
  Omar Montasser (TTI-Chicago) ; Steve Hanneke (Toyota Technological Institute at Chicago) ;
  Nathan Srebro (Toyota Technical Institute of Chicago)

• Moment Multicalibration for Uncertainty Estimation
Online Learning, Game Theory 2 (A)

Tue, Aug 17, 11:10 – 11:30

- Survival of the strictest: Stable and unstable equilibria under regularized learning with partial information
  Angeliki Giannou (National Technical University of Athens);
  Emmanouil Vlatakis-Gkaragkounis (Columbia University);
  Panayotis Mertikopoulos (CNRS and Criteo AI Lab)

- Adaptive Learning in Continuous Games: Optimal Regret Bounds and Convergence to Nash Equilibrium
  Yu-Guan Hsieh (Univ. Grenoble Alpes);
  Kimon Antonakopoulos (Inria);
  Panayotis Mertikopoulos (CNRS and Criteo AI Lab)

- Learning in Matrix Games can be Arbitrarily Complex
  Gabriel Andrade (University of Colorado Boulder);
  Rafael Frongillo (CU Boulder);
  Georgios Piliouras (Singapore University of Technology and Design)

- Robust Online Convex Optimization in the Presence of Outliers
  Tim van Erven (University of Amsterdam);
  Sarah Sachs (University of Amsterdam);
  Wouter Koolen (CWI Amsterdam);
  Wojciech Kotlowski (Poznan University of Technology)

Bandits, RL and Control 1 (A)

Tue, Aug 17, 11:10 – 11:30

- Improved Regret for Zeroth-Order Stochastic Convex Bandits
  Tor Lattimore (DeepMind);
  Andras Gyorgy (DeepMind)

- Minimax Regret for Stochastic Shortest Path with Adversarial Costs and Known Transition
  Liyu Chen (USC);
  Haipeng Luo (USC);
  Chen-Yu Wei (University of Southern California)

- Towards a Dimension-Free Understanding of Adaptive Linear Control
  Juan Perdomo (University of California, Berkeley);
  Max Simchowitz (UC Berkeley);
  Alekh Agarwal (Microsoft);
  Peter Bartlett

- Fine-Grained Gap-Dependent Bounds for Tabular MDPs via Adaptive Multi-Step Bootstrap
  Haife Xu (Tsinghua University);
  Tengyu Ma (Stanford);
  Simon Du (University of Washington)

Online Learning, Game Theory 2 (B)

Tue, Aug 17, 11:35 – 11:55

- Black-Box Control for Linear Dynamical Systems
  Xinyi Chen (Princeton University; Google);
  Elad Hazan (Princeton University)

- Majorizing Measures, Sequential Complexities, and Online Learning
  Adam Block (MIT);
  Yuval Dagan (MIT);
  Alexander Rakhlin (MIT)
• Instance-Dependent Complexity of Contextual Bandits and Reinforcement Learning: A Disagreement-Based Perspective
  Dylan Foster (MIT); Alexander Rakhlin (MIT); David Simchi-Levi (MIT); Yunzong Xu (MIT)

• Sequential prediction under log-loss and misspecification
  Meir Feder (TAU); Yury Polyanskiy (MIT)

Bandits, RL and Control 1 (B)

○ Tue, Aug 17, 11:35 – 11:55
  TRACK 2

• Is Reinforcement Learning More Difficult Than Bandits? A Near-optimal Algorithm Escaping the Curse of Horizon
  Zihan Zhang (Tsinghua University); Xiangyang Ji (Tsinghua University); Simon Du (University of Washington)

• Corruption-robust exploration in episodic reinforcement learning
  Thodoris Lykouris (Microsoft Research NYC); Max Simchowitz (UC Berkeley); Alex Slivkins (Microsoft Research);
  Wen Sun (Cornell University)

• On Query-efficient Planning in MDPs under Linear Realizability of the Optimal State-value Function
  Gellert Weisz (DeepMind, UCL); Philip Amortila (University of Illinois at Urbana-Champaign);
  Barnabás Janzer (University of Cambridge); Yasin Abbasi-Yadkori (DeepMind);
  Nan Jiang (University of Illinois at Urbana-Champaign); Csaba Szepesvari (DeepMind/University of Alberta)

• Last-iterate Convergence of Decentralized Optimistic Gradient Descent/Ascent in Infinite-horizon Competitive Markov Games
  Chen-Yu Wei (University of Southern California); Chung-Wei Lee (University of Southern California);
  Mengxiao Zhang (University of Southern California); Haipeng Luo (USC)

Keynote: David Silver (DeepMind)

○ Tue, Aug 17, 12:05 – 13:00
  MAIN TRACK

Open Problem 3

○ Wed, Aug 18, 09:30 – 09:40
  MAIN TRACK

• Are all VC classes learnable with computable learners?
  Sushant Agarwal (University of Waterloo); Nivasini Ananthakrishnan (University of Waterloo);
  Shai Ben-David (University of Waterloo); Tosca Lechner (University of Waterloo); Ruth Urner (York University)

Generalization and PAC-Learning 1 (A)

○ Wed, Aug 18, 09:50 – 10:15
  TRACK 1
Regression and High-Dimensional Statistics (A)

Wed, Aug 18, 09:50 – 10:15

Efficient Algorithms for Learning from Coarse Labels
- Dimitris Fotakis (National Technical University of Athens)
- Alkis Kalavasis (National Technical University of Athens)
- Vasilis Kontonis (University of Wisconsin-Madison)
- Christos Tzamos (UW-Madison)

Impossibility of Partial Recovery in the Graph Alignment Problem
- Luca Ganassali (INRIA (Paris))
- Laurent Massoulie (Microsoft-Inria Joint Center)
- Marc Lelarge (INRIA-ENS)

Hypothesis testing with low-degree polynomials in the Morris class of exponential families
- Dmitriy Kunisky (New York University)

Group testing and local search: is there a computational-statistical gap?
- Fotis Iliopoulos (Princeton University)
- Ilias Zadik (NYU)

Johnson-Lindenstrauss Transforms with Best Confidence
- Maciej Skorski (University of Luxembourg)

Generalization and PAC-Learning 1 (B)

Wed, Aug 18, 10:20 – 10:40

Fast Rates for Structured Prediction
- Vivien Cabannnes (INRIA)
- Francis Bach (INRIA - Ecole Normale Supérieure)
- Alessandro Rudi (INRIA, Ecole Normale Superieure)
Regression and High-Dimensional Statistics (B)

Wed, Aug 18, 10:20 – 10:40

Reduced-Rank Regression with Operator Norm Error
Praneeth Kacham (Carnegie Mellon University); David Woodruff (Carnegie Mellon University)

Rank-one matrix estimation: analytic time evolution of gradient descent dynamics
Antoine Bodin (EPFL); Nicolas Macris (Ecole Polytechnique Federale de Lausanne)

It was "all" for "nothing": sharp phase transitions for noiseless discrete channels
Ilias Zadik (NYU); Jonathan Niles-Weed (NYU)

Stochastic block model entropy and broadcasting on trees with survey
Emmanuel Abbe (EPFL); Elisabetta Cornacchia (EPFL); Yuzhou Gu (Massachusetts Institute of Technology); Yury Polyanskiy (MIT)

Networks and Graphs

Wed, Aug 18, 11:10 – 11:35

Random Graph Matching with Improved Noise Robustness
Cheng Mao (Georgia Institute of Technology); Mark Rudelson; Konstantin Tikhomirov (Georgia Institute of Technology)

Quantifying Variational Approximation for Log-Partition Function
Romain Cosson (MIT); Devavrat Shah (MIT)

Source Identification for Mixtures of Product Distributions
Spencer Gordon (California Institute of Technology); Bijan Mazaheri (California Institute of Technology); Yuval Rabani (Hebrew University of Jerusalem); Leonard Schulman (Caltech)

Learning to Sample from Censored Markov Random Fields
Ankur Moitra (MIT); Elchanan Mossel (MIT); Colin Sandon (MIT)

Learning from Censored and Dependent Data: The case of Linear Dynamics
Orestis Plevrakis (Princeton University)

Bandits, RL and Control 2 (A)

Wed, Aug 18, 11:10 – 11:30
Cooperative and Stochastic Multi-Player Multi-Armed Bandit: Optimal Regret With Neither Communication Nor Collisions
Mark Sellke ; Sebastien Bubeck (Microsoft Research) ; Thomas Budzinski (ENS Lyon)

Softmax Policy Gradient Methods Can Take Exponential Time to Converge
Gen Li (Tsinghua University, China) ; Yuting Wei (University of Pennsylvania) ; Yuejie Chi (CMU) ; Yuantao Gu (Tsinghua University) ; Yuxin Chen (Princeton University)

Asymptotically Optimal Information-Directed Sampling
Johannes Kirschner (ETH Zurich) ; Tor Lattimore (DeepMind) ; Claire Vernade (DeepMind) ; Csaba Szepesvari (DeepMind/University of Alberta)

Fast Rates for the Regret of Offline Reinforcement Learning
Yichun Hu (Cornell University) ; Nathan Kallus (Cornell University) ; Masatoshi Uehara (Cornell University)

Bandits, RL and Control 2 (B)

Nearly Minimax Optimal Reinforcement Learning for Linear Mixture Markov Decision Processes
Dongruo Zhou (UCLA) ; Quanquan Gu (University of California, Los Angeles) ; Csaba Szepesvari (DeepMind/University of Alberta)

Parameter-Free Multi-Armed Bandit Algorithms with Hybrid Data-Dependent Regret Bounds
Shinji Ito (NEC Corporation)

Learning to Stop with Surprisingly Few Samples
Tianyi Zhang (Columbia University) ; Daniel Russo (Columbia University) ; Assaf Zeevi (Columbia University)

Improved Analysis of the Tsallis-INF Algorithm in Stochastically Constrained Adversarial Bandits and Stochastic Bandits with Adversarial Corruptions
Saeed Masoudian (University of Copenhagen) ; Yevgeny Seldin (University of Copenhagen)

Clustering

Towards a Query-Optimal and Time-Efficient Algorithm for Clustering with a Faulty Oracle
Pan Peng (University of Sheffield) ; Jiapeng Zhang (University of Southern California)

Exact Recovery of Clusters in Finite Metric Spaces Using Oracle Queries
Marco Bressan (University of Milan) ; Nicolò Cesa-Bianchi (University of Milan) ; Silvio Lattanzi (Google) ; Andrea Paudice (University of Milan & Istituto Italiano di Tecnologia)

Approximation Algorithms for Socially Fair Clustering
Yury Makarychev (TTIC) ; Ali Vakilian (Toyota Technological Institute at Chicago)

Keynote: Sara van de Geer (ETH Zurich)
Open Problem 4

Thu, Aug 19, 09:30 – 09:40
MAIN TRACK

- **Open Problem: Tight Online Confidence Intervals for RKHS Elements**
  Sattar Vakili (MediaTek Research); Jonathan Scarlett (National University of Singapore);
  Tara Javidi (University of California San Diego)

Generalization and PAC-Learning 2 (A)

Thu, Aug 19, 09:50 – 10:15
TRACK 1

- **Concentration of Non-Isotropic Random Tensors with Applications to Learning and Empirical Risk Minimization**
  Mathieu Even (ENS - Inria); Laurent Massoulié (Microsoft-Inria Joint Center)

- **A Theory of Heuristic Learnability**
  Mikito Nanashima (Tokyo Institute of Technology)

- **From Local Pseudorandom Generators to Hardness of Learning**
  Amit Daniely (Hebrew University); Gal Vardi (Weizmann Institute of Science)

- **Functions with average smoothness: structure, algorithms, and learning**
  Yair Ashlagi (Ben Gurion University); Lee-Ad Gottlieb (Ariel University);
  Aryeh Kontorovich (Ben-Gurion University of the Negev)

- **Robust learning under clean-label attack**
  Avrim Blum (Toyota Technological Institute of Chicago);
  Steve Hanneke (Toyota Technological Institute at Chicago);
  Jian Qian (MIT);
  Han Shao (Toyota Technological Institute at Chicago)

Nonparametrics

Thu, Aug 19, 09:50 – 10:15
TRACK 2

- **Learning with invariances in random features and kernel models**
  Song Mei (UC Berkeley); Theodor Misiakiewicz (Stanford University); Andrea Montanari (Stanford University)

- **Kernel Thinning**
  Raaz Dwivedi (UNIVERSITY OF CALIFORNIA Berkeley); Lester Mackey (Microsoft Research New England)

- **On the Minimal Error of Empirical Risk Minimization**
  Gil Kur (MIT); Alexander Rakhlin (MIT)

- **Nonparametric Regression with Shallow Overparameterized Neural Networks Trained by GD with Early Stopping**
  Ilja Kuzborskij (DeepMind); Csaba Szepesvari (DeepMind/University of Alberta)


A Statistical Taylor Theorem and Extrapolation of Truncated Densities
Constantinos Daskalakis (MIT); Vasilis Kontonis (University of Wisconsin-Madison);
Christos Tzamos (UW-Madison); Emmanouil Zampetakis (Massachusetts Institute of Technology)

Generalization and PAC-Learning 2 (B)

Thu, Aug 19, 10:20 – 10:40
TRACK 1

- Improved Algorithms for Efficient Active Learning Halfspaces with Massart and Tsybakov Noise
  Chicheng Zhang (University of Arizona); Yinan Li (University of Arizona)

- The Optimality of Polynomial Regression for Agnostic Learning under Gaussian Marginals in the SQ Model
  Ilias Diakonikolas (UW Madison); Daniel Kane (UCSD); Thanasis Pittas (University of Wisconsin-Madison);
  Nikos Zarifis (University of Wisconsin-Madison)

- Near Optimal Distributed Learning of Halfspaces with Two Parties
  Mark Braverman (Princeton University); Gillat Kol (Princeton University); Shay Moran (Technion);
  Raghuvansh R. Saxena (Princeton University)

- Query complexity of least absolute deviation regression via robust uniform convergence
  Xue Chen (George Mason University); Michal Derezinski (UC Berkeley)

Sampling Algorithms

Thu, Aug 19, 10:20 – 10:45
TRACK 2

- Optimal dimension dependence of the Metropolis-Adjusted Langevin Algorithm
  Sinho Chewi (Massachusetts Institute of Technology); Chen Lu (Massachusetts Institute of Technology);
  Kwangjun Ahn (MIT); Xiang Cheng (Postdoc at MIT (EECS));
  Thibaut Le Gouic (Massachusetts Institute of Technology); Philippe Rigollet (MIT)

- Random Coordinate Langevin Monte Carlo
  Zhiyan Ding (University of Wisconsin-Madison); Qin Li (University of Wisconsin-Madison);
  Jianfeng Lu (Duke University); Stephen Wright (University of Wisconsin-Madison)

- Near-Optimal Entrywise Sampling of Numerically Sparse Matrices
  Vladimir Braverman (Johns Hopkins University); Robert Krauthgamer (Weizmann Institute of Science, Israel);
  Aditya Krishnan (Johns Hopkins University); Shay Sapir (Weizmann Institute of Science)

- Structured Logconcave Sampling with a Restricted Gaussian Oracle
  Yin Tat Lee (UW); Ruoqi Shen (University of Washington); Kevin Tian (Stanford University)

- On the Convergence of Langevin Monte Carlo: The Interplay between Tail Growth and Smoothness
  Murat Erdogdu (University of Toronto, Vector Institute); Rasa Hosseinzadeh (University of Toronto)

Stochastic Optimization (A)

Thu, Aug 19, 11:10 – 11:30
TRACK 1

- SGD in the Large: Average-case Analysis, Asymptotics, and Stepsize Criticality
• **Stochastic Approximation for Online Tensorial Independent Component Analysis**  
  Chris Junichi Li (UC Berkeley) ; Michael Jordan (UC Berkeley)

• **On the Stability of Random Matrix Product with Markovian Noise: Application to Linear Stochastic Approximation and TD Learning**  
  Alain Durmus (ENS Paris Saclay) ; Eric Moulines (Ecole Polytechnique) ; Alexey Naumov (National Research University Higher School of Economics) ; Sergey Samsonov (National Research University Higher School of Economics) ; Hoi-To Wai (Chinese University of Hong Kong)

• **Shape Matters: Understanding the Implicit Bias of the Noise Covariance**  
  Jeff Z. HaoChen (Stanford University) ; Colin Wei (Stanford University) ; Jason Lee (Princeton) ; Tengyu Ma (Stanford)

**Bandits, RL and Control 3 (A)**

☀ Thu, Aug 19, 11:10 – 11:30  
📍 TRACK 2

• **Double Explore-then-Commit: Asymptotic Optimality and Beyond**  
  Tianyuan Jin (National University of Singapore) ; Pan Xu (University of California, Los Angeles) ; Xiaokui Xiao (National University of Singapore) ; Quanquan Gu (University of California, Los Angeles)

• **Adaptive Discretization for Adversarial Lipschitz Bandits**  
  Chara Podimata (Harvard University) ; Alex Slivkins (Microsoft Research)

• **Efficient Bandit Convex Optimization: Beyond Linear Losses**  
  Arun Suggala (Carnegie Mellon University) ; Pradeep Ravikumar (Carnegie Mellon University) ; Praneeth Netrapalli (Microsoft Research)

• **Mirror Descent and the Information Ratio**  
  Tor Lattimore (DeepMind) ; Andras Gyorgy (DeepMind)

**Stochastic Optimization (B)**

☀ Thu, Aug 19, 11:35 – 11:55  
📍 TRACK 1

• **Almost sure convergence rates for Stochastic Gradient Descent and Stochastic Heavy Ball**  
  Othmane Sebbouh (ENS Paris) ; Robert Gower (Telecom Paris Tech) ; Aaron Defazio (Facebook AI Research)

• **SGD Generalizes Better Than GD (And Regularization Doesn't Help)**  
  Idan Amir (Tel-Aviv University) ; Tomer Koren (Tel Aviv University and Google) ; Roi Livni (Tel Aviv University)

• **Convergence rates and approximation results for SGD and its continuous-time counterpart**  
  Xavier Fontaine (ENS Paris-Saclay) ; Valentin De Bortoli (ENS Paris-Saclay) ; Alain Durmus (ENS Paris Saclay)

• **Streaming k-PCA: Efficient guarantees for Oja's algorithm, beyond rank-one updates**  
  De Huang (Caltech) ; Jonathan Niles-Weed (NYU) ; Rachel Ward (University of Texas)
Multiplayer Bandit Learning, from Competition to Cooperation
Simina Branzei (Purdue University) ; Yuval Peres (N/A)

Non-stationary Reinforcement Learning without Prior Knowledge: an Optimal Black-box Approach
Chen-Yu Wei (University of Southern California) ; Haipeng Luo (USC)

Cautiously Optimistic Policy Optimization and Exploration with Linear Function Approximation
Andrea Zanette (Stanford University) ; Ching-An Cheng (Microsoft) ; Alekh Agarwal (Microsoft)

Regret Minimization in Heavy-Tailed Bandits
Shubhada Agrawal (TIFR, Mumbai) ; Sandeep Juneja (TIFR Mumbai) ; Wouter Koolen (CWI Amsterdam)

Keynote: Persi Diaconis (Stanford University)

Thu, Aug 19, 12:05 – 13:00
MAIN TRACK