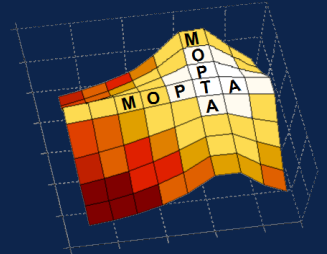




Mathematical
Optimization
Society

International Conference on Continuous Optimization ICCOPT/MOPTA

July 23-28, 2022
Lehigh University



Conference Book

Bethlehem, PA

2022

ICCOPT

iccopt2022.lehigh.edu



ICCOPT/MOPTA 2022 Booklet — Version 1.0

Seventh International Conference on Continuous Optimization

Twenty-First Modeling and Optimization: Theory and Applications Conference

Bethlehem, Pennsylvania, USA, July 23–28, 2022

Daniel P. Robinson and Frank E. Curtis (Chairs of the Local Organizing Committee)

Department of Industrial and Systems Engineering

Lehigh University

200 West Packer Avenue, Bethlehem, PA 18015

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- Pouya Sampourmahani

■ Welcome to ICCOPT/MOPTA 2022!

On behalf of the ICCOPT/MOPTA 2022 Local Organizing Committee, Lehigh University, and the Mathematical Optimization Society (MOS), we are excited to welcome you to the jointly organized International Conference on Continuous Optimization (ICCOPT) and Modeling and Optimization: Theory and Applications (MOPTA) conference. This is the seventh ICCOPT and twenty-first MOPTA, and we are extremely pleased to welcome everyone *in person* to the beautiful campus of Lehigh University in Bethlehem, Pennsylvania, USA.

Organized every three years, ICCOPT is one of the flagship conferences of MOS, covering all aspects of continuous optimization from theory to practice. MOPTA is held on an annual basis and usually involves a smaller, but still diverse group of researchers and practitioners. This year, the conferences are combined, but not for the first time! The second ICCOPT was organized jointly with MOPTA 2007 at McMaster University.

This year's ICCOPT/MOPTA welcomes approximately 600 participants from around 30 countries throughout the world. It consists of four plenary talks, six semi-plenary talks, twelve clusters forming around twenty tracks of parallel sessions, a Best Poster Prize and session, a Best Paper for Young Researchers Prize and session, and the 14th AIMMS-MOPTA Optimization Modeling Competition and session. The conference is preceded by an exciting two-day summer school.

The world has experienced unprecedented challenges over the past couple of years due to the COVID-19 pandemic. It has affected all of our lives to some extent, and for many its impact has been significant and will be long-lasting. This entire conference has been organized during the pandemic, and while some of the world has been able to return to a semblance of normalcy, the effects of the pandemic continue to linger. For example, unfortunately, many members of our community are unable to attend the conference, and it has caused us to impose certain rules and restrictions that we would have otherwise not had to impose. Yet, despite these challenges, we are extremely pleased to be able to host ICCOPT/MOPTA 2022 *in person*, and wish all participants a memorable conference!

ICCOPT/MOPTA 2022 would not have been possible without the incredible efforts of our administrative support staff and volunteers, most notably Sarah Wing, Sheila Dorney, and Mark Motsko. We are forever grateful to them for the countless hours that they spent helping us to organize an event under such uncertain circumstances. Thank you to the Program Committee, cluster chairs, sessions chairs, and prize/competition committees for organizing the scientific program, and to the remainder of the Local Organizing Committee for helping to arrange the logistics of the numerous aspects of the conference.

Welcome to Lehigh and ICCOPT/MOPTA 2022!
Sincerely,



Daniel P. Robinson



Frank E. Curtis

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We encourage all participants in ICCOPT/MOPTA 2022 to download Lehigh University's [HawkWatch app](#) (available on the App Store and Google Play), which offers access to useful information such as campus maps, as well as quick access to emergency and other services.

■ Program Committee



Stephen J. Wright
Chair



Xiaojun Chen



Roberto Cominetti



Frank E. Curtis



Alex d'Aspremont



Maryam Fazel



Tito Homem-de-Mello



Fatma Kılınç-Karzan



Michal Kočvara



Daniel P. Robinson



Kim-Chuan Toh



Michael Ulbrich

■ Local Organizing Committee



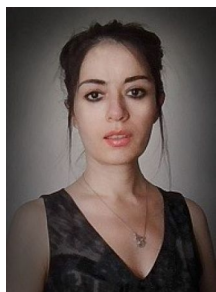
Daniel P. Robinson
Co-Chair



Frank E. Curtis
Co-Chair



Tommaso Giovannelli



Aida Khajavirad



Michael O'Neill



Ted Ralphs



Karmel S. Shehadeh



Tamás Terlaky



Luis Zuluaga

■ Administrative Support Staff



Sheila Dorney



Mark Motsko



Sarah Wing

■ Cluster Organizers

Applications of Continuous Optimization

Mihai Anitescu

Christian Kirches

Convexification and Global Optimization

Aida Khajavirad

Mohit Tawarmalani

Derivative-Free Optimization

Jeffrey Larson

Sara Shashaani

Stefan Wild

Nonlinear Optimization

Dominique Orban

Albert Berahas

Nonsmooth Optimization

Dmitriy Drusvyatskiy

Damek Davis

Optimization for Data Science and Machine Learning

Sebastian Stich

Nicolas Loizou

Optimization Under Uncertainty

Dick den Hertog

Wolfram Wiesemann

PDE-Constrained Optimization

Michael Hintermüller

Semidefinite, Conic, and Polynomial Optimization

Etienne de Klerk

Didier Henrion

Software

Robert Luce

Stochastic Algorithms

Guanghui (George) Lan

Yuyuan (Lance) Ouyang

Variational Inequalities, Complementarity, Games, and Equilibria

Uday Shanbhag

Jane Ye

■ Sponsors and Exhibitors

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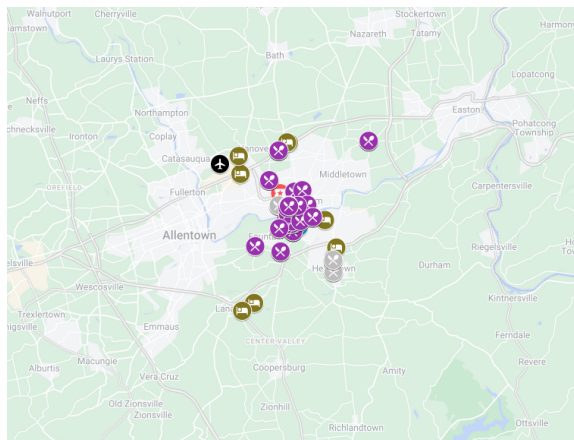


■ Maps

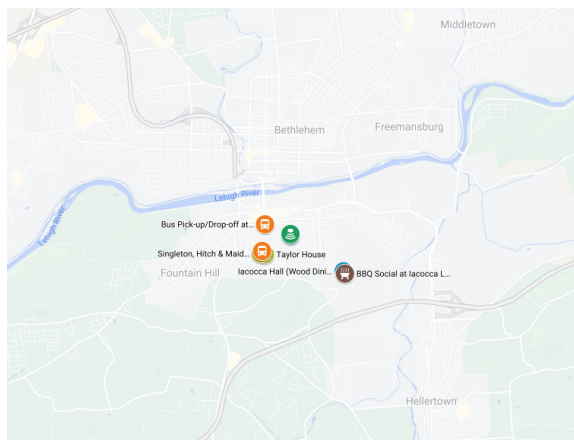
A detailed map of Lehigh University's Asa Packer campus is provided on the following page. For information relevant for ICCOPT/MOPTA 2022, we recommend using the following Google maps on your computer or mobile device.

IMPORTANT: When viewing a map on your mobile device, view the map legend to toggle information on/off.

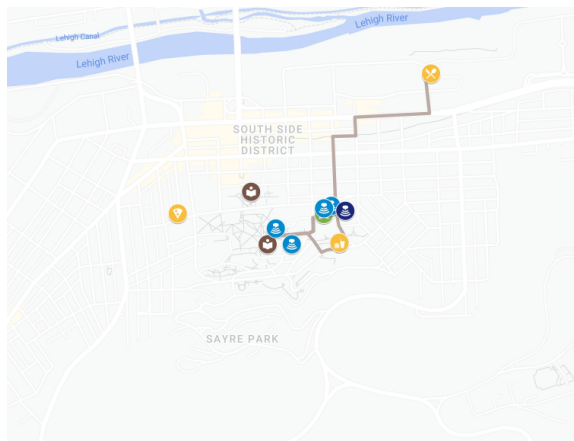
[Click here](#) or on the image below for a Google map of the **Bethlehem area, including hotels and restaurants**.



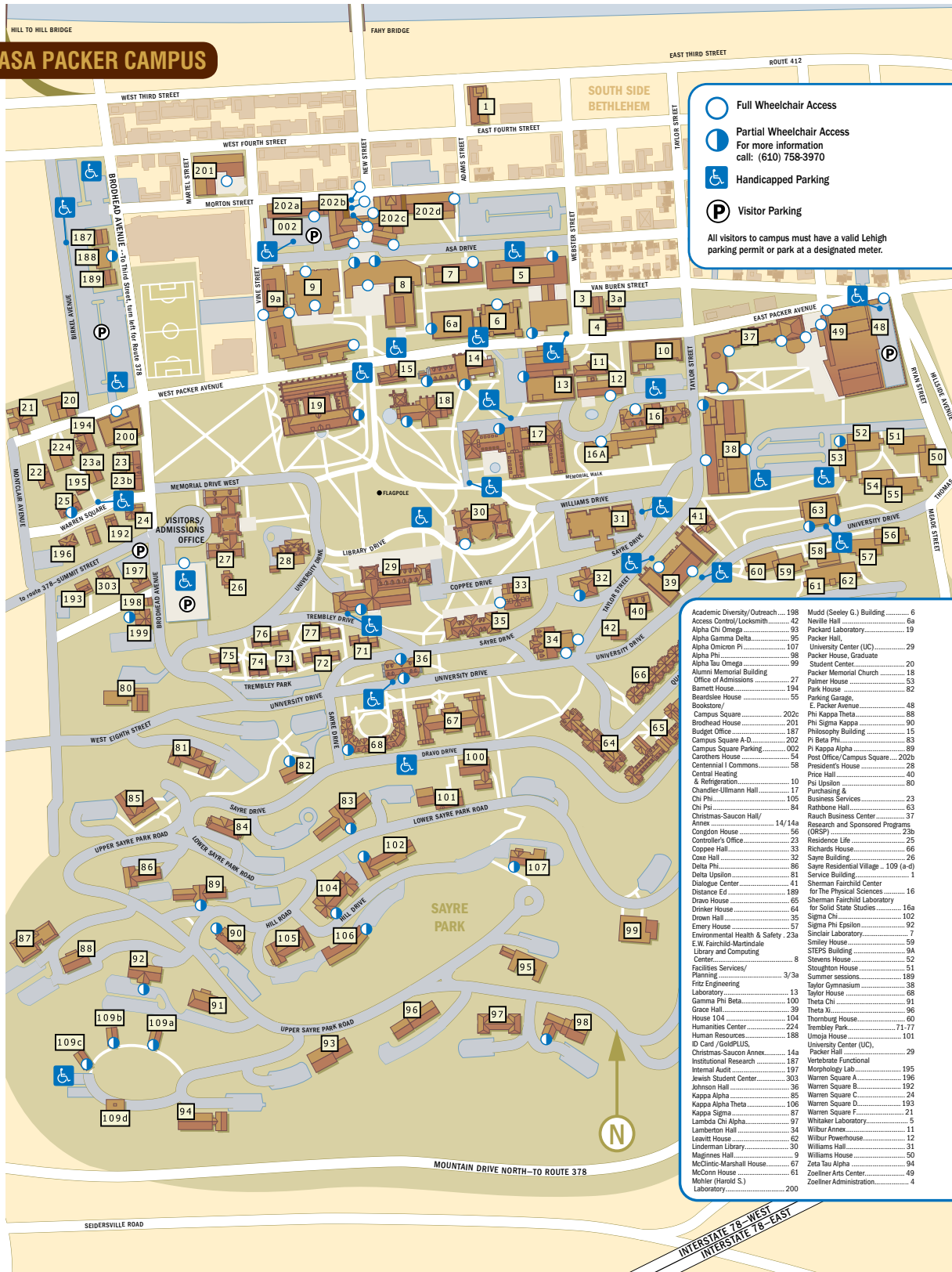
[Click here](#) or on the image below for a Google map of **locations relevant for the Summer School**.



[Click here](#) or on the image below for a Google map of **locations relevant for the main conference**.



ASA PACKER CAMPUS



LEHIGH UNIVERSITY

■ Instructions for Talks

For Speakers:

Every room for the plenary talks, semi-plenary talks, parallel sessions, special sessions, etc. is equipped with the following:

- lectern
- computer
- screen
- projector
- HDMI connection for laptop
- power outlet (near lectern)

Each room *might* have the following as well, but ***these are not guaranteed***:

- white board with markers
- chalk board with chalk
- VGA connection for laptop
- VGA (or other)-to-HDMI adaptor
- laser pointer

We recommend that speakers for parallel and special sessions bring their presentation slides on a USB drive and that they are transferred to the in-room computer at least 5-10 minutes before the start of the session. If a speaker plans not to use the in-room computer and plans to connect a laptop instead, then we recommend testing the connection and entire presentation at least 10-15 minutes before the start of the session.

Each presentation should adhere to the following time restrictions:

- plenary and semi-plenary talks: 50 minute presentation + 10 minutes for Q&A
- parallel session talks: 23 minute presentations + 3 minutes for Q&A
- Best Paper session talks: 17 minute presentations + 3 minutes for Q&A
- Best Poster session talks (for judges): 2 minute presentations
- AIMMS/MOPTA Modeling Competition session talks: 20 minute presentations + 6 minutes for Q&A

For Session Chairs:

- Arrive at the session at least 10 minutes before the start time.
- Familiarize yourself with the in-room technology to be able to assist with any issues.
- Contact a student volunteer in the event of a significant issue.
- Ensure that the session runs on time with speakers adhering to the time restrictions above.
- Adhere to the schedule in the program; if a speaker fails to appear, then advise the audience to wait or leave and return later for the subsequent talks, rather than advancing immediately to the next speaker.

Program Overview

Sun, July 24	Mon, July 25	Tue, July 26	Wed, July 27	Thu, July 28
5:30-8:00pm Welcome Reception and Check-in	9:00-9:30am Opening	9:00-10:20am	9:00-10:00am Semi-Plenary Talk(s) Suvrit Sra	9:00-10:00am Semi-Plenary Talk(s) Guanghai Lan
	9:30-10:30am Plenary Talk Asu Ozdaglar	Parallel Sessions Tue.1	10:00-10:25am Coffee Break	10:00-10:25am Coffee Break
	10:30-10:55am Coffee Break	10:20-10:45am Coffee Break	10:25-11:45am	10:25-11:45am
	10:55am-12:15pm Parallel Sessions Mon.1	10:45am-12:05pm Parallel Sessions Tue.2	Parallel Sessions Wed.1	Parallel Sessions Thu.1
	12:15-1:40pm Lunch Break	12:05-1:40pm Lunch Break	11:45am-1:05pm Lunch Break	11:45am-1:10pm Lunch Break
	1:40-3:00pm Parallel Sessions Mon.2	1:40-3:00pm Parallel Sessions Tue.3	1:05-2:05pm Semi-Plenary Talk(s) Pablo Parrilo Akiko Takeda	1:10-2:30pm Parallel Sessions Thu.2
	3:00-3:25pm Coffee Break	3:00-3:25pm Coffee Break	2:05-2:20pm Break	2:30-2:55pm Coffee Break
	3:25-4:25pm Semi-Plenary Talk(s) Daniel Kuhn Angelia Nedich	3:25-4:45pm Parallel Sessions Tue.4	2:20-3:40pm Parallel Sessions Wed.2	2:55-3:55pm Plenary Talk Defeng Sun
	4:25-4:40pm Break	4:45-5:00pm Break	3:40-4:00pm Coffee Break	3:55-4:15pm Closing remarks
	4:40-6:00pm Best Paper Session, sponsored by SAS	5:00-6:20pm 14th AIMMS/MOPTA Modeling Competition	4:00-5:00pm Plenary Talk Ernesto Birgin	
	6:00-8:00pm Poster Session	6:20-7:00pm Break	5:00-6:00pm Break	
		7:00-10:00pm Conference Dinner	6:00-8:00pm Student Social	

■ Plenary Talks

Monday, 9:30am - 10:30am

Asu Ozdaglar

Massachusetts Institute of Technology

Independent Learning Dynamics for Stochastic Games: Where Game Theory Meets Reinforcement Learning

Room: Zoellner Arts Center, Baker Hall



Abstract: Reinforcement learning (RL) has had tremendous successes in many artificial intelligence applications. Many of the forefront applications of RL involve multiple agents, e.g., playing chess and Go games, autonomous driving, and robotics. Unfortunately, classical RL framework is inappropriate for multi-agent learning as it assumes an agent's environment is stationary and does not take into account the adaptive nature of opponent behavior. In this talk, I focus on stochastic games for multi-agent reinforcement learning in dynamic environments and develop independent learning dynamics for stochastic games: each agent is myopic and chooses best-response type actions to other agents' strategies independently, meaning without any coordination with her opponents. There has been limited progress on developing convergent best-response type independent learning dynamics for stochastic games. I will present our recently proposed independent learning dynamics that guarantee convergence in stochastic games, including for both zero-sum and identical-interest settings. Along the way, I will also reexamine some classical and recent results from game theory and RL literatures, to situate the conceptual contributions of our independent learning dynamics and the mathematical novelties of our analysis.

Biography: Asuman Ozdaglar received the B.S. degree in electrical engineering from the Middle East Technical University, Ankara, Turkey, in 1996, and the S.M. and the Ph.D. degrees in electrical engineering and computer science from the Massachusetts Institute of Technology, Cambridge, in 1998 and 2003, respectively. She is the MathWorks Professor of Electrical Engineering and Computer Science in the Electrical Engineering and Computer Science (EECS) Department at the Massachusetts Institute of Technology. She is the department head of EECS and the Deputy Dean of Academics in the Schwarzman College of Computing. Her research expertise includes optimization theory, with emphasis on nonlinear programming and convex analysis, game theory, with applications in communication, social, and economic networks, distributed optimization and control, and network analysis with special emphasis on contagious processes, systemic risk and dynamic control. She is the recipient of a Microsoft fellowship, the MIT Graduate Student Council Teaching award, the NSF Career award, the 2008 Donald P. Eckman award of the American Automatic Control Council. She is an IEEE fellow and served on the Board of Governors of the Control System Society in 2010. She was an associate editor for IEEE Transactions on Automatic Control and the inaugural area co-editor for the area entitled "Games, Information and Networks" in the journal Operations Research. She is the co-author of the book entitled Convex Analysis and Optimization (Athena Scientific, 2003).

Wednesday, 4:00pm - 5:00pm

Ernesto Birgin
University of São Paulo

**Safeguarded Augmented Lagrangian Methods for Nonconvex Optimization:
Convergence, Complexity and Experiments**

Room: Zoellner Arts Center, Baker Hall



Abstract: Safeguarded augmented Lagrangian methods are suitable tools for solving nonconvex nonlinear programming problems. Their convergence theory, based on weak assumptions, is well understood, even in the case of infeasible problems. Iteration and evaluation complexity results are also known. But it is their practical advantages that make them attractive to tackle real-world problems. On the one hand, implementations that exploit second-order information, and some that even possess convergence to second-order stationary points, are available. On the other hand, however, it is the first-order matrix-free implementations that can more efficiently deal with real-world large-scale problems. This talk will cover both theoretical and practical elements and applications of the augmented Lagrangian method AlgenCAN. In particular, recent complexity results and a comprehensive numerical comparison will be reported.

Biography: Ernesto G. Birgin graduated in Computer Science at the University of Buenos Aires in 1995 and received his PhD in Applied Mathematics at the State University of Campinas in 1998. He is full professor at the University of São Paulo since 2015, where he has been working since 1999. His areas of interest include numerical optimization and operations research. He has published over 100 articles in international journals and is the author, together with J. M. Martinez, of the book *Practical Augmented Lagrangian Methods for Constrained Optimization*, published by SIAM in 2014. He currently serves as associate editor of the journals *Bulletin of Computational Applied Mathematics*, *CLEI Electronic Journal*, *Computational and Applied Mathematics*, *Computational Optimization and Applications*, *International Transactions in Operational Research*, *Journal of Global Optimization*, *Mathematics of Computation*, *Mathematical Programming Computation*, *Pesquisa Operacional*, and *Springer Nature Operations Research Forum*.

Thursday, 2:55pm - 3:55pm**Defeng Sun**

The Hong Kong Polytechnic University

Exploring the Sparsity of Large-Scale Statistical Optimization Problems

Room: Zoellner Arts Center, Baker Hall



Abstract: It has been widely recognized that the structured sparsity of the optimal solutions is an intrinsic property for large-scale optimization problems arising from modern applications in the big data era. In this talk, we shall first illustrate the structured sparsity of the solutions via some popular machine learning models. In particular, we shall show that the solution of the convex clustering model can be highly structurally sparse even if the solution itself is fully dense. We shall then introduce a dual semismooth Newton based proximal point algorithm (PPDNA) and explain why it can be much more efficient than the first-order methods for solving a class of large-scale optimization problems arising from machine learning. The key point is to adaptively make use of the second-order sparsity of the solutions in addition to the data sparsity so that, at each iteration, the computational costs of the second-order methods can be comparable or even lower than those of the first-order methods. Equipped with the PPDNA, we shall then introduce some adaptive sieving methodologies to generate solution paths for large-scale optimization problems with structured sparsity of particular importance in applications. In the last part of the talk, we shall illustrate the high efficiency of our approach with extensive numerical results on several important models including convex clustering, lasso, and exclusive lasso.

Biography: Defeng Sun is currently Chair Professor of Applied Optimization and Operations Research at the Hong Kong Polytechnic University and the President of the Hong Kong Mathematical Society. He mainly publishes in non-convex continuous optimization and machine learning. He received the Beale-Orchard-Hays Prize for excellence in computational mathematical programming from the MOS in 2018. He is a Fellow of SIAM and CSIAM.

■ Semi-Plenary Talks

Monday, 3:25pm - 4:25pm

Daniel Kuhn

École Polytechnique Fédérale de Lausanne (EPFL)

On the Interplay of Optimal Transport and Distributionally Robust Optimization

Room: Zoellner Arts Center, Baker Hall



Abstract: Optimal Transport (OT) seeks the most efficient way to morph one probability distribution into another one, and Distributionally Robust Optimization (DRO) studies worst-case risk minimization problems under distributional ambiguity. It is well known that OT gives rise to a rich class of data-driven DRO models, where the decision-maker plays a zero-sum game against nature who can adversely reshape the empirical distribution of the uncertain problem parameters within a prescribed transportation budget. Even though generic OT problems are computationally hard, the Nash strategies of the decision-maker and nature in OT-based DRO problems can often be computed efficiently. In this talk we will uncover deep connections between robustification and regularization, and we will disclose striking properties of nature's Nash strategy, which implicitly constructs an adversarial training dataset. We will also show that OT-based DRO offers a principled approach to deal with distribution shifts and heterogeneous data sources, and we will highlight new applications of OT-based DRO in machine learning, statistics, risk management and control. Finally, we will argue that, while OT is useful for DRO, ideas from DRO can also help us to solve challenging OT problems.

Biography: Daniel Kuhn holds the Chair of Risk Analytics and Optimization at EPFL. Before joining EPFL, he was a faculty member at Imperial College London (2007-2013) and a postdoctoral researcher at Stanford University (2005-2006). He received a PhD in Economics from the University of St. Gallen in 2004 and an MSc in Theoretical Physics from ETH Zurich in 1999. His research interests revolve around optimization under uncertainty. For his webpage, go [here](#).

Monday, 3:25pm - 4:25pm

Angelia Nedich

Arizona State University

Random Methods for Large-Scale Constrained Optimization Problems

Room: Rauch 184, Perella Auditorium



Abstract: The optimization problems with a large number of constraints are emerging in many application domains such as optimal control, reinforcement learning, and statistical learning, and artificial intelligence, in general. The challenges posed by the size of the problems in these applications resulted in prolific research in the domain of optimization theory and algorithms. Many refinements and accelerations of various (mainly) first-order methods have been proposed and studied, majority of which solves a penalized re-formulation of the original problem in order to cope with the large number of constraints. While the main focus has been on the penalized variants, this talk is offering an alternative approach to these problems. The talk will focus on a different viewpoint and discuss the optimization methods that use randomization to deal with a large number of constraints. The performance and efficiency of such algorithms will be addressed, as well as auxiliary theory that supports them.

Biography: Angelia Nedich has a Ph.D. from Moscow State University, Moscow, Russia, in Computational Mathematics and Mathematical Physics (1994), and a Ph.D. from Massachusetts Institute of Technology, Cambridge, USA in Electrical and Computer Science Engineering (2002). She has worked as a senior engineer in BAE Systems North America, Advanced Information Technology Division at Burlington, MA. Currently, she is a faculty member of the school of Electrical, Computer and Energy Engineering at Arizona State University at Tempe. Prior to joining Arizona State University, she has been a Willard Scholar faculty member at the University of Illinois at Urbana-Champaign. She is a recipient (jointly with her co-authors) of the Best Paper Award at the Winter Simulation Conference 2013 and the Best Paper Award at the International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt) 2015. Her general research interest is in large scale complex systems dynamics and optimization.

Wednesday, 9:00am - 10:00am

Suvrit Sra

Massachusetts Institute of Technology

Two Surprises When Optimization Theory Meets Machine Learning Practice

Room: Zoellner Arts Center, Baker Hall



Abstract: It is well-known that there are large gaps between optimization theory and machine learning practice. However, there are two even more surprising gaps that have persisted at the fundamental level. The first one arises from ignoring the elephant in the room: non-differentiable non-convex optimization, e.g., when training a deep ReLU network. The second surprise is more disturbing: it uncovers a non-convergence phenomenon in the training of deep networks, and as a result it challenges existing convergence theory and training algorithms. Both these fundamental surprises open new directions of research, and I will talk about some of our theoretical progress on these, as well as potential research questions.

Biography: I work in machine learning, optimization, and math – where I care about fundamental theoretical and algorithmic questions as well as applications. The focus of my research is mathematics of ML / Data Science. A main component of my work is optimization for ML, especially non-convex optimization, including non-Euclidean and geometric optimization. Other key topics of interest to me: discrete probability, theory of deep learning, optimal transport, convex geometry, polynomials, non-Euclidean statistics, etc.

Wednesday, 1:05pm - 2:05pm

Pablo A. Parrilo

Massachusetts Institute of Technology

Shortest Paths in Graphs of Convex Sets, and their Applications

Room: Rauch 184, Perella Auditorium



Abstract: Given a graph, the shortest-path problem requires finding a sequence of edges of minimum cost connecting a source vertex to a target vertex. In this talk we introduce a generalization of this classical problem in which the position of each vertex in the graph is a continuous decision variable, constrained to lie in a corresponding convex set, and the cost of an edge is a convex function of the positions of the vertices it connects. Problems of this form arise naturally in motion planning of autonomous vehicles, robot navigation, and even optimal control of hybrid dynamical systems. The price for such a wide applicability is the complexity of this problem, which is easily seen to be NP-hard. We discuss this novel formulation along with different solution approaches, including a strong mixed-integer convex formulation based on perspective functions. This formulation has a very tight convex relaxation and makes it possible to efficiently find globally-optimal paths in large graphs and in high-dimensional spaces.

Biography: Pablo A. Parrilo is the Joseph F. and Nancy P. Keithley Professor of Electrical Engineering and Computer Science at MIT, with a joint appointment in Mathematics. He is affiliated with the Laboratory for Information and Decision Systems (LIDS) and the Operations Research Center (ORC). Past appointments include Assistant Professor at the Automatic Control Laboratory of the Swiss Federal Institute of Technology (ETH Zurich), and Visiting Associate Professor at the California Institute of Technology. He received an Electronics Engineering undergraduate degree from the University of Buenos Aires, and a PhD in Control and Dynamical Systems from the California Institute of Technology. His research interests include mathematical optimization, machine learning, control and identification, robustness analysis and synthesis, and the development and application of computational tools based on convex optimization and algorithmic algebra to practically relevant engineering problems. Prof. Parrilo has received several distinctions, including the Donald P. Eckman Award of the American Automatic Control Council, the SIAM Activity Group on Control and Systems Theory (SIAG/CST) Prize, the IEEE Antonio Ruberti Young Researcher Prize, and the Farkas Prize of the INFORMS Optimization Society. He is an IEEE and SIAM Fellow.

Wednesday, 1:05pm - 2:05pm

Akiko Takeda
The University of Tokyo

Bilevel Optimization for Some Machine Learning Problems

Room: Zoellner Arts Center, Baker Hall



Abstract: Recently, bilevel optimization methods have been actively studied in machine learning (ML). Various ML models are described as bilevel optimization problems, and new approaches that take advantage of the characteristics of the models have been proposed. One of the representative ML applications of bilevel optimization is hyperparameter optimization. Most ML models are equipped with parameters that need to be prefixed, and such parameters are often called hyperparameters. In this talk, we review some bilevel formulations and approaches developed for optimizing an ML model together with hyperparameter values. The talk will explore new bilevel formulations of hyperparameter optimization for more complicated ML models that are formulated as nonsmooth optimization problems and bilevel optimization problems and show new solution methodologies.

Biography: Akiko Takeda received the Doctor of Science degree in information science from the Tokyo Institute of Technology, Japan, in 2001. She is currently a professor in the Department of Creative Informatics, The University of Tokyo, and the team leader of Continuous Optimization Team at Center for Advanced Intelligence Project, RIKEN, Tokyo, Japan. Prior to that, she was a researcher at Toshiba Corporation, an assistant professor at Tokyo Institute of Technology, an associate professor at Keio University, an associate professor at University of Tokyo, and a professor at the Institute of Statistical Mathematics. Her current focus is on the development of solution approaches in decision making problems under uncertainty and in nonconvex optimization problems such as the difference of convex optimization. Her work is motivated by optimization tasks with applications in operations research, machine learning, and control systems. She currently serves as an Associate Editor for SIAM Journal on Optimization.

Thursday, 9:00am - 10:00am

Guanghui (George) Lan
Georgia Institute of Technology

Policy Mirror Descent for Reinforcement Learning

Room: Zoellner Arts Center, Baker Hall



Abstract: Reinforcement Learning (RL) has attracted considerable interest from both industry and academia during the past few years. The study of RL algorithms with provable rates of convergence, however, is still in its infancy. In this talk, we discuss some recent progresses that bridge stochastic nonlinear programming with RL. We pay special attention to online reinforcement learning, which intends to continuously improve the system performances in-situ, when better and better policies are being discovered and deployed. More specifically, we introduce a new and general class of policy mirror descent (PMD) methods and show that they achieve linear convergence for the deterministic case and optimal sampling complexity for the stochastic case for discounted Markov decision processes. We also show how the gradient information can be estimated efficiently online through a few recently proposed conditional temporal difference methods. Extensions of these algorithms for the average reward and block coordinate settings will also be discussed.

Biography: Guanghui (George) Lan is an A. Russell Chandler III professor in the H. Milton Stewart School of Industrial and Systems Engineering at Georgia Institute of Technology. Dr. Lan was on the faculty of the Department of Industrial and Systems Engineering at the University of Florida from 2009 to 2015, after earning his Ph.D. degree from Georgia Institute of Technology in August 2009. His main research interests lie in optimization and machine learning. The academic honors he received include the Mathematical Optimization Society Tucker Prize Finalist (2012), INFORMS Junior Faculty Interest Group Paper Competition First Place (2012) and the National Science Foundation CAREER Award (2013). Dr. Lan serves as an associate editor for Mathematical Programming, SIAM Journal on Optimization and Computational Optimization and Applications. He is also an associate director of the Center for Machine Learning at Georgia Tech.

■ Parallel Sessions

Monday, 10:55am - 12:15pm

Applications of Continuous Optimization

Chandler-Ullmann 116

Session Title : Applications of Continuous Optimization Techniques in Integer Optimal Control

Organizer(s) : Paul Manns

Chair(s) : Paul Manns

Speaker #1 : **Alexandra Grütering**, Convex Relaxations of Parabolic Optimal Control Problems with Combinatorial Switching Constraints

Speaker #2 : **Marvin Severitt**, Graph-Based Approaches for Discrete Subproblems Arising in Integer Optimal Control

Speaker #3 : **Annika Müller**, Finite Element Approximation of Optimal Control Problems Arising in Data-Driven Analysis

Derivative Free Optimization

Chandler-Ullmann 216

Session Title : Recent Advances in Derivative-Free Optimization

Organizer(s) : Raghu Bollapragada, Jeffrey Larson

Chair(s) : Raghu Bollapragada, Jeffrey Larson

Speaker #1 : **Cem Karamanli**, Derivative-Free Optimization via Adaptive Sampling Strategies

Speaker #2 : **Albert Berahas**, Analysis of Line Search and Trust Region Methods with Noise

Speaker #3 : **Shima Dezfulian**, Exploiting Prior Function Evaluations in Derivative-Free Optimization

Nonlinear Optimization

Rauch 241

Session Title : Emerging Applications of Nonlinear Constrained Optimization

Organizer(s) : Charlie Vanaret, Sven Leyffer

Chair(s) : Charlie Vanaret, Sven Leyffer

Speaker #1 : **Daniel P. Robinson**, Inexact First- and Second-Order Methods for Sparse Optimization

Speaker #2 : **Marieme Ngom**, A Novel Acquisition Function for Bayesian Optimization

Speaker #3 : **Sven Leyffer**, Binary Control Pulse Optimization for Quantum Systems

Nonlinear Optimization

Rauch 201

Session Title : New Trends in Continuous Optimization Algorithms and Applications I

Organizer(s) : Ernesto G. Birgin, Luis Felipe Bueno

Chair(s) : Ernesto G. Birgin, Luis Felipe Bueno

Speaker #1 : **Luís Felipe Bueno**, Inexact Restoration for Minimization with Inexact Evaluation both of the Objective Function and the Constraints

Speaker #2 : **Douglas S. Gonçalves**, A Two-Phase Rank-based Algorithm for Low-Rank Matrix Completion

Nonsmooth Optimization

Rauch 085

Session Title : Advances in Large-Scale Nonsmooth Optimization I

Organizer(s) : Mateo Díaz, Ben Grimmer

Chair(s) : Mateo Díaz, Ben Grimmer

Speaker #1 : **Javier Peña**, Affine Invariant Convergence Rates of the Conditional Gradient Method

Speaker #2 : **Lijun Ding**, Revisiting Spectral Bundle Methods: Primal-dual (Sub)linear Convergence Rates

Speaker #3 : **Saeed Hajizadeh**, On Nonsmooth Nonconvex-Nonconcave Minimax Optimization

Optimization for Data Science and Machine Learning

Rauch 101

Session Title : Federated Learning and Optimization Under Data Heterogeneity

Organizer(s) : Krishna Pillutla

Chair(s) : Krishna Pillutla

Speaker #1 : **Samuel Horvath**, Recipes for Better Use of Local Work in Federated LearningSpeaker #2 : **Anastasia Koloskova**, An Improved Analysis of Gradient Tracking for Decentralized Machine LearningSpeaker #3 : **Krishna Pillutla**, Federated Learning with Heterogeneous Data: A Superquantile Optimization Approach**Optimization for Data Science and Machine Learning**

Rauch 137

Session Title : New Problem Formulations for Federated Learning

Organizer(s) : Elnur Gasanov

Chair(s) : Elnur Gasanov

Speaker #1 : **Tian Li**, Personalized Federated Learning: Interplays with Competing Constraints and BeyondSpeaker #2 : **Ahmed Khaled**, FLIX: A Simple and Communication-Efficient Alternative to Local Methods in Federated LearningSpeaker #3 : **Slavomir Hanzely**, Convergence Theory for Meta-Learning with First-Order Updates**Optimization Under Uncertainty**

Rauch 171

Session Title : Application of Adaptive Robust Optimization

Organizer(s) : Ahmadreza Marandi

Chair(s) : Zhao Kang

Speaker #1 : **Zhao Kang**, Robust Spare Parts Inventory ManagementSpeaker #2 : **Arkajyoti Roy**, Optimal Interventions in Robust Optimization with Time-Dependent Uncertainty**Optimization Under Uncertainty**

Rauch 141

Session Title : Data-Driven Robust Optimization

Organizer(s) : Sebastian Pokutta, Kartikey Sharma

Chair(s) : Kartikey Sharma

Speaker #1 : **Kartikey Sharma**, Distributionally Robust Optimization over TimeSpeaker #2 : **Enlu Zhou**, Bayesian Distributionally Robust OptimizationSpeaker #3 : **Yibo Zeng**, Hypothesis-class-free Generalization via Distributionally Robust Optimization**Optimization Under Uncertainty**

Rauch 184

Session Title : Optimization with Marginals

Organizer(s) : Karthik Natarajan

Chair(s) : Karthik Natarajan

Speaker #1 : **Divya Padmanabhan**, Extremal Probability Bounds in Combinatorial OptimizationSpeaker #2 : **Changchun Liu**, Product and Ancillary Pricing Optimization: Market Share Analytics via Perturbed Utility ModelSpeaker #3 : **Arjun Ramachandra**, Tight Probability Bounds with Pairwise Independence

Optimization Under Uncertainty

Rauch 151

Session Title : Tackling Bias in Data-Driven Optimization: Fundamental Limits and New Approaches
 Organizer(s) : Vishal Gupta
 Chair(s) : Michael Huang
 Speaker #1 : **Michael Huang**, Debiasing In-Sample Performance for Block Angular Linear Optimization
 Speaker #2 : **Henry Lam**, On the Impossibility of Statistically Improving Empirical Optimization: A Second-Order Stochastic Dominance Perspective
 Speaker #3 : **Andrew Li**, Causal Inference for Panel Data with General Treatment Patterns

Semidefinite, Conic, and Polynomial Optimization

Rauch 292

Session Title : Convex and Nonconvex Methods for Matrix Factorization Problems I
 Organizer(s) : Mateo Díaz, Oscar Leong, Yong Sheng Soh
 Chair(s) : Mateo Diaz, Oscar Leong, Yong Sheng Soh
 Speaker #1 : **Yuejie Chi**, Accelerating Ill-Conditioned Low-Rank Matrix and Tensor Estimation via Scaled Gradient Descent
 Speaker #2 : **Baturalp Yalcin**, Factorization Approach for Low-complexity Matrix Completion Problems: Exponential Number of Spurious Solutions and Failure of Gradient Methods

Semidefinite, Conic, and Polynomial Optimization

Rauch 271

Session Title : Polynomial Optimization: Theory and Application to Nonlinear Systems and PDEs I
 Organizer(s) : Milan Korda
 Chair(s) : Giovanni Fantuzzi
 Speaker #1 : **Giovanni Fantuzzi**, Verification of Some Functional Inequalities via Polynomial Optimization
 Speaker #2 : **Cheng Guo**, Copositive Duality for Nonconvex Energy Markets

Semidefinite, Conic, and Polynomial Optimization

Rauch 261

Session Title : Recent Advances in SDP I
 Organizer(s) : Renata Sotirov
 Chair(s) : Etienne de Klerk
 Speaker #1 : **Etienne de Klerk**, Two Applications of Semidefinite Programming in Approximation Theory
 Speaker #2 : **Frank de Meijer**, The Chvatal-Gomory Procedure for Integer SDPs with Applications in Combinatorial Optimization
 Speaker #3 : **Sven Polak**, Semidefinite Approximations for Biclques and Biindependent Pairs

Software

Chandler-Ullmann 118

Session Title : Disciplined Parameterized Programming with CVXPY
 Organizer(s) : Steven Diamond
 Chair(s) : Steven Diamond
 Speaker #1 : **Steven Diamond**, Convex Optimization in Python with CVXPY
 Speaker #2 : **Parth Nobel**, Explainable ML and Sequential Decision Making via CVXPYlayers
 Speaker #3 : **Maximilian Schaller**, CVXPYgen - Code Generation for Parametrized Convex Optimization

Stochastic Algorithms

Chandler-Ullmann 133

Session Title : Policy Optimization for Reinforcement Learning
 Organizer(s) : Yuejie Chi
 Chair(s) : Yuejie Chi
 Speaker #1 : **Shaofeng Zou**, Policy Gradient Method for Robust Reinforcement Learning
 Speaker #2 : **Siva Theja Maguluri**, Sample Complexity of Policy-Based Methods under Off-Policy Sampling and Linear Function Approximation
 Speaker #3 : **Jincheng Mei**, Understanding the Effect of Stochasticity in Policy Optimization

Stochastic Algorithms

Zoellner 143

Session Title : Recent Advances in First-Order Methods

Organizer(s) : Yibo Xu

Chair(s) : Yibo Xu

Speaker #1 : **Lihua Lei**, Adaptivity of Stochastic Gradient-based MethodsSpeaker #2 : **Yang Luo**, Halpern-Type Accelerated and Splitting Algorithms For Monotone InclusionsSpeaker #3 : **Yibo Xu**, Distributed Stochastic Inertial-Accelerated Methods with Delayed Derivatives for Non-convex Problems**Variational Inequalities, Complementarity, Games, and Equilibria**

Chandler-Ullmann 218

Session Title : First-Order Methods For Linear Programming

Organizer(s) : Haihao Lu

Chair(s) : Haihao Lu

Speaker #1 : **Oliver Hinder**, Faster First-Order Primal-Dual Methods for Linear Programming using Restarts and SharpnessSpeaker #2 : **Haihao (Sean) Lu**, Infeasibility Detection with Primal-Dual Hybrid Gradient for Large-Scale Linear Programming**Monday, 1:40pm - 3:00pm****Convexification and Global Optimization**

Chandler-Ullmann 115

Session Title : Polynomial Optimization Methods and Applications

Organizer(s) : Chen Chen

Chair(s) : Chen Chen

Speaker #1 : **Kyungchan Park**, Convex Relaxation for Quadratic Optimization over the Stiefel ManifoldSpeaker #2 : **Chen Chen**, Rank Pump for Polynomial Optimization**Derivative Free Optimization**

Chandler-Ullmann 216

Session Title : Using Curvature Information in Derivative-Free Optimization

Organizer(s) : Jeffrey Larson

Chair(s) : Stefan Wild

Speaker #1 : **Bumsu Kim**, Curvature-Aware Derivative Free OptimizationSpeaker #2 : **Shiqing Sun**, Efficient Algorithm with Stochastic Diagonal Hessian EstimationSpeaker #3 : **Sara Shashaani**, Stochastic Derivative-Free Trust-region Methods Using Diagonal Hessians**Nonlinear Optimization**

Rauch 251

Session Title : Algorithms for Nonlinear Optimization I

Organizer(s) : Johannes Brust, Elizabeth Wong

Chair(s) : Johannes Brust, Elizabeth Wong

Speaker #1 : **Jennifer Erway**, Advances in Multipoint Secant MethodsSpeaker #2 : **William Hager**, A Hessian-Based Implementation of the Polyhedral Active Set AlgorithmSpeaker #3 : **Robert Bassett**, One-Step Estimation with Scaled Proximal Methods

Nonlinear Optimization

Rauch 201

Session Title : New Trends in Continuous Optimization Algorithms and Applications II

Organizer(s) : Ernesto G. Birgin, Luis Felipe Bueno

Chair(s) : Ernesto G. Birgin, Luis Felipe Bueno

Speaker #1 : **Rafaela Filippozzi**, Frank-Wolfe Algorithms for Convex Hull Membership ProblemsSpeaker #2 : **Davoud Ataee Tarzanagh**, On Online Bilevel Learning: Dynamic Regret Analysis of Alternating Optimization MethodsSpeaker #3 : **Maryam Yashtini**, Counting Objects by Diffused Index: Geometry-free and Training-free Approach**Nonlinear Optimization**

Rauch 241

Session Title : Recent Advances in Nonlinear Constrained Optimization

Organizer(s) : Sven Leyffer, Charlie Vanaret

Chair(s) : Sven Leyffer, Charlie Vanaret

Speaker #1 : **Frank E. Curtis**, Sequential Quadratic Optimization for Nonlinear Equality Constrained Stochastic OptimizationSpeaker #2 : **Charlie Vanaret**, UNO: A Modular Open-Source Solver for Unifying Nonlinear OptimizationSpeaker #3 : **Michael Saunders**, Experiments with Algorithm NCL for Constrained Optimization**Nonsmooth Optimization**

Rauch 085

Session Title : Advances in Large-Scale Nonsmooth Optimization II

Organizer(s) : Benjamin Grimmer, Mateo Díaz

Chair(s) : Benjamin Grimmer, Mateo Diaz

Speaker #1 : **Zhihui Zhu**, Exactly- and Over-Parameterized Subgradient Methods for Robust Matrix RecoverySpeaker #2 : **Haoyue Wang**, Linear Regression with Partially Mismatched Data: Local Search with Theoretical GuaranteesSpeaker #3 : **Mahyar Fazlyab**, Scalable Verification of Deep Neural Networks via Operator Splitting**Optimization for Data Science and Machine Learning**

Rauch 101

Session Title : Optimization Techniques in Differential Privacy

Organizer(s) : Cristobal Guzman

Chair(s) : Cristobal Guzman

Speaker #1 : **Tomas Gonzalez**, Differentially Private Stationary Points in Stochastic Nonconvex OptimizationSpeaker #2 : **Michael Menart**, Differentially Private Generalized Linear ModelsSpeaker #3 : **Clement Lezane**, Algorithms for Stochastic Complementary Composite Minimization**Optimization for Data Science and Machine Learning**

Rauch 137

Session Title : Recent Advancements in Optimization Methods for Machine Learning I

Organizer(s) : Nicolas Loizou, Sebastian Stich

Chair(s) : Nicolas Loizou, Sebastian Stich

Speaker #1 : **Sebastian Stich**, On the Communication Complexity of Local Gradient MethodsSpeaker #2 : **Brandon Amos**, Amortized Optimization**Optimization Under Uncertainty**

Rauch 151

Session Title : Advances in Markov Decision Processes

Organizer(s) : Julien Grand-Clement

Chair(s) : Julien Grand-Clement

Speaker #1 : **Abhishek Gupta**, Learning in Infinite Dimensional SpacesSpeaker #2 : **Julien Grand-Clement**, A First-Order Approach to Accelerated Value Iteration

Optimization Under Uncertainty

Rauch 171

Session Title : Application of Robust Optimization

Organizer(s) : Ahmadsreza Marandi

Chair(s) : Yingxiao Ye

Speaker #1 : **Yingxiao Ye**, Preserving Biodiversity via Adjustable Robust OptimizationSpeaker #2 : **Ayoub Fousoul**, LP-based Approximations for Disjoint Bilinear and Two-Stage Adjustable Robust Optimization**Optimization Under Uncertainty**

Rauch 141

Session Title : Distributionally Robust Optimization

Organizer(s) : Ruiwei Jiang

Chair(s) : Ruiwei Jiang

Speaker #1 : **Louis Chen**, Asymptotically Exact Rockafellian Formulations in Optimization under UncertaintySpeaker #2 : **Harsha Gangammanavar**, Sequential Sampling-based Solution Algorithms for Two-stage Distributionally Robust OptimizationSpeaker #3 : **Ruiwei Jiang**, Value of Stochastic Modeling with Right-Hand Side Uncertainty**PDE Constrained Optimization**

Chandler-Ullmann 215

Session Title : Algorithmic Advances in Applications of PDE Constrained Optimization I

Organizer(s) : Denis Ridzal, Drew P. Kouri, Harbir Antil

Chair(s) : Denis Ridzal, Drew P. Kouri, Harbir Antil

Speaker #1 : **Denis Ridzal**, ALESQP-RISK: A Scalable and Efficient Algorithm for Nonsmooth Risk-Averse Optimal Control with State ConstraintsSpeaker #2 : **Brendan Keith**, Adaptive Sampling for the Augmented Lagrangian Method**Semidefinite, Conic, and Polynomial Optimization**

Rauch 261

Session Title : Approximation Hierarchies for Polynomial Optimization Problems I

Organizer(s) : Monique Laurent, Lucas Slot

Chair(s) : Lucas Slot

Speaker #1 : **Lorenzo Baldi**, On Putinar's Positivstellensatz and Convergence Rates in Polynomial OptimizationSpeaker #2 : **Sergio Cristancho**, Harmonic Hierarchies for Polynomial OptimizationSpeaker #3 : **Lucas Slot**, Convergence Analysis of the Sum-of-Squares Hierarchy for Polynomial Optimization**Semidefinite, Conic, and Polynomial Optimization**

Rauch 271

Session Title : New First-Order Methods for Convex/Nonconvex Optimization and Applications

Organizer(s) : Renbo Zhao, Robert Freund

Chair(s) : Renbo Zhao, Robert Freund

Speaker #1 : **Dmitriy Drusvyatskiy**, Learning in Decision-Dependent GamesSpeaker #2 : **Zikai Xiong**, Using Taylor Approximated Gradients to Improve the Frank-Wolfe Method for Empirical Risk MinimizationSpeaker #3 : **Jim Renegar**, Solving Convex Feasibility Problems**Software**

Chandler-Ullmann 118

Session Title : Power Network Optimization Software

Organizer(s) : Carleton Coffrin

Chair(s) : Carleton Coffrin

Speaker #1 : **Jean-Paul Watson**, EGRET: A Python-Based Library for Optimal Power Flow, Economic Dispatch, and Unit CommitmentSpeaker #2 : **Carleton Coffrin**, Derivative Computations and AC Optimal Power Flow

Stochastic Algorithms*Zoellner 143*

Session Title : First-Order Methods for Min-Max Problems
 Organizer(s) : Yassine Laguel, N. Serhat Aybat, Mert Gurbuzbalaban
 Chair(s) : Yassine Laguel, N. Serhat Aybat, Mert Gurbuzbalaban
 Speaker #1 : **Yassine Laguel**, New Perspectives on Robustness via the Conditional Value at Risk
 Speaker #2 : **Bugra Can**, A Variance-Reduced Stochastic Accelerated Primal Dual Algorithm
 Speaker #3 : **Mert Gurbuzbalaban**, Robust Accelerated Primal-Dual Methods for Computing Saddle Points

Stochastic Algorithms

Chandler-Ullmann 133

Session Title : Recent Developments on Solving Minimax Optimization and Related Problems I
 Organizer(s) : Ahmet Alacaoglu, Quoc Tran-Dinh
 Chair(s) : Ahmet Alacaoglu
 Speaker #1 : **Qihang Lin**, Federated Learning on Adaptively Weighted Nodes by Bilevel Optimization
 Speaker #2 : **Farzad Yousefian**, Complexity Guarantees for an Implicit Smoothing-enabled Method for Stochastic MPECs
 Speaker #3 : **Siqi Zhang**, The Complexity of Nonconvex-Strongly-Concave Minimax Optimization: Fundamental Limits and Improved Algorithms

Variational Inequalities, Complementarity, Games, and Equilibria

Chandler-Ullmann 218

Session Title : Networks and Games
 Organizer(s) : Jianghai Hu
 Chair(s) : Lina Mallozzi
 Speaker #1 : **Lina Mallozzi**, Games and Optimal Transport in Practical Problems
 Speaker #2 : **Jan Harold Alcantara**, Method of Alternating Projections for Solving Absolute Value Equations
 Speaker #3 : **Jasper Verbree**, Effects of Demand on Wardrop Equilibrium and Breass's Paradox

Tuesday, 9:00am - 10:20am**Applications of Continuous Optimization**

Chandler-Ullmann 116

Session Title : Continuous Optimization of Energy Systems
 Organizer(s) : Anirudh Subramanyam
 Chair(s) : Anirudh Subramanyam
 Speaker #1 : **Hassan Hijazi**, To Project or Not to Project, That is the Question
 Speaker #2 : **Miguel Anjos**, A Multinational Carbon-Credit Market Integrating Distinct National Carbon Allowance Strategies

Derivative Free Optimization

Chandler-Ullmann 216

Session Title : Stochastic Derivative-Free Optimization
 Organizer(s) : Xin Chen, Jeffrey Larson
 Chair(s) : Xin Chen, Jeffrey Larson
 Speaker #1 : **Damiano Zeffiro**, A Weak Tail-Bound Probabilistic Condition for Function Estimation in Stochastic Derivative-Free optimization
 Speaker #2 : **Krishnakumar Balasubramanian**, Exploiting Structures in Stochastic Zeroth-order Optimization

Nonlinear Optimization

Rauch 201

Session Title : Algorithms for Nonlinear Optimization II

Organizer(s) : Johannes Brust, Elizabeth Wong

Chair(s) : Johannes Brust, Elizabeth Wong

Speaker #1 : **Philip Gill**, A Trust-Region Shifted Primal-Dual Interior Method for Nonlinear OptimizationSpeaker #2 : **Minxin Zhang**, A Projected-Search Interior Method for Nonlinear OptimizationSpeaker #3 : **Elizabeth Wong**, Second-Derivative SQP Methods for Nonlinear Optimization**Nonlinear Optimization**

Rauch 241

Session Title : High-Performance Computing in Nonlinear Optimization

Organizer(s) : Nai-Yuan Chiang, Jingyi Wang

Chair(s) : Jingyi Wang

Speaker #1 : **Jingyi Wang**, An Optimization Algorithm for Nonsmooth Nonconvex Problems with Upper- C^2 ObjectiveSpeaker #2 : **Sungho Shin**, Graph-Structured Nonlinear Programming: Properties and AlgorithmsSpeaker #3 : **Michael Bynum**, Advances in ParaPint for Efficient Decomposition of Structured Nonlinear Programming Problems**Nonlinear Optimization**

Rauch 251

Session Title : Stochastic Optimization Methods for Machine Learning I

Organizer(s) : Youssef Diouane, El Houcine Bergou

Chair(s) : Youssef Diouane, El Houcine Bergou

Speaker #1 : **Serge Gratton**, Objective-Function-Free Optimization, Part II: Complexity of Adaptive Regularization and Numerical ExperimentsSpeaker #2 : **Simone Robegoldi**, First-Order Subsampled Trust-Region Method with Inexact Restoration for Finite-Sum MinimizationSpeaker #3 : **Vyacheslav Kungurtsev**, Scaling the Wild: Decentralizing Hogwild!-style Shared-Memory SGD**Nonsmooth Optimization**

Rauch 085

Session Title : Advances in Nonsmooth Optimization: Theory and Applications I

Organizer(s) : Johannes O. Royset

Chair(s) : Johannes O. Royset

Speaker #1 : **Andrzej Ruszczyński**, Subregular Recourse in Nonlinear Multistage Stochastic OptimizationSpeaker #2 : **Johannes O. Royset**, Consistent Approximations in Composite OptimizationSpeaker #3 : **Ying Cui**, A Decomposition Algorithm for Two-Stage Stochastic Programs with Nonconvex Recourse**Nonsmooth Optimization**

Rauch 091

Session Title : Nonsmooth Optimization: Contributed I

Chair(s) : Liwei Jiang

Speaker #1 : **Liwei Jiang**, Saddle Avoidance for Subgradient MethodsSpeaker #2 : **Tam Le**, Subgradient Sampling for Nonsmooth Nonconvex MinimizationSpeaker #3 : **Cédric Josz**, Lyapunov Stability of the Subgradient Method with Constant Step Size

Optimization for Data Science and Machine Learning

Rauch 101

Session Title : Policy Gradient and Actor-Critic Methods: Theoretical Analysis and New Opportunities

Organizer(s) : Anas Barakat

Chair(s) : Anas Barakat

Speaker #1 : **Sajad Khodadadian**, Finite-Sample Analysis of Off-Policy Natural Actor-Critic with Linear Function ApproximationSpeaker #2 : **Sihan Zeng**, A Two-Time-Scale Stochastic Optimization Framework with Applications in Control and Reinforcement LearningSpeaker #3 : **Rui Yuan**, A General Sample Complexity Analysis of Vanilla Policy Gradient**Optimization for Data Science and Machine Learning**

Rauch 137

Session Title : Recent Advancements in Optimization Methods for Machine Learning II

Organizer(s) : Nicolas Loizou, Sebastian Stich

Chair(s) : Nicolas Loizou, Sebastian Stich

Speaker #1 : **Junchi Li**, On the Convergence of Stochastic Extragradient for Bilinear Games using Restarted Iteration AveragingSpeaker #2 : **Nicolas Loizou**, Stochastic Gradient Descent-Ascent: Unified Theory and New Efficient MethodsSpeaker #3 : **Kiran Thekumparampil**, FedChain: Chained Algorithms for Near-Optimal Communication Cost in Federated Learning**Optimization Under Uncertainty**

Rauch 151

Session Title : Advances for Optimization Under Uncertainty in Process Systems Engineering

Organizer(s) : Chrysanthos Gounaris

Chair(s) : Chrysanthos Gounaris

Speaker #1 : **Alexander Dowling**, Optimization Under Epistemic Uncertainty with Bayesian Hybrid ModelsSpeaker #2 : **Qi Zhang**, Multistage Stochastic Programming for Capacity Planning with Uncertain Endogenous Technology LearningSpeaker #3 : **Chrysanthos Gounaris**, New Features and Benchmarking of the PyROS Solver**Optimization Under Uncertainty**

Rauch 171

Session Title : Decision-Making Under Nonlinear Uncertainty

Organizer(s) : Omid Nohadani

Chair(s) : Omid Nohadani

Speaker #1 : **Eojin Han**, Scalable Dynamic Decision-Making via Nonparametric LiftingsSpeaker #2 : **Omid Nohadani**, Dynamic Capacity Management for Deferred SurgeriesSpeaker #3 : **Jordi Castro**, A New Specialized Interior-Point Method for Large-Scale Multistage Stochastic Optimization**Optimization Under Uncertainty**

Rauch 141

Session Title : Serendipitous Results in (Distributionally) (Robust) Optimization

Organizer(s) : Viet Anh Nguyen

Chair(s) : Yutong Wu

Speaker #1 : **Yutong Wu**, Data-Driven Unit Commitment Problem under Uncertainty with Fairness ConsiderationsSpeaker #2 : **Napat Rujeerapaiboon**, Mean-Variance Robust Inventory ModelSpeaker #3 : **Andrew Rosemberg**, Methods for Ambiguity Set Estimation in Distributionally Robust Optimization

PDE Constrained Optimization

Chandler-Ullmann 215

Session Title : Algorithmic Advances in Applications of PDE Constrained Optimization II
 Organizer(s) : Denis Ridzal, Drew P. Kouri, Harbir Antil
 Chair(s) : Denis Ridzal, Drew P. Kouri, Harbir Antil
 Speaker #1 : **Kelsey DiPietro**, Optimization-based Methods for Solving the Monge-Ampère Equation
 Speaker #2 : **Lucas Bouck**, Projection Free Method For the Frank Oseen Model of Liquid Crystals

Semidefinite, Conic, and Polynomial Optimization

Rauch 261

Session Title : Convex and Nonconvex Methods for Matrix Factorization Problems II
 Organizer(s) : Mateo Díaz, Oscar Leong, Yong Sheng Soh
 Chair(s) : Mateo Díaz, Oscar Leong, Yong Sheng Soh
 Speaker #1 : **Justin Romberg**, Approximate Low-Rank Recovery from Noisy and Local Measurements by Convex Programming
 Speaker #2 : **Oscar Leong**, On the Convex Dimension of Data
 Speaker #3 : **Yong Sheng Soh**, Learning Data Representations with Symmetries

Semidefinite, Conic, and Polynomial Optimization

Rauch 271

Session Title : Polynomial Optimization I
 Organizer(s) : Luis F. Zuluaga
 Chair(s) : Luis F. Zuluaga
 Speaker #1 : **Georgina Hall**, Sums of Separable plus Quadratic Polynomials
 Speaker #2 : **Dávid Papp**, Dual Nonnegativity Certificates in Polynomial Optimization

Software

Chandler-Ullmann 118

Session Title : Nonnegative Matrix Factorization: Models, Algorithms, and Applications
 Organizer(s) : Nicolas Nadisic
 Chair(s) : Nicolas Nadisic
 Speaker #1 : **Nicolas Nadisic**, Introduction to Nonnegative Matrix Factorization
 Speaker #2 : **Hiroyuki Kasai**, Introduction of NMFLibrary: An Open-Source Toolbox for Non-Negative Matrix Factorization (NMF)

Stochastic Algorithms

Chandler-Ullmann 133

Session Title : Recent Developments on Solving Minimax Optimization and Related Problems II
 Organizer(s) : Ahmet Alacaoglu, Quoc Tran-Dinh
 Chair(s) : Ahmet Alacaoglu
 Speaker #1 : **Wäiss Azizian**, Last-Iterate Convergence Rates of Mirror Methods in Stochastic Variational Inequalities
 Speaker #2 : **Rahul Parhi**, Viewing Neural Network Training Problems as Optimization Problems over Banach Spaces

Variational Inequalities, Complementarity, Games, and Equilibria

Chandler-Ullmann 218

Session Title : Games and Markets: Analysis and Applications
 Organizer(s) : Andrew Liu
 Chair(s) : Andrew Liu
 Speaker #1 : **Andrew Liu**, Market Equilibrium and Retail Rate Design in the Presence of Prosumers
 Speaker #2 : **Didier Aussell**, Multi-Leader-Follower Games: Theoretical Advances and to Applications

Tuesday, 10:45am - 12:05pm

Convexification and Global Optimization

Chandler-Ullmann 115

Session Title : Convexification of Quadratic/Cubic Programs

Organizer(s) : Boshi Yang

Chair(s) : Boshi Yang

Speaker #1 : **Lucas Waddell**, Strengthening a Linear Reformulation of the 0-1 Cubic Knapsack Problem via Variable ReorderingSpeaker #2 : **Boshi Yang**, Quadratic Programs with Non-intersecting ConstraintsSpeaker #3 : **Andres Gomez**, A Graph-Based Decomposition Method for Quadratic Optimization with Indicators**Derivative Free Optimization**

Chandler-Ullmann 216

Session Title : Using Gradient Estimates in Derivative-Free Optimization

Organizer(s) : Sara Shashaani

Chair(s) : Sara Shashaani

Speaker #1 : **Junhui Zhang**, Distributionally Constrained Black-Box Stochastic Gradient Estimation and OptimizationSpeaker #2 : **Geovani Nunes Grapiglia**, Quadratic Regularization Methods based on Finite-Difference Gradient ApproximationsSpeaker #3 : **Coralia Cartis**, Scalable Derivative-Free Methods**Nonlinear Optimization**

Rauch 251

Session Title : Stochastic Optimization Methods for Machine Learning II

Organizer(s) : Aritra Dutta, El Houcine Bergou

Chair(s) : Aritra Dutta, El Houcine Bergou

Speaker #1 : **Hernando Ombao**, Separating Stimulus-Induced and Background Components of Dynamic Functional ConnectivitySpeaker #2 : **Qiang Heng**, Bayesian Trend Filtering via Proximal Markov Chain Monte CarloSpeaker #3 : **Srijan Das**, Multiple Modalities are All You for Video Understanding!**Nonsmooth Optimization**

Rauch 091

Session Title : Geometry in Nonsmooth Optimization

Organizer(s) : Tonghua Tian

Chair(s) : Tonghua Tian

Speaker #1 : **Tonghua Tian**, Manifolds in Nonsmooth Optimization: Conservative Gradient Fields and Partial SmoothnessSpeaker #2 : **Vasilis Charisopoulos**, A Superlinearly Convergent Subgradient Method for Sharp Semismooth ProblemsSpeaker #3 : **X.Y. Han**, Survey Descent: A Multipoint Generalization of Gradient Descent for Nonsmooth Optimization**Optimization for Data Science and Machine Learning**

Rauch 101

Session Title : Complexity of Stochastic Optimization and Variational Inequalities

Organizer(s) : Cristobal Guzman

Chair(s) : Cristobal Guzman

Speaker #1 : **Xufeng Cai**, Stochastic Halpern Iteration with Variance Reduction for Stochastic Monotone InclusionsSpeaker #2 : **Yair Carmon**, Making SGD Parameter-Free

Optimization for Data Science and Machine Learning

Rauch 137

Session Title : Recent Advancements in Optimization Methods for Machine Learning III

Organizer(s) : Nicolas Loizou, Sebastian Stich

Chair(s) : Nicolas Loizou, Sebastian Stich

Speaker #1 : **Ahmet Alacaoglu**, On the Complexity of a Practical Primal-Dual Coordinate MethodSpeaker #2 : **Robert Gower**, Cutting Some Slack for SGD with Adaptive Polyak StepsizesSpeaker #3 : **Zheng Shi**, AI-SARAH: Adaptive and Implicit Stochastic Recursive Gradient Methods**Optimization Under Uncertainty**

Rauch 171

Session Title : Advances in Reinforcement Learning

Organizer(s) : Selvaprabu Nadarajah

Chair(s) : Selvaprabu Nadarajah

Speaker #1 : **Yiheng Lin**, Multi-Agent Reinforcement Learning in Time-Varying Networked SystemsSpeaker #2 : **Selvaprabu Nadarajah**, Self-adapting Network Relaxations for Weakly-Coupled Markov Decision Processes**Optimization Under Uncertainty**

Rauch 141

Session Title : Advances in Stochastic Programming

Organizer(s) : Can Li

Chair(s) : Can Li

Speaker #1 : **Jim Luedtke**, Sparse Multi-Term Disjunctive Cuts for the Epigraph of a Function of Binary VariablesSpeaker #2 : **Joshua Pulsipher**, Random Field OptimizationSpeaker #3 : **Can Li**, Piecewise Linear Decision Rules via Adaptive Partition for Two Stage Stochastic Mixed Integer Linear Programs**Optimization Under Uncertainty**

Rauch 184

Session Title : Algorithms for Distributionally Robust Optimization

Organizer(s) : Anirudh Subramanyam

Chair(s) : Anirudh Subramanyam

Speaker #1 : **Sanjay Mehrotra**, An Algorithm for Stochastic Convex-Concave Fractional Programs with Applications to Production Efficiency and Equitable Resource AllocationSpeaker #2 : **Zukui Li**, Kernel Distributionally Robust Chance-Constrained Process OptimizationSpeaker #3 : **Ran Ji**, Decomposition Algorithm for Parallel Machine Scheduling Problem under Uncertain Sequence Dependent Setups**Optimization Under Uncertainty**

Rauch 151

Session Title : Large-Scale Data-Driven Optimization

Organizer(s) : Soroosh Shafieezadeh Abadeh

Chair(s) : Soroosh Shafieezadeh Abadeh

Speaker #1 : **Jiajin Li**, Nonsmooth Composite Nonconvex-Concave Minimax Optimization for Distributionally Robust OptimizationSpeaker #2 : **Hongseok Namkoong**, Off-Policy Policy Evaluation For Sequential Decisions Under Unobserved ConfoundingSpeaker #3 : **Soroosh Shafieezadeh Abadeh**, Wasserstein Distance Between a Discrete Probability Measure Supported on Two Points and the Lebesgue

PDE Constrained Optimization

Chandler-Ullmann 215

Session Title : Optimization and Dynamics Based Deep Neural Networks

Organizer(s) : Akwum Onwunta, Deepanshu Verma

Chair(s) : Akwum Onwunta, Deepanshu Verma

Speaker #1 : **Akwum Onwunta**, A Deep Neural Network Approach for Solving Bayesian Inverse Problems Governed by PDEsSpeaker #2 : **Deepanshu Verma**, Advances and Challenges in Solving HJB Equations Arising in Stochastic Optimal ControlSpeaker #3 : **Randy Price**, NINNs: Nudging Induced Neural Networks**Semidefinite, Conic, and Polynomial Optimization**

Rauch 261

Session Title : Algorithms for Large-Scale Conic and Polynomial Optimization

Organizer(s) : James Saunderson

Chair(s) : Chenyang Yuan

Speaker #1 : **Chenyang Yuan**, Low-Rank Univariate Sum of Squares Has No Spurious Local MinimaSpeaker #2 : **Oisín Faust**, Local Linear Convergence of Douglas-Rachford for Random Linear Programs**Semidefinite, Conic, and Polynomial Optimization**

Rauch 271

Session Title : New Methods for Certain Structured Optimization Problems

Organizer(s) : Robert Freund, Renbo Zhao

Chair(s) : Robert Freund, Renbo Zhao

Speaker #1 : **Damek Davis**, A Nearly Linearly Convergent First-Order Method for Nonsmooth Functions with Quadratic GrowthSpeaker #2 : **Renbo Zhao**, Multiplicative Gradient Method: When and Why It WorksSpeaker #3 : **Yurii Nesterov**, Set-Limited Functions and Polynomial-Time Interior-Point Methods**Software**

Chandler-Ullmann 118

Session Title : JuMP and Julia for Optimization

Organizer(s) : Joaquim Dias Garcia

Chair(s) : Joaquim Dias Garcia

Speaker #1 : **Theo Diamandis**, Faster Optimization using RandomizedPreconditioners.jlSpeaker #2 : **Benoit Legat**, Complex Numbers in JuMPSpeaker #3 : **Joaquim Dias Garcia**, Modeling Bilevel Optimization Problems with BilevelJuMP.jl**Stochastic Algorithms**

Chandler-Ullmann 133

Session Title : Design and Analysis of Optimal Reinforcement Learning Algorithms I

Organizer(s) : Ashwin Pananjady

Chair(s) : Ashwin Pananjady

Speaker #1 : **Tengyang Xie**, Bellman-consistent Pessimism for Offline Reinforcement LearningSpeaker #2 : **Wenlong Mou**, Optimal Algorithms for Reinforcement Learning: Oracle Inequalities, Markov Chains, and Stochastic Approximation**Stochastic Algorithms***Zoellner 143*

Session Title : Optimization Methods for Machine Learning

Organizer(s) : Saeed Ghadimi

Chair(s) : Saeed Ghadimi

Speaker #1 : **Murat A. Erdogdu**, Optimal Stochastic Convex Optimization under Infinite Noise VarianceSpeaker #2 : **Aritra Mitra**, Fast, Communication-Efficient, and Robust Approaches for Large-Scale Machine LearningSpeaker #3 : **Ilai Bistritz**, Cooperative Multi-Player Bandit Optimization

Variational Inequalities, Complementarity, Games, and Equilibria

Chandler-Ullmann 116

Session Title : Hierarchical Optimization and Variational Inequality Problems

Organizer(s) : Farzad Yousefian

Chair(s) : Farzad Yousefian

Speaker #1 : **Peixuan Zhang**, A Smoothed Augmented Lagrangian Framework for Stochastic Convex OptimizationSpeaker #2 : **Harshal Kaushik**, Optimization Problems with Variational Inequality Constraints: Algorithms, Complexity Analysis, and Applications**Variational Inequalities, Complementarity, Games, and Equilibria**

Chandler-Ullmann 218

Session Title : Saddle-Point and Bilevel Optimization

Organizer(s) : Prashant Khanduri

Chair(s) : Landi Zhu

Speaker #1 : **Landi Zhu**, A Stochastic Subgradient Method for Distributionally Robust Non-Convex LearningSpeaker #2 : **Saif R. Kazi**, A Hybrid Algorithm for Global Convergence of Mathematical Programming with Complementarity Constraints (MPCC)Speaker #3 : **Alain Zemkoho**, Semismooth Newton-type Methods for Bilevel Optimization**Tuesday, 1:40pm - 3:00pm****Applications of Continuous Optimization**

Chandler-Ullmann 116

Session Title : Advanced Formulations and Algorithms for Optimal Control and Dynamic Optimization

Organizer(s) : Carl Laird

Chair(s) : Lorenz Biegler

Speaker #1 : **Lorenz Biegler**, Stable Economic Nonlinear Model Predictive Control without a Pre-Calculated Steady-State OptimumSpeaker #2 : **Mihai Anitescu**, Decomposition with Overlap for Long Horizon Nonlinear Dynamic ProgrammingSpeaker #3 : **Elisha Pager**, Method for Solving Bang-Bang and Singular Optimal Control Problems Using Adaptive Radau Collocation**Convexification and Global Optimization**

Chandler-Ullmann 115

Session Title : Convexifications for Statistical Problems

Organizer(s) : Andres Gomez

Chair(s) : Andres Gomez

Speaker #1 : **Ryan Cory-Wright**, A New Perspective on Low-Rank OptimizationSpeaker #2 : **Shaoning Han**, Compact Extended Formulation for Low-Rank Functions with Indicator VariablesSpeaker #3 : **Linchuan Wei**, On the Convex Hull of Convex Quadratic Optimization Problems with Indicators**Nonlinear Optimization**

Rauch 241

Session Title : Large-Scale, Nonlinear, and Stochastic Optimization I

Organizer(s) : Albert S. Berahas

Chair(s) : Albert S. Berahas

Speaker #1 : **Miaolan Xie**, High Probability Iteration and Sample Complexity Bounds for Adaptive Line Search via Stochastic OraclesSpeaker #2 : **Salar Fattahi**, Global Convergence of Sub-Gradient Method for Robust Matrix Recovery: Small Initialization, Noisy Measurements, and Over-ParameterizationSpeaker #3 : **Vivak Patel**, Convergence, Stability and Stopping of SGD for Nonconvex Objectives

Nonlinear Optimization

Rauch 201

Session Title : Linear Algebra Methods for Large-Scale Constrained Optimization
 Organizer(s) : Michael Alan Saunders
 Chair(s) : Michael Alan Saunders
 Speaker #1 : **Johannes Brust**, Projected Linear Systems Solver (PLSS)
 Speaker #2 : **Shaked Regev**, A Hybrid Direct-Iterative Method for Solving KKT Linear Systems
 Speaker #3 : **Alexis Montoison**, Krylov Methods for Square Partitioned Linear Systems

Nonlinear Optimization

Rauch 251

Session Title : Sequential Optimality Conditions and Algorithms in Nonlinear Optimization
 Organizer(s) : Paulo J. S. Silva
 Chair(s) : Paulo J. S. Silva
 Speaker #1 : **Roberto Andreani**, Improving the Global Convergence of Inexact Restoration Methods for Constrained Optimization Problems
 Speaker #2 : **Paulo J. S. Silva**, On Scaled Stopping Criteria for a Safeguarded Augmented Lagrangian Method: Theory and Computational Experiments

Nonsmooth Optimization

Rauch 091

Session Title : Recent Developments on Augmented Lagrangian-Based Methods for Nonsmooth Optimization
 Organizer(s) : Kim-Chuan Toh
 Chair(s) : Kim-Chuan Toh
 Speaker #1 : **Yangyang Xu**, First-Order Methods for Problems with a Few Functional Constraints
 Speaker #2 : **Kim-Chuan Toh**, A Two-Phase Proximal Augmented Lagrangian Method for High Dimensional Convex Quadratic Programming Problems
 Speaker #3 : **Vladimir Shikhman**, Cardinality-constrained Optimization Problems in General Position and Beyond

Optimization for Data Science and Machine Learning

Rauch 137

Session Title : Machine Learning for Optimization
 Organizer(s) : Bartolomeo Stellato
 Chair(s) : Bartolomeo Stellato
 Speaker #1 : **Rajiv Sambharya**, Learning to Convexify for Fast Real-Time Optimization
 Speaker #2 : **Vinit Ranjan**, Performance Certification of First Order Methods for Parametric Quadratic Optimization
 Speaker #3 : **Cole Becker**, Learning for robust optimization

Optimization Under Uncertainty

Rauch 141

Session Title : Advances in Robust Optimization Methodology
 Organizer(s) : Nam Ho-Nguyen, Fatma Kiliç-Karzan
 Chair(s) : Nam Ho-Nguyen
 Speaker #1 : **Anirudh Subramanyam**, A Lagrangian Dual Method for Two-Stage Robust Optimization with Binary Uncertainties
 Speaker #2 : **Hyunki Im**, Stochastic First-Order Methods for Constrained Distributionally Robust Optimization
 Speaker #3 : **Nan Jiang**, DFO: A Robust Framework for Data-driven Decision-Making with Endogenous Outliers

Optimization Under Uncertainty

Rauch 184

Session Title : Data-Driven Optimization I

Organizer(s) : Tito Homem-de-Mello

Chair(s) : Tito Homem-de-Mello

Speaker #1 : **Bernardo Pagnoncelli**, Contextual Expected Value ConstraintsSpeaker #2 : **Yifan Lin**, Bayesian Stochastic Gradient Descent for Stochastic Optimization with Streaming Input DataSpeaker #3 : **Rui Gao**, Data-driven Multistage Distributionally Robust Optimization**Optimization Under Uncertainty**

Rauch 151

Session Title : Dynamic Optimization Under Uncertainty

Organizer(s) : Grani A. Hanasusanto

Chair(s) : Grani A. Hanasusanto

Speaker #1 : **Qing Jin**, Distributionally Robust Optimization with Decision-Dependent Information DiscoverySpeaker #2 : **Xiangyi Fan**, A Decision Rule Approach for Two-Stage Data-Driven Distributionally Robust Optimization Problems with Random RecourseSpeaker #3 : **Shixuan Zhang**, Dual Dynamic Programming for Data Driven Distributionally Robust Multi-stage Convex Optimization**Optimization Under Uncertainty**

Rauch 171

Session Title : Theory and Applications of Robust Optimization

Organizer(s) : Angelos Georghiou

Chair(s) : Angelos Georghiou

Speaker #1 : **Ke Ren**, Inverse Optimization for Learning Feasible RegionsSpeaker #2 : **Angelos Georghiou**, Risk-averse Regret Minimization in Multi-Stage Stochastic ProgramsSpeaker #3 : **Ernest Quintana Aparicio**, Robust Optimization of Uncertain Multiobjective Problems via Epigraphical Reformulations**PDE Constrained Optimization**

Chandler-Ullmann 215

Session Title : PDE Constrained Optimization with Nonsmooth Structures I

Organizer(s) : Michael Hintermüller

Chair(s) : Michael Hintermüller

Speaker #1 : **Caroline Geiersbach**, Optimality Conditions and Regularization for Stochastic Optimization with Almost Sure State ConstraintsSpeaker #2 : **Patrick Jaap**, An Inexact Proximal Newton Method for Energetic Finite Strain Plasticity ModelsSpeaker #3 : **Julius Lohmann**, Dual Formulations of the Wasserstein Distance in Urban Planning**Semidefinite, Conic, and Polynomial Optimization**

Rauch 271

Session Title : Polynomial Optimization II

Organizer(s) : Luis F. Zuluaga

Chair(s) : Luis F. Zuluaga

Speaker #1 : **Abraar Chaudhry**, Safely Learning Dynamical Systems with Conic OptimizationSpeaker #2 : **João Gouveia**, Slack Matrices and Self Duality

Semidefinite, Conic, and Polynomial Optimization

Rauch 292

Session Title : Quantum IPMs for Conic Optimization

Organizer(s) : Brandon Augustino

Chair(s) : Brandon Augustino

Speaker #1 : **Brandon Augustino**, Solving the Semidefinite Relaxation of QUBOs in Matrix Multiplication Time, and Faster with QuantumSpeaker #2 : **Mohammad Hossein Mohammadi Siahroudi**, Iterative Refinement to Improve Precision and Complexity of Quantum Interior Point MethodsSpeaker #3 : **Tamás Terlaky**, On Quantum Interior Point Methods for LO and SDO**Semidefinite, Conic, and Polynomial Optimization**

Rauch 261

Session Title : Riemannian Manifold Optimization and Conic Programming

Organizer(s) : Akiko Yoshise, Bruno F. Lourenço, Makoto Yamashita

Chair(s) : Masaru Ito

Speaker #1 : **Masaru Ito**, Automorphism Groups of the Derivative Relaxations of Rank One Generated Hyperbolicity Cones**Software**

Chandler-Ullmann 118

Session Title : Software for Optimisation on Manifolds

Organizer(s) : Ronny Bergmann, Jan Lellmann

Chair(s) : Ronny Bergmann

Speaker #1 : **Ronny Bergmann**, Manopt.jl — Numerical Optimisation on Manifolds in JuliaSpeaker #2 : **Willem Diepeveen**, An Inexact Semismooth Newton Method on Riemannian Manifolds as an Extension to Manopt.jl**Stochastic Algorithms***Zoellner 143*

Session Title : On Accelerated Deterministic or Stochastic Optimization Methods I

Organizer(s) : Qihang Lin, Yangyang Xu

Chair(s) : Qihang Lin, Yangyang Xu

Speaker #1 : **Yiming Ying**, Stability and Generalization of Stochastic Gradient MethodsSpeaker #2 : **Saeed Ghadimi**, Stochastic Multi-Level Composition Optimization Algorithms with Level-Independent Convergence RatesSpeaker #3 : **Yao Yao**, Large-Scale Optimization of Partial AUC in a Range of False Positive Rates**Variational Inequalities, Complementarity, Games, and Equilibria**

Chandler-Ullmann 218

Session Title : Multi-Agent Learning in Games

Organizer(s) : Kaiqing Zhang

Chair(s) : Kaiqing Zhang

Speaker #1 : **Tianyi Lin**, New Results on Multi-Agent Learning in GamesSpeaker #2 : **Runyu Zhang**, On the Effect of Log-Barrier Regularization in Decentralized Softmax Gradient Play in Multiagent Systems

Tuesday, 3:25pm - 4:45pm

Derivative Free Optimization

Chandler-Ullman 216

Session Title : Bayesian and Multiobjective Derivative-Free Optimization

Organizer(s) : Kwassi Joseph Dzahini, Sara Shashaani

Chair(s) : Kwassi Joseph Dzahini, Sara Shashaani

Speaker #1 : **Youssef Diouane**, Bayesian Optimization: Performance Assessment and Improvements Based on Trust RegionsSpeaker #2 : **Ashwin Renganathan**, Lookahead Bayesian Optimization and Applications to Multifidelity OptimizationSpeaker #3 : **Susan Hunter**, On Constructing Confidence Sets for Multi-Objective Stochastic Optimization

Nonlinear Optimization

Rauch 201

Session Title : Advances in Convex Optimization

Organizer(s) : Negar Soheili

Chair(s) : Negar Soheili

Speaker #1 : **Paul Grigas**, New Penalized Stochastic Gradient Methods for Linearly Constrained Convex OptimizationSpeaker #2 : **Benjamin Grimmer**, Radial Duality: Scalable, Projection-Free Optimization MethodsSpeaker #3 : **Negar Soheili**, A Restarting Level Set Method for Constrained Convex Optimization Under Error Bound Condition

Nonlinear Optimization

Rauch 251

Session Title : Advances in Nonsmooth Regularized Optimization

Organizer(s) : Robert Baraldi

Chair(s) : Robert Baraldi

Speaker #1 : **Drew Kouri**, An Inexact Trust-Region Algorithm for Nonsmooth Nonconvex OptimizationSpeaker #2 : **Dominique Orban**, A Proximal Quasi-Newton Trust-Region Method for Nonsmooth Regularized OptimizationSpeaker #3 : **Robert Baraldi**, Using Filter Methods to Guide Convergence for ADMM, with Applications to Nonnegative Matrix Factorization Problems

Nonlinear Optimization

Rauch 241

Session Title : Large-Scale, Nonlinear, and Stochastic Optimization II

Organizer(s) : Albert S. Berahas

Chair(s) : Albert S. Berahas

Speaker #1 : **Michał Dereziński**, Hessian Averaging in Stochastic Newton Methods Achieves Superlinear ConvergenceSpeaker #2 : **Jinwen Yang**, Nearly Optimal Linear Convergence of Stochastic Primal-dual Methods for Linear ProgrammingSpeaker #3 : **Xin Li**, Kaczmarz Algorithms for Tensors

Nonsmooth Optimization

Rauch 085

Session Title : Advances in Nonsmooth Optimization: Theory and Applications II

Organizer(s) : Johannes O. Royset

Chair(s) : Johannes O. Royset

Speaker #1 : **Darinka Dentcheva**, Multi-Stage Stochastic Optimization with Time-consistent Risk ConstraintsSpeaker #2 : **Ariel Goodwin**, The Maximum Entropy on the Mean Method for Linear Inverse Problems and BeyondSpeaker #3 : **Meisam Razaviyayn**, Nonconvex-Nonconcave Min-Max Optimization with a Small Maximization Domain

Optimization for Data Science and Machine Learning

Rauch 101

Session Title : Optimization for Data Science and Machine Learning: Contributed I
 Chair(s) : Xiaopeng Li
 Speaker #1 : **Xiaopeng Li**, Certifying the Absence of Spurious Local Minima at Infinity
 Speaker #2 : **Tao Jiang**, Certifying Clusters from Sum-of-Norms Clustering
 Speaker #3 : **Chong You**, Robust Learning via Double Over-Parameterization

Optimization for Data Science and Machine Learning

Rauch 137

Session Title : Optimization for Data Science and Machine Learning: Contributed II
 Chair(s) : Jason Altschuler
 Speaker #1 : **Jason Altschuler**, Private Convex Optimization: More Iterations, More Problems?
 Speaker #2 : **Angeliki Kamoutsi**, Efficient Performance Bounds for Primal-Dual Learning from Demonstrations
 Speaker #3 : **Weijie Su**, When Will You Become the Best Reviewer of Your Own Papers?

Optimization Under Uncertainty

Rauch 171

Session Title : Advances in Robust Optimization Modeling and Applications
 Organizer(s) : Shimrit Shtern
 Chair(s) : Shimrit Shtern
 Speaker #1 : **Krzysztof Postek**, Machine learning for K-Adaptability in two-stage robust optimization
 Speaker #2 : **Shimrit Shtern**, Radiotherapy Planning with Spatially Dependent Uncertainty Sets
 Speaker #3 : **Ahmed Saif**, Robust Design of Service Systems with Immobile Servers under Demand Uncertainty

Optimization Under Uncertainty

Rauch 151

Session Title : Choice Modeling Under Uncertainty
 Organizer(s) : Selin Ahipasaoglu
 Chair(s) : Selin Ahipasaoglu
 Speaker #1 : **Tien Mai**, Robust Product-Line Pricing under Generalized Extreme Value Models
 Speaker #2 : **Selin Ahipasaoglu**, Assortment Optimization under Heteroscedastic Data
 Speaker #3 : **Zi Ling**, Real-Time Omnichannel Fulfillment Optimization

Optimization Under Uncertainty

Rauch 184

Session Title : Nonconvex and Nonsmooth Stochastic Optimization
 Organizer(s) : Junyi Liu
 Chair(s) : Felipe Atenas
 Speaker #1 : **Felipe Atenas**, A Bundle-like Approach to Induce Descent in the Progressive Hedging Algorithm
 Speaker #2 : **Yifan Hu**, Efficient Algorithms for Minimizing Compositions of Convex Functions and Random Functions and Its Applications in Network Revenue Management

Optimization Under Uncertainty

Rauch 141

Session Title : Optimal Transport for Data-Driven Decision Making
 Organizer(s) : Soroosh Shafieezadeh Abadeh
 Chair(s) : Soroosh Shafieezadeh Abadeh
 Speaker #1 : **Nam Ho-Nguyen**, Adversarial Classification via Distributional Robustness with Wasserstein Ambiguity
 Speaker #2 : **Haoming Shen**, Convex Chance-Constrained Programs with Wasserstein Ambiguity
 Speaker #3 : **Liviu Aolaritei**, Optimal Transport Based Distributionally Robust Optimization: Nash Equilibrium, Regularization, and Computation

Semidefinite, Conic, and Polynomial Optimization

Rauch 271

Session Title : Approximation Hierarchies for Polynomial Optimization Problems II

Organizer(s) : Monique Laurent, Lucas Slot

Chair(s) : Lucas Slot

Speaker #1 : **Adam Kurpisz**, SoS Certification for Symmetric Quadratic Functions and its Connection to Constrained Boolean Hypercube OptimizationSpeaker #2 : **Liangzu Peng**, Semidefinite Relaxations in Robust Rotation Search: Tight or Not**Semidefinite, Conic, and Polynomial Optimization**

Rauch 261

Session Title : Recent Advances in SDP II

Organizer(s) : Renata Sotirov

Chair(s) : Hao Hu

Speaker #1 : **Hao Hu**, Robust Interior Point Methods for Key Rate Computation in Quantum Key DistributionSpeaker #2 : **Luis Felipe Vargas**, Exact Sum of Squares Approximations for the Copositive Cone and Associated Bounds for the Stability Number of a GraphSpeaker #3 : **Daniel Brosch**, Moebius-Transformation-based Symmetry Reduction for Optimization in Binary Variables**Software**

Chandler-Ullman 115

Session Title : Learning and Performance Estimation for Large-Scale Optimization

Organizer(s) : Bartolomeo Stellato

Chair(s) : Bartolomeo Stellato

Speaker #1 : **Maxime Gasse**, Ecole: A Gym-like Library for Machine Learning in Combinatorial Optimization SolversSpeaker #2 : **Bartolomeo Stellato**, Recent Advances in OSQP 1.0Speaker #3 : **Céline Mouter**, PEPit: A Computer-Assisted Approach to Worst-Case Analysis of First-Order Optimization Methods and their Continuous Versions**Software**

Chandler-Ullman 118

Session Title : Scalable and Performance-Portable Optimization with Trilinos

Organizer(s) : Denis Ridzal

Chair(s) : Denis Ridzal

Speaker #1 : **Aurya Javeed**, Get ROL-ingSpeaker #2 : **Roger Pawlowski**, Sacado: Performance Portable Automatic Differentiation Tools for Next Generation ArchitecturesSpeaker #3 : **Mauro Perego**, PDE-Constrained Optimization for Ice-Sheet Initialization**Stochastic Algorithms**

Chandler-Ullman 133

Session Title : Design and Analysis of Optimal Reinforcement Learning Algorithms II

Organizer(s) : Ashwin Pananjady

Chair(s) : Ashwin Pananjady

Speaker #1 : **Shicong Cen**, Fast Policy Optimization for Regularized Reinforcement LearningSpeaker #2 : **Yan Li**, Homotopic Policy Mirror Descent: Policy Convergence, Implicit Regularization, and Improved Sample Complexity

Stochastic Algorithms*Zoellner 143*

Session Title : On Accelerated Deterministic or Stochastic Optimization Methods II

Organizer(s) : Qihang Lin, Yangyang Xu

Chair(s) : Qihang Lin, Yangyang Xu

Speaker #1 : **Uday Shanbhag**, Probability Maximization via Minkowski Functionals: Convex Representations and Tractable ResolutionSpeaker #2 : **Kevin Tian**, Acceleration via Primal-Dual Extragradient MethodsSpeaker #3 : **Erfan Yazdandoost Hamedani**, Randomized Block Coordinate Primal-Dual Methods for Saddle Point Problems**Variational Inequalities, Complementarity, Games, and Equilibria**

Chandler-Ullman 116

Session Title : Recent Advances in Hierarchical and PDE Constrained Optimization

Organizer(s) : Harbir Antil, Evelyn Herberg, Uday V. Shanbhag

Chair(s) : Harbir Antil, Evelyn Herberg, Uday V. Shanbhag

Speaker #1 : **Luke Marrinan**, Randomized Smoothing Method for Constrained Minimization of Expectation-valued Lipschitz Continuous FunctionsSpeaker #2 : **Evelyn Herberg**, Sketching for Nonsmooth PDE Constrained Optimization ProblemsSpeaker #3 : **Harbir Antil**, A Proximal-Gradient-type Method for a Class of Nonconvex Nonsmooth Optimization Problems with Nonlocal Regularization**Variational Inequalities, Complementarity, Games, and Equilibria**

Chandler-Ullman 218

Session Title : Recent Approaches in Variational Inequalities and Complementarity Problems

Organizer(s) : Miju Ahn

Chair(s) : Miju Ahn

Speaker #1 : **Yuyuan Ouyang**, Sliding Methods for Variational InequalitiesSpeaker #2 : **Miju Ahn**, Tractable Continuous Approximations for Cardinality Minimization ProblemsSpeaker #3 : **Andrew Lowy**, Private Federated Learning with Accelerated Algorithms and Near-Optimal Rates**Wednesday, 10:25am - 11:45am****Convexification and Global Optimization**

Chandler-Ullmann 115

Session Title : Convex Relaxations for MINLPs

Organizer(s) : Aida Khajavirad

Chair(s) : Aida Khajavirad

Speaker #1 : **Aida Khajavirad**, Efficient Joint Object Matching via Linear ProgrammingSpeaker #2 : **Ashish Chandra**, Convex Approximations of Risk Measures with Applications to Chance-Constrained ProgrammingSpeaker #3 : **William Strahl**, On Constructing Quadratic Underestimators for Non-Convex D.C. Functions**Derivative Free Optimization**

Chandler-Ullmann 216

Session Title : Structure-Exploiting Derivative-Free Optimization

Organizer(s) : Shima Dezfulian, Sara Shashaani

Chair(s) : Shima Dezfulian, Sara Shashaani

Speaker #1 : **Matt Menickelly**, Stochastic Average Model MethodsSpeaker #2 : **Katya Scheinberg**, Step Search: Adaptive Algorithms Based on Stochastic OraclesSpeaker #3 : **Matthew Hough**, Model-Based Derivative-Free Methods for Convex-Constrained Optimization

Nonlinear Optimization

Rauch 241

Session Title : Advances in Nonlinear Optimization

Organizer(s) : Baoyu Zhou

Chair(s) : Baoyu Zhou

Speaker #1 : **Baoyu Zhou**, SQP Methods for Inequality Constrained Stochastic OptimizationSpeaker #2 : **Raghu Bollapragada**, Adaptive Sampling Stochastic Sequential Quadratic ProgrammingSpeaker #3 : **Jiahao Shi**, Accelerating Sequential Quadratic Programming for Equality Constrained Stochastic Optimization using Predictive Variance Reduction**Nonlinear Optimization**

Rauch 251

Session Title : Stochastic Optimization Methods for Machine Learning III

Organizer(s) : El Houcine Bergou, Youssef Diouane

Chair(s) : El Houcine Bergou, Youssef Diouane

Speaker #1 : **Luis Nunes Vicente**, Stochastic Optimization of Multiple Objectives: A Critical Tool for Assessing Fairness in Machine LearningSpeaker #2 : **Tommaso Giovannelli**, Bilevel Stochastic Methods for Optimization and Machine Learning: Bilevel Stochastic Descent and DARTSSpeaker #3 : **El Houcine Bergou**, A Stochastic Levenberg-Marquardt Method using Random Models with Complexity Results**Nonsmooth Optimization**

Rauch 091

Session Title : Nonsmooth Optimization in Machine Learning

Organizer(s) : Ying Cui, Ju Sun

Chair(s) : Ying Cui, Ju Sun

Speaker #1 : **Claudia Sagastizabal**, Fast Proximal Model-based Descent MethodsSpeaker #2 : **Ju Sun**, Deep Learning with Constraints And NonsmoothnessSpeaker #3 : **Fabian Schaipp**, A Semismooth Newton Stochastic Proximal Point Algorithm with Variance Reduction**Nonsmooth Optimization**

Rauch 085

Session Title : Projective Splitting Algorithms

Organizer(s) : Jonathan Eckstein

Chair(s) : Jonathan Eckstein

Speaker #1 : **Jonathan Eckstein**, Projective Hedging for Stochastic ProgrammingSpeaker #2 : **Patrick Johnstone**, Stochastic Projective Splitting**Optimization for Data Science and Machine Learning**

Rauch 137

Session Title : Adaptive Methods for Deep Learning

Organizer(s) : Antonio Orvieto

Chair(s) : Antonio Orvieto

Speaker #1 : **Antonio Orvieto**, Insight on the Dynamics of Adaptive OptimizersSpeaker #2 : **Jinghui Chen**, Optimization for Deep Learning with Adaptive Gradient Methods: New Perspectives

Optimization for Data Science and Machine Learning

Rauch 101

Session Title : Decentralized Optimization for ML

Organizer(s) : Hadrien Hendrikx

Chair(s) : Gesualdo Scutari

Speaker #1 : **Gesualdo Scutari**, High-Dimensional Inference over Networks: Linear Convergence and Statistical GuaranteesSpeaker #2 : **Alexander Olshevsky**, One-Shot Averaging in Distributed Optimization and Reinforcement LearningSpeaker #3 : **Hadrien Hendrikx**, Beyond Spectral Gap: The Role of the Topology in Decentralized Learning**Optimization Under Uncertainty**

Rauch 184

Session Title : Data-Driven Decision-Making Under Uncertainty: Algorithms and Statistical Guarantees

Organizer(s) : Tobias Sutter

Chair(s) : Tobias Sutter

Speaker #1 : **Mengmeng Li**, Offline Reinforcement Learning through Information ProjectionSpeaker #2 : **Irina Wang**, Mean Robust OptimizationSpeaker #3 : **Tobias Sutter**, Robust Generalization despite Distribution Shift via Minimum Discriminating Information**Optimization Under Uncertainty**

Rauch 171

Session Title : Infinite-Dimensional Optimization

Organizer(s) : Yiping Lu

Chair(s) : Zhuoran Yang

Speaker #1 : **Zhuoran Yang**, Wasserstein Flow Meets Replicator Dynamics: A Mean-Field Analysis of Representation Learning in Actor-CriticSpeaker #2 : **Sven Wang**, Minimax Density Estimation via Measure Transport**Optimization Under Uncertainty**

Rauch 141

Session Title : Optimization Under Uncertain Extreme Events: Modeling and Applications

Organizer(s) : Karthyek Murthy

Chair(s) : Karthyek Murthy

Speaker #1 : **Zhenyuan Liu**, Orthounimodal Distributionally Robust Optimization: Representation, Computation and Multivariate Extreme Event ApplicationsSpeaker #2 : **Chang-Han Rhee**, Eliminating Sharp Minima from SGD with Truncated Heavy-Tailed NoiseSpeaker #3 : **Vishwas Rao**, Optimization under Rare Chance Constraints**Optimization Under Uncertainty**

Rauch 151

Session Title : Theory and Applications in Stochastic and Robust Optimization

Organizer(s) : Weijun Xie, Nan Jiang

Chair(s) : Nan Jiang

Speaker #1 : **Akshith Goyal**, Bilevel Optimization Model for Distribution Network with Uncertain Renewables and Flexible Loads under Wasserstein MetricsSpeaker #2 : **Nathan Justin**, Optimal Robust Classification TreesSpeaker #3 : **Vassilis Digalakis, Jr.**, Towards Industrial Decarbonization via Robust Solar Capacity Expansion

PDE Constrained Optimization

Chandler-Ullman 215

Session Title : PDE Constrained Optimization with Nonsmooth Structures II

Organizer(s) : Michael Hintermüller

Chair(s) : Michael Hintermüller

Speaker #1 : **Michael Hintermüller**, Optimization Subject to Learning Informed PDEsSpeaker #2 : **Bastian Pötzl**, Inexact Proximal Newton Methods in Hilbert SpacesSpeaker #3 : **Walter Gomez**, Assessment of the Influence of The Bathymetry on Propagation of Substances in Shallow Water Regimes through a PDE-constraint Optimization Approach**Semidefinite, Conic, and Polynomial Optimization**

Rauch 271

Session Title : Computational Advances in Semidefinite Programming: Algorithms and Limitations

Organizer(s) : Georgina Hall, Alp Yurtsever

Chair(s) : Georgina Hall, Alp Yurtsever

Speaker #1 : **Alp Yurtsever**, Scalable Semidefinite ProgrammingSpeaker #2 : **Jeffrey Zhang**, Cubic Polynomials and Semidefinite ProgrammingSpeaker #3 : **Ali Mohammad-Nezhad**, On the Complexity of Analyticity in Semidefinite Optimization**Semidefinite, Conic, and Polynomial Optimization**

Rauch 261

Session Title : SDP Performance Estimation of Iterative Methods

Organizer(s) : Etienne de Klerk

Chair(s) : Etienne de Klerk

Speaker #1 : **Yoel Drori**, On the Oracle Complexity of Smooth Strongly Convex MinimizationSpeaker #2 : **Moslem Zamani**, Linear Convergence of the Gradient Method Under the Polyak-Lojasiewicz Inequality for Hypoconvex FunctionsSpeaker #3 : **Hadi Abbaszadehpivasti**, On the Rate of Convergence of the Difference-of-convex Algorithm (DCA)**Software**

Chandler-Ullman 118

Session Title : Recent Advances in Commercial Solvers

Organizer(s) : Robert Luce

Chair(s) : Robert Luce

Speaker #1 : **Imre Polik**, New Features in the Continuous Optimization Solvers of Xpress Solver SuiteSpeaker #2 : **Robert Luce**, Global Nonconvex Quadratic Optimization with GurobiSpeaker #3 : **David M. Gay**, Progress Report on Functions in AMPL**Stochastic Algorithms**

Chandler-Ullman 133

Session Title : Understanding Randomization: Average-Case Efficiency of Iterative Algorithms

Organizer(s) : Ashwin Pananjady

Chair(s) : Ashwin Pananjady

Speaker #1 : **Damien Scieur**, Only Tails Matter: Average-Case Universality and Robustness in the Convex RegimeSpeaker #2 : **Kabir Chandrasekher**, Sharp Global Convergence Guarantees for Iterative Nonconvex Optimization with Random Data

Variational Inequalities, Complementarity, Games, and Equilibria

Chandler-Ullman 218

Session Title : Stochastic Variational Inequalities and Related Topics

Organizer(s) : Jinglai Shen

Chair(s) : Jinglai Shen

Speaker #1 : **Shisheng Cui**, On the Computation of Equilibria in Monotone and Potential Stochastic Hierarchical GamesSpeaker #2 : **Jinglai Shen**, Dynamic Stochastic Variational Inequalities and Convergence of Discrete Approximation**Wednesday, 2:20pm - 3:40pm****Applications of Continuous Optimization**

Chandler-Ullmann 116

Session Title : Optimization Problems with Optimal Transport

Organizer(s) : Dirk Lorenz

Chair(s) : Dirk Lorenz

Speaker #1 : **Hinrich Mahler**, Regularization of the Beckmann Problem: Numerical Methods & Bilevel ApplicationsSpeaker #2 : **Paul Manns**, Γ -Convergence in Regularized Bilevel Optimal TransportSpeaker #3 : **Emanuele Naldi**, Optial Property in Wasserstein Spaces and Applications**Derivative Free Optimization**

Chandler-Ullmann 216

Session Title : Methods for Derivative-Free Optimization

Organizer(s) : Krishnakumar Balasubramanian, Stefan Wild

Chair(s) : Krishnakumar Balasubramanian, Stefan Wild

Speaker #1 : **Stephen Becker**, Stochastic Subspace DescentSpeaker #2 : **Oumaima Sohab**, Full-low Evaluation Methods for Derivative-free OptimizationSpeaker #3 : **Wouter Jongeneel**, Imaginary Zeroth-Order Optimization**Nonlinear Optimization**

Rauch 201

Session Title : New Optimization Methods and Applications

Organizer(s) : Hongchao Zhang, Yu-Hong Dai

Chair(s) : Hongchao Zhang

Speaker #1 : **Rencang Li**, Nonlinear Eigenvalue Approach for Optimization Problems on Stiefel Manifold from Machine LearningSpeaker #2 : **Zi Yang**, The Multi-Objective Polynomial OptimizationSpeaker #3 : **Suhan Zhong**, Loss Functions for Finite Sets**Nonlinear Optimization**

Rauch 241

Session Title : Nonlinear Optimization: Contributed I

Chair(s) : Qi Wang

Speaker #1 : **Qi Wang**, Worst-Case Complexity of TRACE with Inexact Subproblem Solutions for Nonconvex Smooth OptimizationSpeaker #2 : **Vincent Roulet**, Complexity Bounds of Iterative Linear Quadratic Algorithms for Discrete Time Nonlinear ControlSpeaker #3 : **You Hui Goh**, Minimizing the Number of Pieces for Piecewise Linear Approximation in Separable Concave Minimization

Nonlinear Optimization

Rauch 251

Session Title : Stochastic Optimization Methods for Machine Learning IV

Organizer(s) : Serge Gratton, Youssef Diouane, El Houcine Bergou

Chair(s) : Serge Gratton, Youssef Diouane, El Houcine Bergou

Speaker #1 : **Philippe Toint**, Objective-Function-Free Optimization, Part I: Complexity of Adagrad-like MethodsSpeaker #2 : **Aritra Dutta**, Communication Compression in Distributed Deep Learning—A Venture from the Implementation PerspectiveSpeaker #3 : **Courtney Paquette**, Optimization Algorithms in the Large: Exact Dynamics, Average-Case Analysis, and Stepsize Criticality**Nonsmooth Optimization**

Rauch 091

Session Title : Nonconvex Nonsmooth Optimization I

Organizer(s) : Mahdi Soltanolkotabi, Meisam Razaviyayn

Chair(s) : Mahdi Soltanolkotabi, Meisam Razaviyayn

Speaker #1 : **Mateo Diaz**, Clustering a Mixture of Gaussians with Unknown CovarianceSpeaker #2 : **Mahdi Soltanolkotabi**, Overparameterized Learning Beyond the Lazy Training Regime**Nonsmooth Optimization**

Rauch 085

Session Title : Recent Advances in Nonsmooth Optimization

Organizer(s) : David Martinez-Rubio

Chair(s) : Cristobal Guzman

Speaker #1 : **Cristobal Guzman**, Differentially Private Stochastic Convex Optimization in Non-Euclidean SettingsSpeaker #2 : **Ching-pei Lee**, An Inexact Proximal Semismooth Newton Method with Superlinear Convergence to Degenerate Solutions Under the Holderian Error BoundSpeaker #3 : **Michael Sedlmayer**, An Accelerated Minimax Algorithm for Convex-concave Saddle Point Problems with Nonsmooth Coupling Function**Optimization for Data Science and Machine Learning**

Rauch 101

Session Title : Structural Results and Algorithms for Neural Networks and Imaging

Organizer(s) : Sammy Khalife

Chair(s) : Sammy Khalife

Speaker #1 : **Sammy Khalife**, Structural Results and Algorithms for Linear Threshold Neural NetworksSpeaker #2 : **Phillip Kerger**, Image Denoising with Quantum Annealing via Boltzmann MachinesSpeaker #3 : **Christian Kümmerle**, Optimal Iteratively Reweighted Least Squares Algorithms for Low-Rank Optimization**Optimization for Data Science and Machine Learning**

Rauch 137

Session Title : Tensor Modeling and Optimization

Organizer(s) : Jamie Haddock, Liza Rebrova

Chair(s) : Jamie Haddock

Speaker #1 : **Jing Qin**, Regularized Kaczmarz Algorithms for Tensor RecoverySpeaker #2 : **Anna Ma**, Recovery in the Tensor RegimeSpeaker #3 : **Longxiu Huang**, Robust Tensor Decomposition

Optimization Under Uncertainty

Rauch 151

Session Title : Distributional Robust Optimization

Organizer(s) : Bart Van Parys

Chair(s) : Bart Van Parys

Speaker #1 : **Bart Van Parys**, Optimal Data-Driven Optimization with Noisy DataSpeaker #2 : **Mohammed Amine Bennouna**, Holistic Robust Data-Driven DecisionsSpeaker #3 : **Karthyek Murthy**, Debiasing “Plugged-in” Risk Estimates for Minimization of Extreme Risks with Limited Data**Optimization Under Uncertainty**

Rauch 141

Session Title : Topics in Stochastic Processes for Optimization

Organizer(s) : Anastasia Borovykh

Chair(s) : Anastasia Borovykh

Speaker #1 : **Jing Dong**, Stochastic Gradient Descent with Dependent Data for Offline Reinforcement LearningSpeaker #2 : **Susana Gomes**, Mean Field Limits and Phase Transitions for Multi-Well and Multi-Scale DiffusionsSpeaker #3 : **Daniel Lengyel**, How Non-Orthogonal Finite-Difference Schemes are Optimal for Derivative-free Optimization**Optimization Under Uncertainty**

Rauch 171

Session Title : Uncertainty Quantification, Forecasting, and Model Aggregation

Organizer(s) : Houman Owhadi

Chair(s) : Pau Batlle-Franch

Speaker #1 : **Pau Batlle Franch**, Uncertainty Quantification of the 4th Kind: Optimal Posterior Accuracy-Uncertainty Tradeoff with the Minimum Enclosing BallSpeaker #2 : **Matthieu Darcy**, One Shot Learning of Stochastic Differential Equations with Computational Graph CompletionSpeaker #3 : **Hamed Hamze Bajgiran**, Aggregation of Pareto Optimal Models**PDE Constrained Optimization**

Chandler-Ullmann 215

Session Title : Novel Approaches to PDE Constrained Shape Optimization

Organizer(s) : Volker Schulz

Chair(s) : Matthias Schuster

Speaker #1 : **Matthias Schuster**, Shape Optimization for Interface Identification in Nonlocal ModelSpeaker #2 : **Stephan Schmidt**, Shape Newton Schemes Based on Material DerivativeSpeaker #3 : **Eddie Wadbro**, Material Distribution Topology Optimization for an Acoustic Problem Including Visco-thermal Boundary Layer Losses**Semidefinite, Conic, and Polynomial Optimization**

Rauch 271

Session Title : Polynomial Optimization

Organizer(s) : Olga Kuryatnikova

Chair(s) : Lorenz Roebers

Speaker #1 : **Lorenz Roebers**, Sparse Non-SOS Putinar-type PositivstellensätzeSpeaker #2 : **Ken Kobayashi**, Cardinality-constrained Distributionally Robust Portfolio Optimization

Semidefinite, Conic, and Polynomial Optimization

Rauch 261

Session Title : Recent Developments in Solving Structured Semidefinite Programs

Organizer(s) : Fatma Kiliç-Karzan, Alex L. Wang

Chair(s) : Alex L. Wang

Speaker #1 : **Alex L. Wang**, UntitledSpeaker #2 : **Hank Yang**, Solving Rank-One Semidefinite Relaxation of Polynomial Optimization: From Certifiable Robot Perception to BeyondSpeaker #3 : **Swati Padmanabhan**, A Faster Interior Point Method for Semidefinite Programming**Software**

Chandler-Ullmann 118

Session Title : New Directions in Modeling Software

Organizer(s) : Steven Dirkse

Chair(s) : Steven Dirkse

Speaker #1 : **Robert Fourer**, Advances in Model-Based Optimization with AMPLSpeaker #2 : **Utkarsh Detha**, MOSEK v10: Affine Conic Constraints, New Conic Domains and Disjunctive ConstraintsSpeaker #3 : **Steven Dirkse**, Model Deployment with GAMS Engine**Stochastic Algorithms**

Chandler-Ullmann 133

Session Title : Advances in Constrained Optimization and Stochastic Programming

Organizer(s) : Zhe Zhang

Chair(s) : Zhe Zhang

Speaker #1 : **Zhe Zhang**, An Optimal Algorithm for Convex Nested Stochastic Composite OptimizationSpeaker #2 : **Jiaming Liang**, A Stochastic Proximal Bundle MethodSpeaker #3 : **Digvijay Boob**, A (Stochastic) Level Constrained Gradient Descent Method for Nonconvex Function Constrained Optimization**Variational Inequalities, Complementarity, Games, and Equilibria**

Chandler-Ullmann 218

Session Title : Reinforcement Learning for Multi-Agent Systems

Organizer(s) : Alfredo Garcia

Chair(s) : Alfredo Garcia

Speaker #1 : **Sarper Aydin**, A Decentralized Policy Gradient Algorithm for Markov Potential Games with Networked AgentsSpeaker #2 : **Siliang Zeng**, Learning to Coordinate in Multi-Agent Systems: A Coordinated Actor-Critic Algorithm and Finite-Time Guarantees**Thursday, 10:25am - 11:45am****Applications of Continuous Optimization**

Chandler-Ullmann 116

Session Title : Algorithms and Computations in Federated Learning

Organizer(s) : Kibaek Kim

Chair(s) : Kibaek Kim

Speaker #1 : **Minseok Ryu**, Differentially Private Federated Learning via Inexact ADMM with Multiple Local UpdatesSpeaker #2 : **Hideaki Nakao**, Stability Constrained Optimization Using Neural Lyapunov Control

Convexification and Global Optimization

Chandler-Ullmann 115

Session Title : Global Optimization of MINLPs and its Applications
 Organizer(s) : Harsha Nagarajan
 Chair(s) : Harsha Nagarajan
 Speaker #1 : **Hamed Rahimian**, Sequential Convexification of a Bilinear Set
 Speaker #2 : **Arvind Raghunathan**, Optimal Linearizations for MultiLinear Programs (MLP)
 Speaker #3 : **David Bernal**, Mixed-Binary Quadratic Programming via Convex Copositive Optimization and Ising Solvers

Derivative Free Optimization

Chandler-Ullmann 216

Session Title : Constrained Derivative-Free Optimization
 Organizer(s) : Warren Hare, Stefan Wild
 Chair(s) : Jeffrey Larson
 Speaker #1 : **Juliane Müller**, Gaussian Processes for Accelerating Noisy VQE Optimization
 Speaker #2 : **Xin Chen**, Leverage High-Pass and Low-Pass Filters to Improve Single-Point Zeroth-Order Optimization
 Speaker #3 : **Kwasssi Joseph Dzahini**, Constrained Stochastic Blackbox Optimization using a Progressive Barrier and Probabilistic Estimates

Nonlinear Optimization

Rauch 241

Session Title : Large-Scale, Nonlinear, and Stochastic Optimization III
 Organizer(s) : Albert Berahas, Raghu Bollapragada
 Chair(s) : Albert Berahas, Raghu Bollapragada
 Speaker #1 : **Andreas Waechter**, A Smoothing-Based Decomposition Algorithm for Nonlinear Two-Stage Problems
 Speaker #2 : **Yuege (Gail) Xie**, Linear Convergence of Adaptive Stochastic Gradient Descent Methods

Nonlinear Optimization

Rauch 251

Session Title : Set-Regularity and Error Bounds: Theory and Algorithms
 Organizer(s) : Javier Pena, Angelia Nedich
 Chair(s) : Javier Pena, Angelia Nedich
 Speaker #1 : **Luis Zuluaga**, Linear Convergence of the Douglas-Rachford Algorithm via a Generic Error Bound Condition
 Speaker #2 : **David Gutman**, The Inexact Cyclic Block Proximal Gradient Method and Inexact Proximal Maps
 Speaker #3 : **Angelia Nedich**, Linear Regularity of Convex Sets

Nonsmooth Optimization

Rauch 085

Session Title : Nonconvex Nonsmooth Optimization II
 Organizer(s) : Mahdi Soltanolkotabi, Meisam Razaviyayn
 Chair(s) : Mahdi Soltanolkotabi, Meisam Razaviyayn
 Speaker #1 : **Anas Barakat**, Stochastic Optimization with Momentum: Convergence, Fluctuations, and Traps Avoidance
 Speaker #2 : **Renato Monteiro**, Global Complexity Bound of a Proximal ADMM for Linearly-Constrained Non-separable Nonconvex Composite Programming
 Speaker #3 : **Jiawei Zhang**, Faster Algorithms and Improved Generalization Bounds for Nonconvex Minmax Optimization Problems

Nonsmooth Optimization

Rauch 091

Session Title : Nonsmooth Optimization: Contributed II

Chair(s) : Tuyen Tran

Speaker #1 : **Tuyen Tran**, Minimizing Differences of Convex Functions with Applications to Multifacility Location and ClusteringSpeaker #2 : **Mikhail Solodov**, Regularized Smoothing for Solution Mappings of Convex Problems, with Applications to Two-Stage Stochastic Programming and some Hierarchical Problems**Optimization for Data Science and Machine Learning**

Rauch 137

Session Title : Optimization for Data Science and Machine Learning: Contributed III

Chair(s) : Si Yi Meng

Speaker #1 : **Si Yi Meng**, Example Selection Methods for Stochastic Gradient DescentSpeaker #2 : **Lena Sembach**, Riemannian Optimization for Variance Estimation in Linear Mixed Models**Optimization for Data Science and Machine Learning**

Rauch 101

Session Title : Randomized Iterative Methods Beyond Least-Squares

Organizer(s) : Jamie Haddock, Liza Rebrova

Chair(s) : Jamie Haddock

Speaker #1 : **Lionel Ngupeyou Tondji**, Faster Randomized Block Sparse Kaczmarz by AveragingSpeaker #2 : **Maximilian Winkler**, Extended Randomized Kaczmarz Method for Sparse Least Squares and Impulsive Noise ProblemsSpeaker #3 : **William Swartworth**, Iteratively Solving Corrupted Linear Systems**Optimization Under Uncertainty**

Rauch 151

Session Title : Data-Driven Optimization II

Organizer(s) : Tito Homem de Mello

Chair(s) : Tito Homem de Mello

Speaker #1 : **Fengpei Li**, General Feasibility Bounds for Sample Average Approximation via Vapnik-Chervonenkis DimensionSpeaker #2 : **Tito Homem de Mello**, Application-Driven Learning via Joint Estimation and Optimization**Optimization Under Uncertainty**

Rauch 184

Session Title : Recent Advances in Distributionally Robust Optimization

Organizer(s) : Jiajin Li

Chair(s) : Jiajin Li

Speaker #1 : **Shengyi He**, Higher-Order Expansion and Bartlett Correctability of Distributionally Robust OptimizationSpeaker #2 : **Jie Wang**, Sinkhorn Distributionally Robust Optimization**Optimization Under Uncertainty**

Rauch 171

Session Title : Recent Advances in Optimization Under Uncertainty

Organizer(s) : Soroosh Shafieezadeh Abadeh

Chair(s) : Soroosh Shafieezadeh Abadeh

Speaker #1 : **Yiling Zhang**, Distributionally Robust Stochastic Bilevel Linear Programs with Facility Location ApplicationsSpeaker #2 : **Anand Deo**, Risk Averse Decision Making Using Tail Self-SimilaritySpeaker #3 : **Man Yiu Tsang**, An Inexact Column-and-Constraint Generation Method to Solve Two-Stage Robust Optimization Problems

Optimization Under Uncertainty

Rauch 141

Session Title : Robust and Stochastic Combinatorial Optimization

Organizer(s) : Omar El Housni

Chair(s) : Omar El Housni

Speaker #1 : **Rohan Ghuge**, Batched Dueling BanditsSpeaker #2 : **Omar El Housni**, On the Power of Static Assignment Policies for Robust Facility Location Problems**Semidefinite, Conic, and Polynomial Optimization**

Rauch 261

Session Title : Quantum Computing Optimization

Organizer(s) : Ramin Fakhimi

Chair(s) : Ramin Fakhimi

Speaker #1 : **Rodolfo Alexander Quintero Ospina**, Characterizing and Benchmarking QUBO Reformulations of the Knapsack ProblemSpeaker #2 : **Ramin Fakhimi**, Formulations of the Max k-Cut Problem on Classical and Quantum Computers**Semidefinite, Conic, and Polynomial Optimization**

Rauch 271

Session Title : Semidefinite Programming and Polynomials I

Organizer(s) : Greg Blekherman

Chair(s) : Greg Blekherman

Speaker #1 : **Greg Blekherman**, Complexity of Symmetric Nonnegative PolynomialsSpeaker #2 : **Julia Lindberg**, The Maximum Likelihood Degree of Sparse Polynomial SystemsSpeaker #3 : **Bachir El Khadir**, On Sum of Squares Representation of Convex Forms and Generalized Cauchy-Schwarz Inequalities**Software**

Chandler-Ullmann 118

Session Title : Computational Advances in Semidefinite Programming: Software and Applications

Organizer(s) : Alp Yurtsever, Georgina Hall

Chair(s) : Alp Yurtsever, Georgina Hall

Speaker #1 : **Cameron Wolfe**, How Much Pre-Training is Enough to Discover a Good Subnetwork?Speaker #2 : **Baptiste Goujaud**, PEPit: A Python Framework for Performance Estimation**Stochastic Algorithms**

Chandler-Ullmann 133

Session Title : Frontiers of Stochastic Optimization

Organizer(s) : Tianyi Lin

Chair(s) : Tianyi Lin

Speaker #1 : **Kaiqing Zhang**, Optimistic Natural Policy Gradient for Multi-Agent Learning with Parameter Convergence and Function ApproximationSpeaker #2 : **Lin Xiao**, Stochastic Optimization with Decision-Dependent DistributionsSpeaker #3 : **Getachew Befekadu**, Rare-Event Simulations for Diffusion Processes Pertaining to a Chain of Distributed Systems with Small Random Perturbations**Stochastic Algorithms***Zoellner 143*

Session Title : New Theory and Applications in Dynamic Optimization

Organizer(s) : Peter Zhang

Chair(s) : Peter Zhang

Speaker #1 : **Mohamed Yahya Soali**, Minkowski Centers via Robust Optimization: Computation and ApplicationsSpeaker #2 : **Ningji Wei**, Adjustability in Robust Linear OptimizationSpeaker #3 : **Kimberly Villalobos Carballo**, A Robust Optimization Approach to Deep Learning

Variational Inequalities, Complementarity, Games, and Equilibria

Chandler-Ullmann 218

Session Title : First-Order Methods for Minimax Optimization and Variational Inequality Problems

Organizer(s) : Erfan Yazdandoost Hamedani

Chair(s) : Erfan Yazdandoost Hamedani

Speaker #1 : **Philip Thompson**, Robust Linear Regression in High-Dimensions and Stochastic Gradient DescentSpeaker #2 : **Afrooz Jalilzadeh**, Complexity Guarantees for Nonlinearly Constrained Nonsmooth Stochastic Merely-Convex-Merely-Concave Minimax Optimization**Thursday, 1:10pm - 2:30pm****Nonlinear Optimization**

Rauch 241

Session Title : Large-Scale, Nonlinear, and Stochastic Optimization IV

Organizer(s) : Albert S. Berahas, Baoyu Zhou

Chair(s) : Albert S. Berahas, Baoyu Zhou

Speaker #1 : **Tom O'Leary-Roseberry**, Addressing Stability in Second Order Stochastic MethodsSpeaker #2 : **Junhyung (Lyle) Kim**, Convergence and Stability of the Stochastic Proximal Point Algorithm with MomentumSpeaker #3 : **Peng Wang**, Linear Convergence of a Proximal Alternating Minimization Method with Extrapolation for L1-Norm Principal Component Analysis**Nonlinear Optimization**

Rauch 201

Session Title : Methods for Meta-Parameter Estimation in Complex Nonlinear Models

Organizer(s) : Aleksandr Aravkin

Chair(s) : Kevin Doherty

Speaker #1 : **Kevin Doherty**, Derivative Free Optimization with Interpolation and Trust Regions: Efficient Use of Zeroth Order InformationSpeaker #2 : **Aleksei Sholokhov**, A Relaxation Approach to Feature Selection for Linear Mixed Effects ModelsSpeaker #3 : **Kelsey Maass**, A Hyperparameter-Tuning Approach to Automated Radiotherapy Inverse Planning**Nonlinear Optimization**

Rauch 251

Session Title : Nonlinear Optimization: Contributed II

Chair(s) : Casey Garner

Speaker #1 : **Casey Garner**, Linearly Convergent FISTA Variant for Composite Optimization with DualitySpeaker #2 : **François Pacaud**, Reduced-Space Interior-Point Method: A GPU-accelerated ComebackSpeaker #3 : **Naoki Marumo**, Accelerated-Gradient-based Generalized Levenberg-Marquardt Method with Oracle Complexity Bound and Local Quadratic Convergence**Nonsmooth Optimization**

Rauch 091

Session Title : Recent Advances on Distributed Optimization

Organizer(s) : Jingwei Liang, Mingrui Liu

Chair(s) : Ying Sun

Speaker #1 : **Ying Sun**, High-Dimensional Inference over Networks under SparsitySpeaker #2 : **Zhize Li**, Distributed Optimization with Communication CompressionSpeaker #3 : **Ya-Nan Zhu**, A Federated Primal Dual Fixed Point Method for Linearly Constrained Separable Optimization

Optimization for Data Science and Machine Learning

Rauch 101

Session Title : Optimization for Data Science and Machine Learning: Contributed IV

Chair(s) : Elnur Gasanov

Speaker #1 : **Elnur Gasanov**, 3PC: Three Point Compressors for Communication-Efficient Distributed Training and a Better Theory for Lazy AggregationSpeaker #2 : **M. Taha Toghani**, PARS-Push: Personalized, Asynchronous and Robust Decentralized OptimizationSpeaker #3 : **Maximilian Wüschmidt**, Convergence Rates for a Deep Learning Algorithm for Semilinear PDEs**Optimization for Data Science and Machine Learning**

Rauch 137

Session Title : Optimization for Data Science and Machine Learning: Contributed V

Chair(s) : Ilyas Fatkhullin

Speaker #1 : **Ilyas Fatkhullin**, EF21 with Bells & Whistles: Practical Algorithmic Extensions of Modern Error FeedbackSpeaker #2 : **Igor Sokolov**, EF21: A New, Simpler, Theoretically Better, and Practically Faster Error Feedback**Optimization Under Uncertainty**

Rauch 141

Session Title : Advances in Large-Scale Sequential Decision Making

Organizer(s) : Selvaprabu Nadarajah

Chair(s) : Selvaprabu Nadarajah

Speaker #1 : **Parshan Pakiman**, Self-guided Approximate Linear ProgramsSpeaker #2 : **Sebastian Perez-Salazar**, Robust Online Selection with Uncertain Offer AcceptanceSpeaker #3 : **Cagin Uru**, Sequential Search with Acquisition Uncertainty**Optimization Under Uncertainty**

Rauch 184

Session Title : Multistage Stochastic/Robust Optimization

Organizer(s) : Siqian Shen, Xian Yu

Chair(s) : Xian Yu

Speaker #1 : **Rohit Kannan**, Data-Driven Multi-Stage Stochastic Optimization on Time SeriesSpeaker #2 : **Kibaek Kim**, A Reinforcement Learning Approach to Parameter Selection for Distributed Optimization in Power SystemsSpeaker #3 : **Xian Yu**, On the Value of Multistage Risk-Averse Stochastic Facility Location with or without Prioritization**Optimization Under Uncertainty**

Rauch 171

Session Title : Online Learning and Robustness in Online Control

Organizer(s) : Varun Gupta

Chair(s) : Varun Gupta

Speaker #1 : **Gautam Goel**, Online Control with Optimal Data-Dependent RegretSpeaker #2 : **Shuo Han**, Accelerating Model-Free Policy Optimization Using Model-Based GradientSpeaker #3 : **Hao Wang**, A Non-Asymptotic Analysis for Re-Solving Heuristic in Online Matching

Optimization Under Uncertainty

Rauch 151

Session Title : Optimization Under Uncertainty for Machine Learning

Organizer(s) : Bahar Taskesen

Chair(s) : Bahar Taskesen

Speaker #1 : **Bahar Taskesen**, Sequential Domain Adaptation by Synthesizing Distributionally Robust ExpertsSpeaker #2 : **Yves Rychener**, Distributionally Robust Optimization with Multiple Data SourcesSpeaker #3 : **Karthik Natarajan**, Generalizing Correlation Gap to Pairwise Independence**PDE Constrained Optimization**

Chandler-Ullman 215

Session Title : Optimization for Flow-Transport Systems

Organizer(s) : Carlos N. Rautenberg, Weiwei Hu

Chair(s) : Carlos N. Rautenberg

Speaker #1 : **Lin Mu**, Pressure Robust Scheme for Incompressible FlowSpeaker #2 : **Lorena Bociu**, Analysis and Control in Fluid Flows through Deformable Porous Media**Semidefinite, Conic, and Polynomial Optimization**

Rauch 261

Session Title : Polynomial Optimization: Theory and Application to Nonlinear Systems and PDEs II

Organizer(s) : Victor Magron

Chair(s) : Philipp di Dio

Speaker #1 : **Philipp di Dio**, Time-dependent Moments from PDEsSpeaker #2 : **Felix Kirschner**, Construction of Multivariate Polynomial Approximation Kernels via Semidefinite ProgrammingSpeaker #3 : **Alexander Taveira Blomenhofer**, Projecting Towards the Image Set of a Polynomial Map with Sum-of-Squares Relaxations**Semidefinite, Conic, and Polynomial Optimization**

Rauch 271

Session Title : Semidefinite Programming and Polynomials II

Organizer(s) : Greg Blekherman

Chair(s) : Greg Blekherman

Speaker #1 : **Gabor Pataki**, How Do Exponential Size Solutions Arise in Semidefinite Programming?Speaker #2 : **Shengding Sun**, A Novel Perspective of Classical Linear Algebra using Hyperbolic PolynomialsSpeaker #3 : **Jiawang Nie**, Generalized Nash Equilibrium Problems**Semidefinite, Conic, and Polynomial Optimization**

Rauch 292

Session Title : Semidefinite, Conic, and Polynomial Optimization: Contributed

Chair(s) : Frank Permenter

Speaker #1 : **Frank Permenter**, Log-Domain Interior-Point Methods for Quadratic ProgrammingSpeaker #2 : **Shuvomoy Das Gupta**, Branch-and-Bound Performance Estimation Programming: A Unified Methodology for Constructing Optimal Optimization Methods**Software**

Chandler-Ullman 118

Session Title : Computational Science and Engineering Applications of Automatic Differentiation and Optimization

Organizer(s) : Paul Hovland

Chair(s) : Rebecca Gjini

Speaker #1 : **Rebecca Gjini**, Automatic Differentiation and Optimization in a Pythonic Direct Data Assimilation Framework for Wind RetrievalsSpeaker #2 : **Sri Hari Krishna Narayanan**, Reducing Memory Requirements of Quantum Optimal ControlSpeaker #3 : **Ludger Paehler**, Compiler-enabled Gradient-based Optimization of Shock-Bubble Interactions

Software

Chandler-Ullman 115

Session Title : Software: Contributed

Chair(s) : Tyler Chang

Speaker #1 : **Tyler Chang**, ParMOO: A Parallel Solver for Multiobjective Simulation Optimization ProblemsSpeaker #2 : **Jialu Wang**, Pyomo.DOE: An Open-Source Package for Model-based Design of Experiments in Python**Stochastic Algorithms**

Chandler-Ullman 133

Session Title : Stochastic Approximation and Reinforcement Learning

Organizer(s) : Siva Theja Maguluri

Chair(s) : Siva Theja Maguluri

Speaker #1 : **Ashwin Pananjady**, Does Temporal Difference Learning Attain Optimal (Deterministic and Stochastic) Performance?Speaker #2 : **Zaiwei Chen**, Target Network and Truncation Overcome the Deadly Triad in Q-LearningSpeaker #3 : **Martin Zubeldia**, Exponential Concentration Bounds for Stochastic Approximation**Variational Inequalities, Complementarity, Games, and Equilibria**

Chandler-Ullman 218

Session Title : Distributed Nash Equilibrium Seeking

Organizer(s) : Ceyhun Eksin

Chair(s) : Ceyhun Eksin

Speaker #1 : **Duong Thuy Anh (Ella) Nguyen**, Distributed Nash Equilibrium Seeking over Time-Varying Directed Communication NetworksSpeaker #2 : **Alfredo Garcia**, A Market Mechanism for Trading Flexibility Between Interconnected Electricity MarketsSpeaker #3 : **James Bailey**, $O(1/T)$ Time-Average Convergence in a Generalization of Multiagent Zero-Sum Games

■ AIMMS/MOPTA Modeling Competition

The **14th AIMMS-MOPTA Optimization Modeling Competition** is a result of cooperation between AIMMS and the organizers of the MOPTA conference. Teams of at most three students participated and solved a challenging surgery scheduling in flexible operating rooms under uncertainty problem. The teams had to form a mathematical model of the problem, implement it in a modeling language such as AIMMS, solve it, create a graphical user interface, and write a 15-page report on the project. For more information about the competition and the full problem description, please see <https://iccopt2022.lehigh.edu/competition-and-prizes/aimms-mopta-competition/>.

Problem: *Surgery Scheduling in Flexible Operating Rooms Under Uncertainty*

Hospitals are complex and expensive systems to manage. One department of particular interest that poses major managerial challenges is the operating room (OR) department. The OR department generates about 40–70% of revenues and incurs 20–40% of operating costs in a hospital. It also demands significant hospital resources and directly influences patient flow and efficiency of care delivery. Thus, hospital managers are constantly seeking better OR and surgery scheduling approaches to improve OR utilization, surgical care, and quality, as well as to minimize operational costs.

Stochasticity is an intrinsic characteristic of OR and surgery scheduling problems since surgical activities are subject to multiple sources of uncertainty. This competition focuses on an elective surgery planning problem (ESP) in flexible ORs, where emergency patients are accommodated in the existing elective surgery schedule. Elective cases can be scheduled weeks or months in advance. In contrast, the arrival of emergency surgeries is random, and must be performed on the day of arrival. The goal is to construct a plan that specifies the assignments of a subset of elective cases from a waiting list to available OR surgery blocks and the scheduled start times of surgeries assigned to each block. The surgical blocks are typically designed to allow for multiple surgeries to be scheduled during the surgery block's time length. The plan's quality is a function of costs related to performing or postponing elective surgeries, costs related to OR overtime and idle time, costs related to surgery waiting times, and costs related to canceling scheduled surgeries to accommodate emergency surgeries. The goal is to develop an efficient and implementable method to solve ESP that managers can use in practice.

Finalists

We are happy that eight teams from around the world registered for the competition. The panel of first-round judges were Linlin Ma (Supply Chain Application Developer, AIMMS), Karmel S. Shehadeh (ISE/Lehigh), and Luis Zuluaga (ISE/Lehigh) who selected the following three teams as finalists:

Bern Unicorns's, University of Bern, Department of Business Administration

Team Members: Robin Hauenstein, Nicklas Klein, Nicola Travaglini
Advisor: Norbert Trautmann

The HospITALs, University of Pavia, Department of Mathematics "Felice Casorati"

Team Members: Ambrogio Maria Bernardelli, Lorenzo Bonasera, Eleonora Vercesi
Advisor: Davide Duma

TU Berlin, TU Berlin, Institute for Mathematics

Team Members: Mohammed Majthoub Almoghrabi, Przemyslaw Bartman
Advisor: Guillaume Sagnol

Each finalist team will give a 26-minute presentation (20 minutes for the talk and 6 minutes for questions) on their work during the 14th AIMMS-MOPTA Optimization Modeling Competition session on **July 26, 2022, starting at 5pm in the Perella Auditorium (Rauch 184)**. The winning team will be announced at the conference dinner (Prizes: 1st place \$1200; 2nd place \$600; 3rd place \$300). In addition, the highest-ranked finalist team that used AIMMS as the software platform to solve the problem will be awarded an additional \$1000. The panel of judges will consist of the following: Ana-Iulia Alexandrescu-Anselm (ISE/Lehigh), Linlin Ma (Supply Chain Application Developer, AIMMS), Daniel P. Robinson (ISE/Lehigh), Karmel S. Shehadeh (ISE/Lehigh), and Luis Zuluaga (ISE/Lehigh).

We thank all the teams for contributing to the competition. This was another successful and positive experience for all participants and MOPTA organizers. Thank you to **AIMMS** for sponsoring the competition!

■ Best Paper Session

The Best Paper Prize for Young Researchers in Continuous Optimization has been led by the Selection Committee:

- Katya Scheinberg (Chair), Cornell University
- Johannes Royset, Naval Postgraduate School
- Miguel Anjos, University of Edinburgh
- Suvrit Sra, Massachusetts Institute

Four finalists will be featured in a dedicated session that will take place on July 25, 2022 from 4:40-6pm in Baker Hall (Zoellner Arts Center). The winner will be determined after the finalist session and announced at the conference dinner.

1. *Nominee:* Kabir Aladin Chandrasekher, Ashwin Pananjady, and Christos Thrampoulidis (co-finalists)

Title: Sharp global convergence guarantees for iterative nonconvex optimization with random data

Abstract: Iterative algorithms are the workhorses of modern statistical learning, and are widely used to fit large-scale, complex models to random data. While the choice of an algorithm and its hyperparameters determines both the speed and fidelity of the learning pipeline, it is common for this choice to be made heuristically, either by expensive trial-and-error or by comparing rough bounds on convergence rates of various candidate algorithms. Motivated by this, we develop a principled framework that produces sharp, iterate-by-iterate characterizations of solution quality for algorithms run with sample-splitting on a wide range of nonconvex model-fitting problems with Gaussian data. I will present the general framework and highlight several concrete consequences for parameter estimation in some popular statistical models, covering both higher-order algorithms based on alternating updates as well as first-order algorithms based on subgradient descent. These corollaries reveal multiple nonstandard phenomena and facilitate rigorous comparisons between algorithms.

2. *Nominee:* Christopher Criscitiello

Title: Negative curvature obstructs acceleration for geodesically convex optimization, even with exact first-order oracles

Abstract: Hamilton and Moitra (2021) showed that, in certain regimes, it is not possible to accelerate Riemannian gradient descent in the hyperbolic plane if we restrict ourselves to algorithms which make queries in a (large) bounded domain and which receive gradients and function values corrupted by a (small) amount of noise. We show that acceleration remains unachievable for any deterministic algorithm which receives exact gradient and function-value information (unbounded queries, no noise). Our results hold for the classes of strongly and nonstrongly geodesically convex functions, and for a large class of Hadamard manifolds including hyperbolic spaces and the symmetric space $SL(n)/SO(n)$ of positive definite $n \times n$ matrices of determinant one. This cements a surprising gap between the complexity of convex optimization and geodesically convex optimization: for hyperbolic spaces, Riemannian gradient descent is optimal on the class of smooth and strongly geodesically convex functions, in the regime where the condition number scales with the radius of the optimization domain. The key idea for proving the lower bound consists of perturbing the hard functions of Hamilton and Moitra (2021) with sums of bump functions chosen by a resisting oracle.

3. *Nominee:* X.Y. Han

Title: Survey Descent: A Multipoint Generalization of Gradient Descent for Nonsmooth Optimization

Abstract: For strongly convex objectives that are smooth, the classical theory of gradient descent ensures linear convergence relative to the number of gradient evaluations. An analogous nonsmooth theory is challenging: even when the objective is smooth at every iterate, the corresponding local models are unstable, and traditional remedies need unpredictably many cutting planes. We instead propose a multipoint generalization of the gradient descent iteration for local optimization. While designed with general objectives in mind, we are motivated by a “max-of-smooth” model that captures the subdifferential dimension at optimality. We prove linear convergence when the objective is itself max-of-smooth, and experiments suggest a more general phenomenon.

4. *Nominee:* Shanyin Tong

Title: Optimization under rare chance constraints

Abstract: Chance constraints provide a principled framework to mitigate the risk of high-impact extreme events by modifying the controllable properties of a system. The low probability and rare occurrence of such events, however, impose severe sampling and computational requirements on classical solution methods that render them impractical. This work proposes a novel sampling-free method for solving rare chance constrained optimization problems affected by uncertainties that follow general Gaussian mixture distributions. By integrating modern developments in large deviation theory with tools from convex analysis and bilevel optimization, we propose tractable formulations that can be solved by off-the-shelf solvers. Our formulations enjoy several advantages compared to classical methods: their size and complexity is independent of event rarity, they do not require linearity or convexity assumptions on system constraints, and under easily verifiable conditions, serve as safe conservative approximations or asymptotically exact reformulations of the true problem. Computational experiments on linear, nonlinear, and PDE-constrained problems from applications in portfolio management, structural engineering, and fluid dynamics illustrate the broad applicability of our method and its advantages over classical sampling-based approaches in terms of both accuracy and efficiency.

■ Poster Session

The poster session and competition will be held on Monday, July 25 from 6-8pm in the Rauch atrium. The list of poster session presenters is below; for full abstracts, see [here](#). The best poster prize will be awarded at the conference dinner.

Bugra Can	
<i>A Variance-reduced Stochastic Accelerated Primal Dual Algorithm</i>	1
Sebastien Colla	
<i>Automatic Performance Estimation for Decentralized Optimization</i>	2
Nicole Cortes	
<i>Co-optimizing the Design and Operation strategy of solid oxide fuel cell-based hydrogen-electricity co-production systems</i>	3
Niloofar Fadavi	
<i>An active-set method for two-stage stochastic quadratic programming</i>	4
Jun-ya Gotoh	
<i>Knot Selection of B-Spline Regression via Trimmed Regularizer</i>	5
Fadi Hamad	
<i>A fully adaptive trust-region method</i>	6
Yao Ji	
<i>Distributed Sparse Regression via Penalization</i>	7
David Kiessling	
<i>Efficient Numerical Algorithms for Time Optimal Control</i>	8
J. Lyle Kim	
<i>Convergence and Stability of the Stochastic Proximal Point Algorithm with Momentum</i>	9
Clement Lezane	
<i>Algorithms for Stochastic Complementary Composite Minimization</i>	10
Yongchun Li	
<i>D-optimal Data Fusion: Exact and Approximation Algorithms</i>	11
Xinhong Liu	
<i>Optimization of Reactive Ink Formulation for Additive Manufacturing of Charged Membranes</i>	12
Si Yi Meng	
<i>Reusing function evaluations in derivative-free line search methods</i>	13
Wenlong Mou	
<i>ROOT-SGD: Sharp Nonasymptotics and Asymptotic Efficiency in a Single Algorithm</i>	14
Edward Duc Hien Nguyen	
<i>Exact Diffusion with Local Steps</i>	15
Vincent Roulet	
<i>Complexity Bounds of Iterative Linear Quadratic Optimization Algorithms for Discrete Time Nonlinear Control</i>	16
Pouya Sampourmahani	
<i>On the Semidefinite Representation of Second-order Conic Optimization Problems</i>	17
Igor Sokolov	
<i>EF21: A New, Simpler, Theoretically Better, and Practically Faster Error Feedback</i>	18

Trang Tran	
<i>Policy Optimization for Queueing Models</i>	19
Jie Wang	
<i>Sinkhorn Distributionally Robust Optimization</i>	20
Ke Wang	
<i>Bayesian Optimization Considering Experimental and Physical Constraints – Case Study of Flash Sintering</i>	21
Qi Wang	
<i>Worst-Case Complexity of TRACE with Inexact Subproblem Solutions for Nonconvex Smooth Optimization</i>	22
Zeguan Wu	
<i>Preconditioned Inexact Infeasible Quantum Interior Point Method for Linear Optimization</i>	23
Miaolan Xie	
<i>High Probability Iteration and Sample Complexity Bounds for Stochastic Adaptive Step Search</i>	24
Jinwen Yang	
<i>Nearly Optimal Linear Convergence of Stochastic Primal-Dual Methods for Linear Programming</i>	25
Chennan Zhou	
<i>Effective scenarios in Two-stage DRO: properties and acceleration of decomposition algorithms</i>	26

■ Accommodations



- Hotel: Comfort Suites
- Address: 120 W. Third Street, Bethlehem, PA
- Phone: (610) 882-9700
- Distance: 3 minute drive / 7 minute walk to conference venue



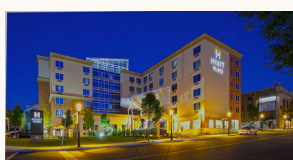
- Hotel: Wind Creek Bethlehem
- Address: 77 Wind Creek Blvd, Bethlehem, PA
- Phone: (877) 726-3777
- Distance: 7 minute drive / 16 minute walk to conference venue



- Hotel: Historic Hotel Bethlehem
- Address: 437 Main Street, Bethlehem, PA
- Phone: (888) 231-9320
- Distance: 6 minute drive / 28 minute walk to conference venue



- Hotel: Candlewood Suites Bethlehem South
- Address: 1630 Spillman Drive, Bethlehem, PA
- Phone: (610) 849-4100
- Distance: 7 minute drive / 30 minute walk to conference venue



- Hotel: Hyatt Place Bethlehem
- Address: 45 W. North Street, Bethlehem, PA
- Phone: (610) 625-0500
- Distance: 8 minute drive / 35 minute walk to conference venue



- Hotel: Days Hotel by Wyndham, Allentown
- Address: 3400 Airport Road, Allentown, PA
- Phone: (610) 266-1000
- Distance: 13 minute drive to conference venue



- Hotel: Hampton Inn & Suites Bethlehem
- Address: 200 Gateway Drive, Bethlehem PA
- Phone: (855) 605-0317
- Distance: 15 minute drive to conference venue



- Hotel: Holiday Inn Express
- Address: 2201 Cherry Lane, Bethlehem, PA
- Phone: (610) 838-6110
- Distance: 20 minute drive to conference venue



- Hotel: SpringHill Suites by Marriott Allentown Bethlehem/Center Valley
- Address: 3800 West Drive, Center Valley, PA
- Phone: (888) 236-2427
- Distance: 18 minute drive to conference venue



- Hotel: Sonesta Select Allentown Bethlehem
- Address: 2160 Motel Drive, Bethlehem, PA
- Phone: (610) 317-6200
- Distance: 14 minute drive to conference venue



- Hotel: SureStay PLUS by Best Western Lehigh Valley
- Address: 300 Gateway Drive, Bethlehem, PA
- Phone: (610) 866-5800
- Distance: 14 minute drive walk to conference venue



- Hotel: Homewood Suites by Hilton – Center Valley
- Address: 3350 Center Valley Parkway, Center Valley, PA
- Phone: (610) 351-6400
- Distance: 13 minute drive to conference venue