

**Optimization in the Big Data Era**  
Structured Optimization Models in High-Dimensional Data  
Analysis  
**(12-16 December 2022)**



**Venue**

LT 33  
Faculty of Science (S17)  
National University of Singapore  
10 Lower Kent Ridge Road  
Singapore 119076

**ORGANIZING COMMITTEE**

**Co-Chairs**

Stephen J. Wright  
University of Wisconsin, USA

Defeng Sun  
The Hong Kong Polytechnic University, China

Kim Chuan Toh  
National University of Singapore, Singapore

# Structured Optimization Models in High-Dimensional Data Analysis

## (12–16 December 2022)

### Monday, 12 December 2022

Time	Title	Speaker
0900–0920	Registration	
0920–0930	Opening Remarks	
0930–1015	<i>Distinguished Visitor Lecture Series</i> Set-Limited Functions and Polynomial-Time Interior-Point Methods	Yurii Nesterov UCLouvain, Belgium
1015–1045	<i>Group Photo &amp; Coffee Break</i>	
1045–1130	<i>Distinguished Visitor Lecture Series</i> New perspectives for higher-order methods in Convex Optimization	Yurii Nesterov UCLouvain, Belgium
1130–1215	Tensor Learning in 2020s: Methodology, Theory, and Applications	Anru Zhang Duke University, USA
1215–1400	<i>Lunch Break</i>	
1400–1445	Faster Lagrangian-based methods in convex optimization	Shoham Sabach Technion - Israel Institute of Technology, Israel
1445–1530	Demystifying Feature learning via gradient descent with applications to medical image reconstruction	Mahdi Soltanolkotabi University of Southern California, USA
1530–1600	<i>Coffee Break</i>	
1600–1645	Nonconvex Min-Max Optimization: fundamental limits, acceleration, and adaptivity	Niao He ETH Zurich, Switzerland
1645–1730	Nonlinear Covariance Shrinkage Estimator via Distributionally Robust Optimization	Man-Chung Yue The University of Hong Kong, China

### Tuesday, 13 December 2022

Time	Title	Speaker
0915–0930	Registration	
0930–1015	Generalized Levenberg–Marquardt method with oracle complexity bound and local quadratic convergence	Akiko Takeda The University of Tokyo, Japan
1015–1045	<i>Coffee Break</i>	

Tuesday, 13 December 2022		
Time	Title	Speaker
1045-1130	On the Complexity of Approximate Stationarity Concepts in Non-Smooth Optimization	Anthony Man-Cho So The Chinese University of Hong Kong, China
1130-1215	Determinantal point processes for sampling minibatches in SGD	Meixia Lin Singapore University of Technology and Design, Singapore
1215-1400	<b><i>Lunch Reception at Department of Mathematics (Lounge)</i></b>	
1400-1445	Fair Principal Component Analysis under Optimal Transport Perturbations	Viet Anh Nguyen The Chinese University of Hong Kong, China
1445-1530	Implicit Regularization of Bregman Proximal Point Algorithm and Mirror Descent on Separable Data	Ethan Xingyuan Fang Duke University, USA
1530-1600	<i>Coffee Break</i>	
1600-1645	Decentralized Gossip-Based Stochastic Bilevel Optimization over Communication Networks	Shuoguang Yang Hong Kong University of Science and Technology, China
1645-1730	Sampling with constraints using variational methods	Xin Tong National University of Singapore, Singapore

Wednesday, 14 December 2022		
Time	Title	Speaker
0915-0930	Registration	
0930-1015	<i>Distinguished Visitor Lecture Series</i> Nonconvex Stochastic Programs: Deterministic Constraints	Jong-Shi Pang University of Southern California, USA
1015-1045	<i>Coffee Break</i>	
1045-1130	<i>Distinguished Visitor Lecture Series</i> Nonconvex Stochastic Programs: Chance Constraints	Jong-Shi Pang University of Southern California, USA
1130-1215	Data-scarce identification of learning dynamics via sum-of-squares optimization	Antonios Varvitsiotis Singapore University of Technology and Design, Singapore
1215-1330	<i>Lunch Break</i>	
1330-1415	Global and Local Convergence-Rate Analysis of an Inexact Newton Augmented Lagrangian Method for Zero-One Composite Optimization	Houduo Qi University of Southampton, UK
1430-1730	<u>Excursion</u> Venue: Bontanic Gardens	

Wednesday, 14 December 2022		
Time	Title	Speaker
1800–2100	<u>Conference dinner</u> Venue: Palm Beach @ One Fullerton	
Thursday, 15 December 2022		
Time	Title	Speaker
0915–0930	Registration	
0930–1015	Learning Mixtures of Separable Dictionaries for High-Dimensional Tensor Data	Waheed Bajwa Rutgers University, USA
1015–1045	<i>Coffee Break</i>	
1045–1130	Instability, Computational Efficiency and Statistical Accuracy	Nhat Ho The University of Texas at Austin, USA
1130–1215	Finding Structures in Large Models: Imbalance Trouble	Christos Thrampoulidis University of British Columbia, Canada
1215–1400	<i>Lunch Break</i>	
1400–1445	Optimal Regularizers for Data via Shape Regression	Yong Sheng Soh National University of Singapore, Singapore
1445–1530	On the convergence analysis of augmented Lagrangian method for matrix optimization	Chao Ding Chinese Academy of Sciences, China
1530–1600	<i>Coffee Break</i>	
1600–1645	Adescent algorithm for the optimal control of ReLU neural network informed PDEs based on approximate directional derivatives	Michael Hintermuller Weierstrass Institute, Germany
1645–1700	Closing Remarks	
Friday, 16 December 2022		
Time	Title	Speaker
0930–1200	Free Discussion	

**This schedule is accurate as of 05 December 2022.**