

Coordinate Descent Methods

@ SIAM Conference on Optimization, San Diego, May 2014

Organizers: Peter Richtarik (Edinburgh), Lin Xiao (Microsoft) and Zhaosong Lu (SFU)

Coordinate descent methods are becoming increasingly popular due to their ability to scale to big data problems. The purpose of this symposium is to bring together researchers working on developing novel coordinate descent algorithms, analyzing their convergence / complexity, and applying the algorithms to new domains.

Tuesday, May 20, 2014

MS31 (Room: Sunrise)

Coordinate Descent Methods: Parallelism, Duality and Non-smoothness- Part I of III

10:15-10:40 Primal-dual Subgradient Method with Partial Coordinate Update [abstract](#)

Yurii Nesterov, Université Catholique de Louvain, Belgium

10:45-11:10 Accelerated, Parallel and Proximal Coordinate Descent [abstract](#)

Peter Richtarik and *Olivier Fercoq*, University of Edinburgh, United Kingdom

11:15-11:40 Stochastic Dual Coordinate Ascent with ADMM [abstract](#)

Taiji Suzuki, Tokyo Institute of Technology, Japan

MS43 (Room: Sunrise)

Coordinate Descent Methods: Parallelism, Duality and Non-smoothness- Part II of III

2:30-2:55 On the Complexity Analysis of Randomized Coordinate Descent Methods [abstract](#)

Zhaosong Lu, Simon Fraser University, Canada; *Lin Xiao*, Microsoft Research, USA

3:00-3:25 Universal Coordinate Descent Method [abstract](#)

Olivier Fercoq and *Peter Richtarik*, University of Edinburgh, United Kingdom

3:30-3:55 Stochastic Block Mirror Descent Methods for Nonsmooth and Stochastic Optimization [abstract](#)

Cong D. Dang and *Guanghai Lan*, University of Florida, USA

4:00-4:25 Iteration Complexity Analysis of Block Coordinate Descent Methods [abstract](#)

Zhi-Quan Luo, University of Minnesota, Minneapolis, USA

MS55 (Room: Sunrise)

Coordinate Descent Methods: Parallelism, Duality and Non-smoothness- Part III of III

5:00-5:25 Hydra: Distributed Coordinate Descent for Big Data Optimization [abstract](#)

Martin Takac and *Peter Richtarik*, University of Edinburgh, United Kingdom

5:30-5:55 Parallel Coordinate Descent for Sparse Regression [abstract](#)

Joseph Bradley, University of California, Berkeley, USA

6:00-6:25 The Rich Landscape of Parallel Coordinate Descent Algorithms [abstract](#)

Chad Scherrer, Independent Consultant, USA; *Ambuj Tewari*, University of Michigan, USA; Mahantesh Halappanavar and David Haglin, Pacific Northwest National Laboratory, USA

6:30-6:55 An Asynchronous Parallel Stochastic Coordinate Descent Algorithm [abstract](#)

Ji Liu and Stephen J. Wright, University of Wisconsin, Madison, USA; Christopher R{\e}, Stanford University, USA; Victor Bittorf, University of Wisconsin, Madison, USA

Thursday, May 22, 2014

MS90 (Room: Sunrise)

[Coordinate Descent Methods: Sparsity, Non-convexity and Applications - Part I of III](#)

9:30-9:55 Iteration Complexity of Feasible Descent Methods for Convex Optimization [abstract](#)

Chih-Jen Lin, National Taiwan University, Taiwan

10:00-10:25 Randomized Block Coordinate Non-Monotone Gradient Method for a Class of Nonlinear Prog. [abstract](#)

Zhaosong Lu, Simon Fraser University, Canada; Lin Xiao, Microsoft Research, USA

10:30-10:55 Recent Progress in Stochastic Optimization for Machine Learning [abstract](#)

Tong Zhang, Rutgers University, USA

11:00-11:25 Efficient Coordinate-minimization for Orthogonal Matrices through Givens Rotations [abstract](#)

Uri Shalit, Hebrew University of Jerusalem, Israel; Gal Chechik, Bar-Ilan University, Israel

MS102 (Room: Sunrise)

[Coordinate Descent Methods: Sparsity, Non-convexity and Applications - Part II of III](#)

2:00-2:25 Coordinate Descent Type Methods for Solving Sparsity Constrained Problems [abstract](#)

Amir Beck, Technion - Israel Institute of Technology, Israel

2:30-2:55 Coordinate descent methods for ℓ_0 -regularized optimization problems [abstract](#)

Andrei Patrascu and Ion Necoara, University Politehnica of Bucharest, Romania

3:00-3:25 Efficient Randomized Coordinate Descent for Large Scale Sparse Optimization [abstract](#)

Xiaocheng Tang and Katya Scheinberg, Lehigh University, USA

3:30-3:55 GAMSEL: A Penalized Likelihood Approach to Model Selection for Generalized Additive Models [abstract](#)

Alexandra Chouldechova and Trevor Hastie, Stanford University, USA

MS114 (Room: Sunrise)

[Coordinate Descent Methods: Sparsity, Non-convexity and Applications - Part III of III](#)

4:30-4:55 Efficient Accelerated Coordinate Descent Methods and Faster Algorithms for Linear Systems [abstract](#)

Yin Tat Lee and Aaron Sidford, Massachusetts Institute of Technology, USA

5:00-5:25 Applications of Coordinate Descent in Combinatorial Prediction Markets [abstract](#)

Miroslav Dudik, Microsoft Research, USA

5:30-5:55 A Comparison of PCDM and DQAM for Big Data Problems [abstract](#)

Rachael Tappenden, Peter Richtarik, and Burak Buke, University of Edinburgh, United Kingdom

6:00-6:25 Direct Search Based on Probabilistic Descent [abstract](#)

Serge Gratton and Clément Royer, ENSEEIHT, Toulouse, France; Luis N. Vicente and *Zaikun Zhang*, Universidade de Coimbra, Portugal