Workshop I: Big Data Meets Large-Scale Computing

Monday September 24, 2018

8:00–8:55 *Check-In/Light Breakfast (Hosted by IPAM)*

8:55–9:00 *Welcome and Opening Remarks*

9:00–9:50 **David Keyes** (King Abdullah Univ. of Science and Technology (KAUST))
The Convergence of Big Data and Extreme Simulation

10:00–10:15 *Break*

10:15–11:05 **Benjamin Peherstorfer** (Courant Institute of Mathematical Sciences)
Data-Driven Multifidelity Methods for Monte Carlo Estimation and Beyond

11:15–11:30 *Break*

11:30–12:20 **Gael Varoquaux** (Institut National de Recherche en Informatique et Automatique (INRIA))
Detecting psychiatric disorders with statistical learning tailored to brain activity

12:30–2:30 *Lunch (on your own)*

2:30–3:20 **Alexander Szalay** (John Hopkins University)
Numerical Laboratories: the Road to Exascale

3:30–4:30 *Break*

4:30–5:30 **Emmanuel Candes** (Stanford University)
Public Lecture - Green Family Lecture Series: "Sailing Through Data: Discoveries and Mirages"

5:30–6:45 *Poster Session & Reception (Hosted by IPAM)*

Tuesday September 25, 2018

8:00–9:00 *Continental Breakfast*

9:00–9:50 **Hans-Joachim Bungartz** (Technical University Munich (TUM))
Sparse grids and their impact on HPC and Big Data

10:00–10:15 *Break*

10:15–11:05 **Michael Griebel** (University of Bonn)
Manifold learning by sparse grid methods

11:15–11:30 *Break*

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11:30–12:20 **Dirk Pflüger** (Universität Stuttgart)
Numerical data mining with sparse grids at extreme scale

12:30–2:30 *Lunch (on your own)*

2:30–3:20 **Chris Johnson** (University of Utah)
Big Data Meets Large-Scale Visualization

3:30–4:00 *Break*

4:00–4:50 **Valerio Pascucci** (University of Utah)
Extreme Data Management Analysis and Visualization for Exascale Supercomputers and Experimental Facilities

Wednesday September 26, 2018

8:00–9:00 *Continental Breakfast*

9:00–9:50 **Moses Charikar** (Stanford University)
Importance Sampling in High Dimensions via Hashing

10:00–10:15 *Break*

10:15–11:05 **Marina Meila** (University of Washington)
Non-linear dimension reduction in the age of big data

11:15–11:30 *Break*

11:30–12:20 **Emmanuel Candes** (Stanford University)
Is non-convex optimization really hard? A couple of recent stories

12:30–2:30 *Lunch (on your own)*

2:30–3:20 **Sherry Li** (Lawrence Berkeley National Laboratory)
A Study of Clustering Techniques and Hierarchical Matrix Formats for Kernel Ridge Regression

3:30–4:00 *Break*

4:00–4:50 **Per-Gunnar Martinsson** (University of Colorado Boulder)
Randomized projection methods for reducing communication in matrix computations

Thursday September 27, 2018

8:00–9:00 *Continental Breakfast*

9:00–9:50 **Asch Mark** (Université de Picardie (Jules Verne))
Model Inversion and Data Assimilation for Decision-Making in an Uncertain but Data-Rich World

10:00–10:15 *Break*

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10:15–11:05 **Omar Ghattas** (University of Texas at Austin)
Scalable algorithms for optimal training data for Bayesian inference of large scale models

11:15–11:30 *Break*

11:30–12:20 **Carlos Andrade Costa** (IBM Thomas J. Watson Research Center)
Converged Ecosystem for Data Analytics and Extreme-Scale Computing

12:30–2:00 *Lunch (on your own)*

2:00–2:50 **Ion Stoica** (University of California, Berkeley (UC Berkeley))
Ray: A System for Distributed AI

3:00–4:00 *Discussion*

4:30–5:30 **Emmanuel Candes** (Stanford University)
Public Lecture - Green Family Lecture Series: "The Knockoffs Framework: New Statistical Tools for Replicable Selections"

5:30–6:45 *Reception (Location: IPAM Lobby)*

Friday September 28, 2018

8:00–9:00 *Continental Breakfast*

9:00–9:50 **Marc Genton** (King Abdullah Univ. of Science and Technology (KAUST))
A Stochastic Generator of Global Monthly Wind Energy with Tukey g-and-h Autoregressive Processes

10:00–10:15 *Break*

10:15–11:05 **Rio Yokota** (Tokyo Institute of Technology)
Optimization Methods for Large Scale Distributed Deep Learning

11:15–11:30 *Break*

11:30–12:20 **Paris Perdikaris** (University of Pennsylvania)
Probabilistic data fusion and physics-informed machine learning: A new paradigm for modeling and computation under uncertainty

12:30 *Conclusion*