

Summer school on Computational Geometric  
Learning  
June 9-10-11 2011, Paris

Thursday June 9th

*Morning*

09:00 - 09:45 Registration and welcome coffee

09:45 - 13:00 Lecture by Suresh Venkatasubramanian (University of Utah)  
Topic: The Geometry of Probability Distributions

09:45 - 10:30 Part I: Distances between distributions: classification and properties

10:30 - 11:00 Break

11:00 - 11:45 Part II: Estimation and dimensionality reduction for distributions

11:45 - 12:15 Break

12:15 - 13:00 Part III: Beyond information theory: metric-aware distances between  
distributions

*Afternoon*

14:45 - 15:30 Don Sheehy (Carnegie Mellon University)  
Learning with nets and meshes

15:30 - 16:00 Break

16:00 - 16:45 Arijit Ghosh (INRIA Sophia-Antipolis)  
Reconstructing and meshing submanifolds

16:45 - 17:15 Break

17:15 - 18:00 Alexandr Andoni (Microsoft Research, Mountain View)  
Introduction to LSH (tentative title)

## Friday June 10th

### *Morning*

09:45 - 13:00 Lecture by Herbert Edelsbrunner (IST Vienna)  
Topic: Computational Topology

09:45 - 10:30 Part I: Persistent Homology

10:30 - 11:00 Break

11:00 - 11:45 Part II: Algorithms

11:45 - 12:15 Break

12:15 - 13:00 Part III: Applications

### *Afternoon*

14:45 - 15:30 Rien van de Weygaert (Rijksuniversiteit Groningen)  
Topological aspects of the cosmic web

15:30 - 16:00 Break

16:00 - 16:45 Barak Raveh (Tel Aviv University)  
Exploring and summarizing the high-dimensional space of  
molecular motions

16:45 - 17:15 Break

17:15 - 18:00 Quentin Mérigot (CNRS, Grenoble)  
Estimation of Federer's curvature measures

## Saturday June 11th

### *Morning*

09:45 - 13:00 Lecture by Kenneth Clarkson (IBM Almaden Research Center)  
Topic: Geometric optimization and structure in high dimensions

09:45 - 10:30 Part I: Quadratic optimization in the simplex: coresets and sparsity

10:30 - 11:00 Break

11:00 - 11:45 Part II: Quick and dirty feature extraction: sampling and sketching

11:45 - 12:15 Break

12:15 - 13:00 Part III: Quicker and dirtier quadratic programming:  
regret bounds and sublinear optimization

### *Afternoon*

14:45 - 15:30 Christian Sohler (TU Dortmund)  
Streaming algorithms for the analysis of massive data sets  
in machine learning

15:30 - 16:00 Break

16:00 - 16:45 Christian Lorenz Mueller (ETH Zürich)  
Variable-metric randomized search heuristics for gradient-free  
black-box optimization

16:45 - 17:15 Break

17:15 - 18:00 Sören Laue (Friedrich-Schiller-Universität Jena)  
Theory, algorithms and software for optimization