

## Workshop IV: Deep Geometric Learning of Big Data and Applications

### Monday May 20, 2019

- 8:00–8:55 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:55–9:00 *Welcome & Opening Remarks: Dean Miguel García-Garibay (Dean of Physical Sciences, UCLA) and Dima Shlyakhtenko (Director, IPAM)*
- 9:00–9:40 **Arthur Szlam** (Facebook)  
*Language, Interaction, and Perception in Minecraft*
- 9:50–10:10 *Break*
- 10:10–10:50 **Soumith Chintala** (Facebook AI Research)  
*Automatic Differentiation, PyTorch and Graph Neural Networks*
- 11:00–11:20 *Break*
- 11:20–12:00 **Jeremias Sulam** (Johns Hopkins University)  
*Deep Learning as Sparsity Enforcing Algorithms*
- 12:10–2:00 *Lunch (on your own)*
- 2:00–2:40 **Marc Pollefeys** (ETH Zurich)  
*Semantic 3D reconstruction*
- 2:50–3:10 *Break*
- 3:10–3:50 **Bahram Jalali** (University of California, Los Angeles (UCLA))  
*Low Latency Deep Imaging Cytometry*
- 4:00–6:00 *Poster Session & Reception (Hosted by IPAM)*

### Tuesday May 21, 2019

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:40 **Tom Goldstein** (University of Maryland)  
*A theoretical look at adversarial examples: a perspective from high-dimensional geometry*
- 9:50–10:10 *Break*
- 10:10–10:50 **Hongyang Zhang** (Carnegie Mellon University)  
*Theoretically Principled Trade-off between Robustness and Accuracy*
- 11:00–11:20 *Break*

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- 11:20–12:00 **Roy Lederman** (Yale University)  
*On Inverse Problems and Unsupervised Learning in the Mapping of Heterogeneous Molecular Structures in Cryo-Electron Microscopy*
- 12:10–2:00 *Lunch (on your own)*
- 2:00–2:40 **Xavier Bresson** (Nanyang Technological University, Singapore)  
*Graph Convolutional Neural Networks for Molecule Generation and Travelling Salesman Problem*
- 2:50–3:10 *Break*
- 3:10–3:50 **Hamed Pirsiavash** (University of Maryland Baltimore County)  
*Self-supervised learning for visual recognition*

### Wednesday May 22, 2019

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:40 **Jian Tang** (HEC Montréal)  
*GMNN: Graph Markov Neural Networks*
- 9:50–10:10 *Break*
- 10:10–10:50 **Thomas Kipf** (Universiteit van Amsterdam)  
*Unsupervised Learning with Graph Neural Networks*
- 11:00–11:20 *Break*
- 11:20–12:00 **Jure Leskovec** (Stanford University)  
*Deep Generative Models for Graphs: Methods & Applications*
- 12:10–2:00 *Lunch (on your own)*
- 2:00–2:40 **Mathias Niepert** (NEC Laboratories Europe)  
*Relational Representation Learning with Graph Neural Networks*
- 2:50–3:10 *Break*
- 3:10–3:50 **Federico Monti** (Universita della Svizzera Italiana)  
*Geometric Deep Learning: approaches and applications*

### Thursday May 23, 2019

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:40 **Mikhail Belkin** (Ohio State University)  
*From classical statistics to modern machine learning*
- 9:50–10:10 *Break*

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- 10:10–10:50 **Thiago Serra** (Mitsubishi Electric Research Laboratories (Merl))  
*Bounding and Counting Linear Regions of Deep Neural Networks*
- 11:00–11:20 *Break*
- 11:20–12:00 **Rene Vidal** (Johns Hopkins University)  
*On the Implicit Bias of Dropout*
- 12:10–2:00 *Lunch (on your own)*
- 2:00–2:40 **Stanley Osher** (University of California, Los Angeles (UCLA))  
*Unnormalized Optimal Transport*
- 2:50–3:10 *Break*
- 3:10–3:50 **Srikumar Ramalingam** (University of Utah)  
*Deriving Equivalent Networks and hyperparameter optimization*
- 4:00–4:20 *Break*
- 4:20–5:00 **Luc Van Gool** (ETH Zurich)  
*The creation of dense depth maps for autonomous cars*

## Friday May 24, 2019

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:40 **Taco Cohen** (Qualcomm AI Research)  
*Gauge Equivariant Convolutional Networks*
- 9:50–10:10 *Break*
- 10:10–10:50 **Kostas Daniilidis** (University of Pennsylvania)  
*Geometry-aware deep learning: A brief history of equivariant representations and recent results*
- 11:00–11:20 *Break*
- 11:20–12:00 **Ersin Yumer** (Uber ATG)  
*Exploiting the 3D Geometry and the Structure of the World in Deep Learning*

