

TRIPODS Activities This Year

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The UC Davis *TETRAPODS* Institute of Data Science

- *TRIPODS* := Transdisciplinary Research In Principles of Data Science
- *UCD4IDS* Members:
 - * 35 faculty members (CS:5; ECE:4; Math:11; Stat:14) including:
 - PI Team: *Director*: N. Saito (Math); *Director of Special Events*: N. Amenta (CS); *Director of Graduate Affairs*: C.-N. Chuah (ECE); *Director of Postdoctoral Affairs*: T. Lee (Stat)
 - Steering Committee: PI Team + A. Aue (Stat); J. De Loera (Math); Z. Ding (ECE); P. Koehl (CS)
 - * 3 postdocs to be hired for two years (CS/ECE:1; Math:1; Stat:1)
 - * Up to 15 quarters of GSR support for Year 1 (CS:3; ECE:3; GGAM/Math:5; Stat:4)
- Research themes (not a disjoint set!)
 - 1) *Fundamentals of machine learning directed toward biological and medical applications*
 - 2) *Optimization theory and algorithms for machine learning including numerical solvers for large-scale nontrivial learning problems*
 - 3) *High-dimensional data analysis on graphs and networks*
- What we will do this year (10/01/19—09/30/20)
 - * Weekly seminars (MADDD; Statistics; DS related CS/ECE seminars)
 - * Weekly roundtable discussions (once a week)
 - * Quarterly colloquium (expanded Joint Math/Stat colloquium)
 - * Annual Workshop (late spring or early fall)
 - * Plan for eventual *Bay Area Data Science Day*

Key Points

- Through these activities, we want to *increase communications and collaborations* among 4 disciplines both *research and training of postdocs/graduate students*.
- We will closely collaborate with *the IMPACT Data Science Center* (PI: Thomas Strohmmer) on many aspects of data science activities on campus.
- A good & useful *website* is important!
 - * I am currently developing the site: <https://ucd4ids.sf.ucdavis.edu> using UCD's website building toolkit called *SiteFarm*:<https://sitefarm.ucdavis.edu>
 - * Currently, our site is not open to public yet.
 - * Once it is ready, it will be <https://ucd4ids.ucdavis.edu>, i.e., no "sf".
 - * You can login to our website and edit/revise some contents, e.g., your information currently I put in *People* menu.
 - * To do so, *please send your CAS username to me so that I can add you as a "contributor" to our website.*
- By the end of this 3-year grant, we want to:
 - * Write and submit a proposal to establish *Graduate Group in Data Science* (GGDS)
 - * Plan for *TRIPODS Phase II*: need to establish collaborations with other TRIPODS institutions (e.g., UC Berkeley)

2019 Fall Quarter Roundtable Discussions after Seminars

- 10/01 (Tue; MADDD): Yong Jae Lee (UCD CS): *TRIPODS Introduction; Future of deep learning*
- 10/10 (Thu; Stat): Pantelis Loupos (UCD Graduate School of Management) *Data science needs and issues in Business Schools*
- 10/15 (Tue; MADDD): Meisam Razaviyayn (USC): *Data science and machine learning activities at USC; Nonsmooth & nonconvex optimization in data science*
- 10/24 (Thu; Stat): Julie Novak (Netflix): *Data science and machine learning at Netflix; What skills does Netflix expect for new hires?*
- 10/29 (Tue; MADDD): Yu Zhang (UC Santa Cruz): *Data science activities at UCSC; Big data analytics*
- 11/07 (Thu; Stat): Thomas Strohmer (UCD Math): *Relationship between IMPACT and TRIPODS; Challenges and future of high-dimensional data clustering*
- 11/12 (Tue; MADDD): Rishidev Chaudhuri (UCD Math & NPB): *Graphs and networks in neuroscience*
- 11/21 (Thu; Stat): Grace Yi (Waterloo): *Data science and machine learning activities at Waterloo; Data science and machine learning in health research*
- 11/26 (Tue; MADDD): Javad Lavaei (Berkeley): *Data science and machine learning activities at Berkeley; Data science and machine learning in control theory and power systems*

FYI: Institutions that Received the 2019 TRIPODS Grants

- Building the Foundation for a Data-Intensive Studies Center: L. Cowen, *Tufts*
- Institute for Integrated Data Science: A Transdisciplinary Approach to Understanding Fundamental Trade-offs and Theoretical Foundations: A. McGregor, *U. Mass. Amherst*
- Data Science Principles of the Human-Machine Convergence: F. Roberts, *Rutgers*
- Penn Institute for Foundations of Data Science: S. Agarwal, *U. Penn*
- FINPenn: Center for the Foundations of Information Processing at the University of Pennsylvania: A. Ribeiro, *U. Penn*
- Collaborative Research: Foundations of Greater Data Science: D. Matteson, *Cornell*; M. Cetin, *U. Rochester*
- Institute for the Foundations of Graph and Deep Learning: R. Vidal, *Johns Hopkins*
- Innovations in Data Science: Integrating Stochastic Modeling, Data Representations, and Algorithms: S. Mukherjee, *Duke*
- Illinois Institute for Data Science and Dynamical Systems (iDS2): M. Raginsky, *UIUC*
- UIC Foundations of Data Science Institute: T. Berger-Wolf; *UIC*
- Collaborative Research: Institute for Data, Econometrics, Algorithms and Learning: N. Srebro, *Toyota Tech. Inst. Chicago*; C. Gao, *U. Chicago*; J. Hartline, *Northwestern*
- D4 (Dependable Data-Driven Discovery) Institute: H. Rajan, *Iowa State*
- UT Austin Institute on the Foundations of Data Science: S. Sanghavi, *UT Austin*
- Texas A&M Research Institute for Foundations of Interdisciplinary Data Science (FIDS): B. Mallick, *Texas A&M*
- UC Davis TETRAPODS Institute of Data Science: N. Saito, *UC Davis*