Jacob D. Moorman

Applied Math Ph.D. Student at UCLA

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EDUCATION

Ph.D. in Mathematics — **2016 - Present**

Advanced to Candidacy in Mathematics — **June 14, 2019**

M.A. in Mathematics — **June 15, 2018**

University of California, Los Angeles (UCLA) — *Los Angeles, CA*

B.S. in Mathematical Sciences — **May 17, 2016**

B.S. in Computer Science — **May 17, 2016**

New Jersey Institute of Technology (NJIT) — *Newark, NJ*

RESEARCH

Awards

- 2018-2019 MENTOR NRT Fellowship $34,000

Journal Papers

- **Jacob D. Moorman**, Thomas K. Tu, Denali Molitor, Deanna Needell,
  "*Randomized Kaczmarz with Averaging*."
  Submitted Feb. 2020.
- **Jacob D. Moorman**, Qinyi Chen, Thomas K. Tu, Zachary M. Boyd, Andrea L. Bertozzi,
  "*The Subgraph Matching Problem on Multiplex Networks*."
  Submitted Feb. 2020.
- Robert M. Gower, Denali Molitor, **Jacob D. Moorman**, Deanna Needell,
  "*Adaptive Sketch-and-Project Methods for Solving Linear Systems*."
  Submitted Sept. 2019.

Conference Papers

- **Jacob D. Moorman**, Thomas K. Tu, Denali Molitor, Deanna Needell,
  "*Randomized Kaczmarz with Averaging*."
  Proc. Information Theory and Applications Workshop, La Jolla, CA, Feb. 2019.
- **Jacob D. Moorman**, Qinyi Chen, Thomas K. Tu, Zachary M. Boyd, Andrea L. Bertozzi,
  "*Filtering Methods for Subgraph Matching on Multiplex Networks*."
  Proc. GTA³ 2.0 at IEEE International Conference on Big Data, Seattle, WA, Dec. 2018, pp. 3980-3985.

Presentations

- "*On Comparing Adaptive Sampling Rules for Sketch-and-Project Methods*."
  Joint Mathematics Meeting, Denver, CO, Jan. 2020.
  - Oral presentation by **Jacob D. Moorman**
- "*Adaptive Sketch-and-Project Methods for Solving Linear Systems*."
  Joint Mathematics Meeting, Denver, CO, Jan. 2020.
  - Oral presentation by Denali Molitor
- "*On Comparing Adaptive Kaczmarz Methods*."
  5th Annual Loma Linda Workshop in Particle Imaging and Treatment Planning
  - Oral presentation by Deanna Needell
- "*Randomized Kaczmarz with Averaging*."
  Information Theory and Applications Workshop, La Jolla, CA, Feb. 2019.
  - Poster presentation by **Jacob D. Moorman**
- "*Randomized Kaczmarz with Averaging*."
  Shannon Channel, YouTube, Apr. 2019.
  - Webinar presentation by Denali Molitor
- "*Filtering Methods for Subgraph Matching on Multiplex Networks*."
  GTA³ 2.0 at IEEE International Conference on Big Data, Seattle, WA, Dec. 2018.
  - Oral presentation by Thomas K. Tu

Reviewer

- Linear Algebra and its Applications
- Numerical Algorithms
- SIAM Journal on Matrix Analysis and Applications
- SIAM Journal on Scientific Computing

WORK EXPERIENCE

Research Intern
June 2019 – Sept 2019
Malibu, CA
HRL Laboratories

- Created dynamic calibration procedures for sensor fusion and metrology applications
- Established benchmarking procedures to objectively compare calibration accuracies
- Integrated calibration procedures into a hands-off sensor system

Data Science Research Intern
April 2017 – Sept 2017
Los Angeles, CA
Neural Analytics

- Developed quality metrics and search algorithms for automating robotic transcranial doppler ultrasound scans
- Created simulations for testing search algorithms to reduce the need for physical tests
- Automated routine data visualization processes

Software Engineering Intern
Jan 2015 – May 2016
New York, NY
Trillium Labs

- Built an equity market data visualization web application to allow interactive access to millisecond resolution records
- Implemented outlier detection methods to help identify anomalous stocks and transactions
- Combined outlier detection and data visualization tools for generating market insights

Undergraduate Researcher
Jan 2014 – Dec 2014
Newark, NJ
NJIT Department of Mathematics

- Applied a particle filtering approach to identify and track acoustic sources in 2 and 3 dimensions
- Wrote simulations and benchmark tests in C++ and MATLAB to evaluate performance

Game Development Consultant
Sept 2012 – Nov 2014
Farmingdale, NJ
Mission Critical Studios

- Designed and prototyped levels for 2D puzzle game published on Steam
- Added custom physics mechanics to 3D action game in Unity using C#

TEACHING

Teaching Assistant
Sept 2016 – May 2018
Los Angeles, CA
UCLA Department of Mathematics

- Math 174E: Mathematics of Finance (S'18)
- Math 171: Stochastic Processes (S'18, W'18, F'17)
- Math 155: Mathematical Imaging (W'18)
- Math 142: Mathematical Modeling (F'17)
- Math 170B: Probability Theory (S'17)
- Math 170A: Probability Theory (F'16)