# 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

### 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

### Awards

- 2018-2019 MENTOR NRT Fellowship $34,000

### 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)