

# DANIEL MILLER

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## Summary

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Math Ph.D. candidate with experience developing algorithms for understanding the statistical properties of large data sets coming from number theory. Have experience leading the creation of a scalable, distributed back-end for an Azure-hosted website. Interested in developing new methods for getting the most from existing large data sets. Enthusiastic about applying theoretical knowledge to understand real-world data in a fast-paced, goal-oriented environment.

## Education

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### Cornell University

#### PH.D. IN MATHEMATICS

August 2012–May 2017

- Coordinated logistics, teaching, and grading for a course with 300 students and 12 faculty.
- Assisted in teaching classes at undergraduate and graduate levels.
- Won the Eleanor Norton York Award for excellent collaboration and rapid research progress.

### Cornell University

#### MASTER'S IN COMPUTER SCIENCE

August 2015–May 2017

- Managed the creation of a location-centric auction site written in C# and hosted on Azure.
- Tested the site for scalability to 2K requests per second.
- Collaborated in writing a CPU scheduler and gossip-based networking protocol in C.

### University of Nebraska Omaha

#### B.S. IN MATHEMATICS

August 2009–August 2012

- Minored in Computer Science, graduated *summa cum laude*.
- Dean's List all semesters, Highest Honors in Mathematics, with senior thesis.
- Designed and wrote a compiler for a C-style programming language in Standard ML.

## Research Experience

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### Ph.D. Research

#### CORNELL UNIVERSITY

August 2013–May 2017

- Developing and implementing new techniques for computing  $G$ -star discrepancy, used in numerical integration.
- Created sample sequences to disprove a conjecture on the discrepancy of data coming from elliptic curves.
- Proved precise connections between discrepancy of a sequence and analytic properties of an associated  $L$ -function.
- Demonstrated non-scalability of an algorithm for computing torsion in the cohomology of locally symmetric spaces.

### Arizona Winter School

#### UNIVERSITY OF ARIZONA

May 2014, May 2016

- Wrote scalable code to test a new version of the Lang–Trotter conjecture to high precision.
- Formulated and proved a generalized version of the Bertini Smoothness Theorem.

### Summer Mathematics Institute

#### CORNELL UNIVERSITY

Summer 2011

- Collaborated to create a high-dimensional example that disproved a conjecture.
- Published *Strongly non-embeddable metric spaces*. Topology Appl. **159** (2012), no.3, 749–755.
- Published *Polygonal equalities and virtual degeneracy in  $L_p$  spaces*. J. Math. Anal. Appl. **415** (2014), no.1, 247–268.

## Skills

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**Programming:** C#, Python, Java, ASP.NET, C, Sage, and  $\text{\LaTeX}$ .

**Web:** Azure, Amazon Web Services, HTML, and Google's Material Design Lite.