DANIEL MILLER

(402) 512-4475 | dm635@cornell.edu | linkedin.com/in/daniel-miller/

Summary

Math Ph.D. candidate at Cornell doing research in computational and statistical aspects of algebraic number theory. Work in bursts, beginning with focused reading of top current research, followed by test computations in Python or C, and discussion of test cases with colleagues. Construct a new theoretical setting that generalizes current work, and prove results as well as implement algorithms in this new setting. 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.

Education

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#, using the ASP.NET framework, 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

Computational statistics of elliptic curves
CORNELL UNIVERSITY (PHD) *August 2013–May 2017*

- Developing and implementing new techniques for computing *G*-star discrepancy, used in Monte Carlo 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.

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 created 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

Programming: C#, Python, Java, ASP.NET, C, Sage, and LaTeX.

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

Undergraduate Projects

Kerrigan Research Minigrants Program
University of Nebraska Omaha *Spring 2011*
- Investigated and computed a difficult counterexample in univalent function theory.

Fund for Undergraduate Scholarly Experiences
University of Nebraska Omaha *Summer 2012*
- Streamlined the proof and statement of an important new result in Hopf–Galois module theory.

Leadership

Resident Assistant, *Chesterton House*. Coordinated events, finances, and recruiting for an academic living center.

President, *GCF*. Directed the event-planning, fund-raising, and leadership of a nonprofit campus organization.