Maxie D. Schmidt | Resume

(636)-751-4916 • mschmidt34@gatech.edu
http://people.math.gatech.edu/~mschmidt34/ • Professional references available upon request

Statement of Purpose

My research interests are primarily in number theory and enumerative combinatorics with an emphasis on generating function methods, continued fractions, software development, and experimental mathematics. I am always open to exploring new interesting problems in mathematics and software engineering.

Education

Georgia Institute of Technology **Ph.D. Candidate**
School of Mathematics *2017–Present*

One year as a research assistant for the Georgia Tech Discrete Mathematics and Molecular Biology group. Work experience includes three semesters as a graduate teaching assistant including one semester as head TA for Math 1552.

University of Illinois at Urbana-Champaign **M.S.**
Master of Science in Computer Science *2012–2014*

Work experience includes four semesters as a graduate teaching assistant. Received a NSF GRFP National Honorable Mention in both 2013 and 2014 and was awarded the Diffenbaugh Graduate Fellowship in 2012.

University of Illinois at Urbana-Champaign **B.S.**
B.S. in Liberal Arts and Science for Math and B.S. in Engineering for CS *2004–2012*

Institutional honors of Cum Laude with departmental honors of Highest Distinction for both degree preparations. Awarded the Barry M. Goldwater Scholarship in 2010.

Northwest Missouri State University **A.S.**
Associate of Science from the Missouri Academy of Science, Mathematics and Computing *2002–2004*

Employment and Professional Activities

Mathematical Biology Group Research Assistant 2018–Present
Position Title of Code Goddess and Group Software Engineer

Continued work with the *Georgia Tech Discrete Mathematics and Molecular Biology* research group. Recent work with the group and their growing list of software contributions includes updating, growing, and debugging the existing mathematical visualization code for the *RNAStructViz* application.

Freelance Software Work 2018–2019
Paid C and C++, Java, and Android Library Development

Freelance software experience stemming from my independent work on the *Chameleon Mini Live Debugger* Android application which controls a Chameleon Mini NFC pentesting and emulation device. Continued freelance work from this contractor has involved writing custom cryptographic routines and customizing the Chameleon Mini RevG firmware source in C and C++ for their private real-world commercial NFC applications.

Computational Consultant and Programmer 2016–2017
Research Assistant with the University of Washington in Seattle

Computational data consultant work, programming, and webserver administration for tiling, geometry, and graph-theoretic projects with the University of Washington in Seattle.

Illinois Geometry Lab Programming Consultant 2013–2014
Mathematica and General Purpose Programming Consultant

Involvement within the *Illinois Geometry Lab* (IGL) at the University of Illinois at Urbana-Champaign with projects focusing on mathematical visualization and community engagement.

Software Experience, Skills and Interests

Programming Experience

- Software experience in languages including C and C++, Python, microcontroller and AVR firmware programming, Java, Mathematica, Sage, and LaTeX (professional to expert level in all). Development on Linux and Mac OSX including package installation via *Homebrew*. Experience with PHP, MySQL, and WordPress.
- Extensive recent experience developing Android applications and libraries focusing on NFC, USB interfacing to the Chameleon Mini penetration testing device, audio and video recording, and Mifare Classic tag recognition. My *Chameleon Mini Live Debugger* application has 500+ active users on the Google Play Store for Android. I have recently written DESFire tag emulation support for the Chameleon Mini device firmware sources using funding obtained at GA Tech.
- A list of my current open source software projects is found on my GitHub page at `https://github.com/maxieds`.

Experience with Linux and Unix Systems

Administration and systems programming for a variety of Linux and Unix-like platforms including desktop maintenence, server administration, and building custom home routers using *OpenBSD*. Experience with *Gentoo* and *Debian* Linux variants including *Ubuntu* and several other distributions.

Publications List

- **Combinatorial Sums and Identities Involving Generalized Divisor Functions with Bounded Divisors**
  ↳ *Accecpted for publication in INTEGERS.* *2020*
- **Factorization Theorems for Relatively Prime Divisor Sums, GCD Sums and Generalized Ramanujan Sums**
  ↳ *Accecpted for publication in the Ramanujan Journal. With Hamed Mousavi.* *2020*
- **A Short Note on Integral Transformations and Conversion Formulas for Sequence Generating Functions**
  ↳ *Axioms special issue on Mathematical Analysis and Applications II* *2019*
- **Factorization Theorems for Generalized Lambert Series and Applications**
  ↳ *Ramanujan Journal. Joint work with Merca Merca.* *2018*
- **Zeta Series Generating Function Transformations Related to Generalized Stirling Numbers and Partial Sums of the Hurwitz Zeta Function**
  ↳ *Online Journal of Analytic Combinatorics* *2018*
- **New Congruences and Finite Difference Equations for Generalized Factorial Functions**
  ↳ *INTEGERS: The Electronic Journal of Combinatorial Number Theory* *2018*
- **Combinatorial Identities for Generalized Stirling Numbers Expanding f-Factorial Functions and the f-Harmonic Numbers**
  ↳ *Journal of Integer Sequences. Includes a summary of my Senior Thesis project from 2010–2011 at UIUC.* *2018*
- **Generating Special Arithmetic Functions by Lambert Series Factorizations**
  ↳ *Contributions to Discrete Mathematics. With Merca Merca.* *2018*
- **Jacobi-Type Continued Fractions and Congruences for Binomial Coefficients Modulo Integers $h \geqslant 2$**
  ↳ *INTEGERS: The Electronic Journal of Combinatorial Number Theory* *2018*
- **A Partition Identity Related to Stanley's Theorem**
  ↳ *American Mathematical Monthly. With Merca Merca.* *2018*
- **The partition function $p(n)$ in terms of the classical Möbius function**
  ↳ *Ramanujan Journal. With Merca Merca.* *2017*
- **Continued Fractions for Square Series Generating Functions**
  ↳ *Ramanujan Journal* *2017*
- **New Recurrence Relations and Matrix Equations for Arithmetic Functions Generated by Lambert Series**
  ↳ *Acta Arithmetica* *2017*
- **Continued Fractions and q-Series Generating Functions for the Generalized Sum-of-Divisors Functions**
  ↳ *Journal of Number Theory* *2017*
- **Generating Function Transformations Related to Polylogarithm Functions and the k-Order Harmonic Numbers**
  ↳ *Online Journal of Analytic Combinatorics* *2017*
- **Square Series Generating Function Transformations**
  ↳ *Journal of Inequalities and Special Functions* *2017*
- **Jacobi-type continued fractions for the ordinary generating functions of generalized factorial functions**
  ↳ *Journal of Integer Sequences* *2017*
- **A Computer Algebra Package for Polynomial Sequence Recognition**
  ↳ *Master's Thesis published in UIUC Ideals* *2014*
- **Generalized j-factorial functions, polynomials, and applications**
  ↳ *Journal of Integer Sequences* *2010*