

Education

- Aug. 2014– May 2018 **B.S. Computer Engineering and B.S. Mathematics**,
University of Illinois at Urbana-Champaign.
- Aug. 2018– Present **PhD Mathematics**, *Texas A&M University.*

Publications

- *The Surprising Accuracy of Benford's Law in Mathematics*. Zhaodong Cai, Matthew Faust, A.J. Hildebrand, Junxian Li, Yuan Zhang, *The American Mathematical Monthly*, (2020), DOI: 10.1080/00029890.2020.1690387
- *Leading Digits of Mersenne Numbers*, Zhaodong Cai, Matthew Faust, A.J. Hildebrand, Junxian Li, Yuan Zhang, *Experimental Mathematics*, (2019), DOI: 10.1080/10586458.2018.1D551162

Presentations

- *Leading Digit Distribution, Continued Fractions, and Probabilistic Diophantine Approximation*, Matthew Faust, Yuan Zhang (Poster) UI Undergraduate Research Symposium, April 27, 2017
- *Leading Digit Distribution, Continued Fractions, and Probabilistic Diophantine Approximation*, Zhaodong Cai, Matthew Faust, Yuan Zhang, (Poster) Joint Mathematics Meetings, Atlanta, GA, January 6, 2017.
- *A local Benford Law for a class of arithmetic sequences*, Zhaodong Cai, Matthew Faust, (20 minute talk) Young Mathematicians Conference, Ohio State University, Columbus, OH, August 19-21, 2016.
- *A local Benford Law for a class of arithmetic sequences*, Zhaodong Cai, Matthew Faust, (15 minute talk) MAA MathFest, Columbus, OH, August 4 - 7, 2016
- *Randomness and regularities in the leading digits of number-theoretic sequences*, Zhaodong Cai, Matthew Faust, Shunping Xie (20 minute talk) Rose-Hulman Undergraduate Mathematics Conference, Terre Haute, IN, April 22-23, 2016.
- *Local and global randomness in the leading digits of arithmetic sequences*, Zhaodong Cai, Matthew Faust, Shunping Xie (Poster) UI Undergraduate Research Symposium, April 21, 2016.

Undergraduate Research Experience

Jan. 2017 – **Illinois Combinatorics Lab Undergraduate Experience.**

- Aug 2018
- Mentor: Alexander Yong
 - Investigation of existing conjectures proposed in *Newton polytopes in algebraic combinatorics* by Cara Monical, Neriman Tokcan, and Alexander Yong.
 - Proved various results regarding quasisymmetric Schur polynomials and their convex hulls with regards to the saturated Newton polytope property.

Jan. 2017 – **Critical zeros of the Riemann zeta-function: Illinois Geometry Lab.**

- August 2018
- Mentor: Nicolas Robles
 - Made use of Python and Mathematica to produce models employed in *Combinatorial applications of autocorrelation ratios* by Kyle Pratt, Nicolas Robles, Alexandru Zaharescu, Dirk Zeindler.

Jan. 2016 – **Randomness in Number Theory: Illinois Geometry Lab.**

- Dec. 2016
- Mentor: A. J. Hildebrand
 - Undertook various investigations relating to Benford's law, which resulted in two publications.
 - Employed C++ and Python on the Illinois Campus Cluster to generate and analyze data.

Teaching

2019 Fall **TA for Math 152**, *Texas A&M University*, College Station, TX.

- Meet twice weekly with three sections of students to provide recitations and oversee labs for the university's second semester of engineering calculus.
- Prepare and grade a weekly quiz.

2018 Fall – **Grader for Math 220**, *Texas A&M University*, College Station, TX.

2019 Spring ○ Graded weekly assignments for the introduction to mathematical proofs course.

2017 **Grader for Math 231**, *University of Illinois*, Champaign, IL.

- Graded weekly assignments for the engineering section of Calculus II.

2016 **Course Assistant for CS 374**, *University of Illinois*, Champaign, IL.

- Graded weekly assignments for Algorithms and Models of Computation
- Assisted in presenting material to a twice weekly discussion section.

Honors

2018 **Math Algebraic-Combinatorics Scholarship ICLUE.**

2014–2018 **Edmund J. James Scholar.**

2014 – 2015 **ECE Grainger Freshman Scholarship.**

2014 – 2015 **IL Engineering Achievement Scholarship.**

Skills

Programming / Software.

- C/C++, Python, Java, Haskell, SystemVerilog, Mathematica, Macaulay2, Git, L^AT_EX

Operating Systems.

- Unix/Linux, Windows