

Andrew Sward

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Education

- 2013 **PhD in Applied Mathematics**, *University of Illinois (at Chicago)*.
- 2009 **Masters in Pure Mathematics**, *University of Illinois (at Chicago)*.
- 2007 **Bachelor's of Science in Computer Science and Mathematics**, *Northeastern University*, Boston, MA, summa cum laude.

Experience

- 2014-Present **Visiting Assistant Professor**, *Augustana College*, Rock Island, IL.
 - ★ Taught 7 courses in applied mathematics, including Calculus, Differential Equations, Mathematical Modeling, and a Senior Seminar.
 - ★ Presented talks in research areas of financial mathematics accessible to undergraduates.
 - ★ Presided over independent study in Operations Research for directed undergraduate research.
- 2013-2014 **Visiting Lecturer**, *UIC*, Chicago, IL.
 - ★ Lectured three sections of Calculus 1 and one section of Calculus 3.
 - ★ Coordinated with five TAs as well as permanent faculty on exam content and grading procedures.
 - ★ Facilitated learning for students with disabilities by working closely with the Disability Resource Center.
- 2007-2013 **Teaching Assistant**, *UIC*, Chicago, IL.
 - ★ Ran discussion sessions for different mathematics courses at the university, including Differential Equations, Business Calculus, and Finite Mathematics.
 - ★ Gave lectures on behalf of professors when needed.
 - ★ Wrote, proctored, and graded student exams and quizzes.
- 2006 **Supplemental Instructor**, *Co-op at Northeastern University*, Boston, MA.
 - ★ Attended lectures given on Differential Equations and Linear Algebra, and held problem sets three times a week for students enrolled in the course.
 - ★ Acted as the Tutoring Center's top mathematics tutor, tutoring over 50 students in almost all undergraduate mathematics courses.
 - ★ Created Northeastern's first undergraduate student group for tutors, uniting tutors from all departments across campus under the Northeastern University Tutoring Society (NUTS).
- 2004-2005 **Junior Software Developer**, *Co-op at Empirix*, Bedford, MA.
 - ★ Discovered various defects in the company's software product.
 - ★ Engaged in writing code in C++ to fix defects and documented these fixes.
 - ★ Actively contributed to the software development process by reviewing technical and design specifications.

PhD Thesis

- Title *A Discontinuous-Galerkin Method for the CEV process*
- Advisor David Nicholls
- Description Numerical Analysis techniques for valuing European as well as American options. Code written in Matlab.
- Publication To Appear in: *Communications in Computational Physics*

Awards

- 2013 Victor Twersky Memorial Award, received from the Mathematics Department at UIC.
- 2009 Outstanding TA, received from the Mathematics Department at UIC.
- 2007 Top 100 most influential seniors at Northeastern University.
- 2006 Wenzinger Scholarship recipient.
- 2002-2007 Dean's Scholarship recipient.

Talks

- 2015 *Bitcoin Protocol: A Detailed Look* Poster Session, MathFest, Washington D.C.
- 2015 *The Simpsons and Their Mathematical Secrets* Pi Mu Epsilon Banquet, Augustana
- 2014 *A Proof of the Generalized Futurama Theorem* Math Seminar, Augustana
- 2014 *Introduction to the Valuation of Stock Options* Math Seminar, Augustana
- 2014 *Bitcoin: The Internet of Money* Guest Speaker for Computer Science, Augustana
- 2014 *Why the Future No Longer Needs Wall Street* Math Seminar, Augustana
- 2012 *A DG-Method for the CEV process.* Applied Math Seminar, UIC
- 2010 *Sums of Reciprocals of Squares using Complex Analysis.* Undergrad Math Club, UIC
- 2009 *Recurrence Relations and the Fibonacci Formula.* Undergrad Math Club, UIC
- 2007 *RSA Encryption.* Senior Computer Science Seminar, Northeastern University
- 2006 *Advanced Sudoku Strategies.* Tutoring Club, Northeastern University

Other Projects

Graduate Projects

- Matlab Implementation of various numerical methods for pricing options, including Finite Difference schemes, binomial method and Monte-Carlo.
- Python Implementation of the cutting algorithm in Linear Programming.
- Matlab Implementation of a scheduling algorithm for airline traffic.
- Matlab Implementation of a minimum containing disk for an arbitrary set of points.

Bachelor projects

- JAVA Design and implementation of the tile board game Carcassonne.
- JAVA Ray-tracing computer graphics simulator, including reflections and Phong shading with highlights.
- JAVA Sudoku solver (non brute-force techniques).
- Scheme Fractal simulator

Computer skills

- Basic XML, HTML, PHP
- Intermediate C, C++, Scheme, Python, Mathematica
- Expert JAVA, Matlab, TeX
- Tools Eclipse, CGAL, Sage, SourceSafe
- Miscellaneous Windows, Office, Linux

———— Interests

Bitcoin Cryptocurrencies