Daniel Tamor Liu Citron

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Education

Cornell University — Ithaca, NY
Ph.D. Theoretical Physics; Experimental Physics Minor — *2011 – Present*
M.S. Physics — *2014*
Committee: Christopher R. Myers, Chair; Paul Ginsparg; Paul McEuen

University of Chicago — Chicago, IL
B.A. Physics with Honors — *2005 – 2009*
Senior Honors Thesis: "Simulating Jamming in Granular Materials"

Research Interests

- Infectious disease dynamics modeling
- Mathematics for analyzing complex systems
- Computational tools for analyzing large datasets
- Stochastic processes
- Statistical physics
- Social network analysis

Awards & Fellowships

- NSF Graduate Research Fellowship (Cornell University) — *2012 – Present*
- Phi Beta Kappa (University of Chicago) — *2009*
- Dean's List (University of Chicago) — *2006 – 2009*

Data Science Projects

Studying Keyword Adoption as an Indicator of Community Formation — Ithaca, NY
Graduate Research Assistant, Cornell University — *Winter – Summer 2013*
- Performed social network analysis of scientists collaborating on similar topics
- Compiled Adobe Lucene database of textual content of scientific articles
- Used text database to identify groups of authors who used the same key words or phrases
- Created Python tools for studying formation and growth of research collaboration networks

Measuring Patterns in Text Reuse in Scholarly Corpus — Ithaca, NY
Graduate Research Assistant, Cornell University — *Summer – Fall 2012*
- Measured rate and distribution of text reuse in online database of scientific articles (arXiv)
- Converted raw data into social network dataset for easy visualization and exploration
- Created Python tools for measuring properties of social network dataset

Modeling Projects

Infectious Disease Dynamics — Ithaca, NY
Graduate Research Assistant, Cornell University — *Summer 2013 – Present*
- Developed tools in Python for stochastic modeling of endemic disease on a contact network
- Used computer simulations to explore endemic state of stochastic model of disease
- Performed mathematical analysis of stochastic model using moment closure techniques

Two-Dimensional Jamming Transition Chicago, IL

Undergraduate Research Assistant, University of Chicago *Fall 2008 – Fall 2009*

- Developed computer simulation in Fortran to explore jamming transition in soft discs
- Collaborated with an experimentalist to compare simulation results to real-world phenomena
- Studied behavior of system's displacement field above and below jamming

Software and Hardware Development

Synchrotron X-Ray Tomography Experiment Argonne National Lab, Chicago IL

Research Support Staff, GSECARS *Spring 2010 – Summer 2011*

- Improved synchrotron X-ray tomography experiment at Advanced Photon Source
- Rewrote IDL software to allow for faster tomographic data collection
- Redesigned user interface for controlling tomography experiment
- Designed and built optical mount for new tomography experiment apparatus

Software Testing of Implantable Medical Device Yehud, Israel

Biomedical Engineering Intern, Biocontrol Medical *Fall 2009 – Spring 2010*

- Designed firmware test protocol for electronic wand used to communicate with the device
- Performed tests on software for programming the device

Technical Skills

Proficient in: Python, Mathematica, Fortran, IDL, Microsoft Office, LaTeX, Mac OS X, Unix

Working knowledge of: SQL, Git, Julia, Adobe Lucene, Octave, Microsoft Windows, SolidWorks

Leadership Experience

Graduate & Professional Students Assembly Cornell University

Chair, Faculty Awards Committee *Fall 2014 – Present*

Physics Field Representative *Fall 2013 – Present*

- Attended biweekly meetings to discuss issues and initiatives relevant to graduate students
- Communicated with peers in physics department about events and other GPSA activities
- Planned faculty awards ceremony with small group of graduate student peers

Physics Graduate Society Cornell University

Treasurer, Event Coordinator *Summer 2012 – Spring 2013*

- Organized STEM graduate student summer colloquium series
- Worked with other officers to plan social events for graduate students throughout school year
- Conducted science outreach activities with community elementary school students and parents

Cornell Center for Materials Research Outreach Cornell University

Volunteer *Summer 2014 – Present*

- Conducted science outreach with 10-30 elementary school students
- Performed physics and chemistry demonstrations and explained basic scientific concepts
- Supervised small groups of 2-3 students to help them conduct simple experiments

University of Chicago Scavenger Hunt University of Chicago

Judge (event organizer) *2009 – 2014*

- Collaborated closely with group of 15-20 individuals to plan four day University-wide event
- Organized successful Guinness World Record as World's Largest Scavenger Hunt in 2011

Society of Physics Students University of Chicago

President *Spring 2008 – Spring 2009*

- Planned weekly lecture series on topics in physics by students and professors

Teaching Experience

Instructor Cornell University

Physics GRE Preparation Short Course *Spring 2013; Spring 2014*

- Designed syllabus and lecture slides for 6-week course
- Gave lectures and led discussions to review undergraduate physics material for exam

Laboratory Teaching Assistant Cornell University

Physics II: Electricity and Magnetism (for majors) *Fall 2014*
Physics II: Electricity and Magnetism *Spring 2012*
Physics I: Mechanics and Heat *Fall 2011*

- Supervised 10–15 students' laboratory work
- Demonstrated experimental techniques necessary to complete laboratory procedure

Teaching Assistant Cornell University

Physics II: Electricity and Magnetism *Spring 2012*
Physics I: Mechanics and Heat *Fall 2011*

- Led biweekly discussion sections to teach students problem solving techniques
- Wrote weekly quizzes; graded homework and exams

Physics, Calculus, and Algebra Tutor Tutor.com

Independent Contractor *Spring 2008 – Fall 2009*

- Tutored high school and middle school students online

Publications

- Daniel T. Citron, Paul Ginsparg. "Patterns of Text Reuse in a Scientific Corpus." PNAS 2014; published ahead of print December 8, 2014, DOI:10.1073/pnas.1415135111
- Mark L. Rivers, Daniel T. Citron, Yanbin Wang. "Recent Developments in Computed Tomography at GSECARS," Proc. SPIE 7804, 780409 (2010), DOI:10.1117/12.861393
- X. Cheng, G. Varas, D. Citron, H. Jaeger, and S. Nagel. "Collective Behavior in a Granular Jet: Emergence of a Liquid with Zero Surface Tension," Physical Review Letters, Vol. 99, Nov. 2007

Presentations

Accounting for Fluctuations in Stochastic SIRS Model on Networks U. of Pittsburgh

International Workshop on Advances in Discrete Networks *December, 2014*

Text Overlap Patterns in Scientific Literature Cornell University

STEM Graduate Student Colloquium *June, 2014*