

Amanda Lynn Traud

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Education

- University Of North Carolina at Chapel Hill (UNC-CH)
Doctorate of Philosophy in Mathematics
Expected Graduation May 2013
- University Of North Carolina at Chapel Hill (UNC-CH)
Bachelor of Science in Mathematics Applied Concentration
May 2008
- North Carolina State University
Minor in Business Management
January 2005 – May 2006
Transferred
- Wake Technical Community College
Transfer Program
August 2002 – December 2005
- Fuquay Varina High School, Fuquay-Varina, NC
May 2002

Research Experience

- 2008** **Deterministic Models of the HIV Epidemic**
Research Advisor: Dr. Peter J. Mucha, Dr. Audrey Pettifor

Worked with Clarissa Sellers, SPGRE Undergraduate, to make compartmental models of the HIV epidemic including the effects of Herpes Simplex Virus-2 and concurrent partnerships with the African American population of the Southeast United States.

- 2008** **Visualizing Networks**
Research Advisor: Dr. Peter J. Mucha

Worked with Christina Frost, SPGRE Undergraduate, to develop codes to visualize networks both respecting and ignoring community structure. Combined Kamada-Kawai, and Fruchterman and Reingold techniques of graphing networks with Leading Eigenvector Community Detection.

- 2006-Present** **Community Detection in Large Social Networks**
Research Advisor: Dr. Peter J. Mucha, Dr. Mason A. Porter

Developed codes, primarily in MATLAB, to implement eigenvector based community detection schemes for large networks with sparse adjacency matrices. Initial applications focused on intra-university Facebook networks, including development of code to transfer provided data into compatible formats and

correlation of structure with identified individual characteristics.

2006 Development of Novel Materials for Use as Proton Exchange Membranes in Hydrogen Fuel Cells

Overseen by: Chemistry Graduate Student Ronald Traud. Developed a mathematical equation to predict the relative volume available for polymer electrolyte in a pore-filling type proton exchange membrane. Fabricated frames to be used for the formation of a novel proton exchange membrane from liquid precursors.

Publications

In Progress

“Finding Sociological Patterns in Facebook Networks.” Amanda L. Traud, Peter J. Mucha, Yan Zhang, Mason A. Porter.

Published

“Community structure in Congressional Cosponsorship Networks,” Y. Zhang, A. J. Friend, A. L. Traud, M. A. Porter, J. H. Fowler & P. J. Mucha, *Physica A* **387**, 1705-1712 (2008).

Conferences

- July 2008 **SIAM Annual Meeting**
- April 2008 **Celebration of Undergraduate Research**
- April 2008 **National Conference for Undergraduate Research**
- Nov. 2007 **South Eastern AMS Conference**
- Sept. 2007 **NC-OPT-ED Alliance Day**
- July 2007 **RES/SPGRE Research Review**
- April 2007 **National Conference for Undergraduate Research**
- March 2007 **SAMSI Undergraduate Workshop**
- March 2006 **SAMSI 2 Day Undergraduate Workshop**
- March 2006 **SIAM-SEAS Undergraduate Conference**

Professional Presentations

Traud, A. L. (2008 July) Identifying Sociological Trends in Facebook Networks. Poster presented at the annual meeting of the Society for Industrial and Applied Mathematics in San Diego, CA.

Traud, A. L. (2008 April) Identifying Sociological Patterns in Facebook Networks. Oral Presentation presented at the annual meeting of Celebration of Undergraduate Research at UNC Chapel Hill.

Traud, A. L. (2008 April) Sociological Pattern Detection In Facebook Networks Through Eigenvector Methods. Oral presentation presented at the annual meeting of the National Conference for Undergraduate Research.

Traud, A. L. (2008 March) Finding Sociological Trends in Facebook Networks. Oral presentation presented at the Fourth Annual Graduate Research Symposium in Chapel Hill.

Traud, A. L. (2007 November) Using Eigenvector Methods to Find Sociological Patterns in Facebook Networks. Oral presentation presented at the South Eastern AMS Conference in Murfreesboro.

Traud, A. L. (2007 September) Facebook Communities Through Eigenvectors. Oral presentation at the Sixth Annual NC-OPT-ED Alliance Day.

Traud, A. L. (2007 July) Finding Sociological Patterns in Facebook Networks. Oral presentation at Review of RES/SPGRE Summer Research.

Traud, A. L. (2007 April) Community Detection in Facebook. Poster presentation presented at annual meeting of Celebration of Undergraduate Research.

Traud, A. L. (2007, April). Community Detection in Facebook. Oral presentation presented at the annual meeting of the National Conference for Undergraduate Research.

Academic Distinctions

AGEP Fellow

Pre-doctoral program that provides research funding to selected minority students interested in obtaining a PhD in science.

MCM Honorable Mention

Mathematical Contest for Modeling awarded teams of three Successful Participant, Honorable Mention, Meritorious, and Outstanding for modeling questions answered.

First Annual SIAM Undergraduate Poster Award

Award presented to the best of the undergraduate posters presented at the SIAM Annual meeting.

Teaching Experience

- Mentor for two SPGRE Undergraduates – UNC-CH (May 2008-August 2008)
- Grader for the Mathematics Dept. – UNC-CH (August 2007-May 2008)
- Math Tutor for the Student Athletes – UNC-CH (August 2006-May 2007)
- Math Tutor for the Summer Bridge Program – UNC-CH (Summer 2006)

Affiliations

- Society for Industrial and Applied Mathematics (2008-present)
- American Women in Mathematics (2008 – present)
- Society of Undergraduate Mathematicians (2005-2006)

Activities

- Mathematical Contest for Modeling. University of North Carolina 2008
- Member: Transfer Student Association. University of North Carolina 2006- present
- Member: SHRM. NC State University 2005-2006
- Member: Math Club. Wake Technical Community College 2002-2005
- Recruitment Chairperson: Economics Club. Wake Technical Community College 2002-2005