

Emily Gember-Jacobson

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Education

- May 2011 **M.S. in Computer Sciences**, *University of Wisconsin-Madison*, Madison, WI.
In addition to Computer Science coursework, completed a PhD minor comprising courses from the Delta Program in Research, Teaching, and Learning.
- May 2009 **B.A. with honors in Computer Science**, *Grinnell College*, Grinnell, IA.
Concentration (minor) in Gender and Women's Studies

Research Experience

- Aug 2009 - May 2015 **Research Assistant**, *University of Wisconsin-Madison*, Madison, WI.
Work on the Paradyn Project with Dr. Barton P. Miller. Research interests include binary analysis and instrumentation, efficient exploit detection, and library fingerprinting.
- Summer 2008 **Undergraduate Researcher**, *Texas A&M University*, College Station, TX.
Worked in the Sketch Recognition Lab with Dr. Tracy Hammond. Created a web interface for the Sketch-based Online User Study Application (SOUSA). Funded by the Distributed Mentor Project (DMP) through the Computing Research Association's Committee on the Standing of Women in Computing (CRA-W).
- Summer 2007 **Research Assistant**, *Grinnell College*, Grinnell, IA.
Mentored Advanced Project in Media Computing with Dr. Samuel A. Rebelsky. Investigated efficient pixel manipulation in the GIMP. Product was used in the Computer Science I class at Grinnell College.

Teaching Experience

- Summer 2015 **Lecturer**, *Computer Sciences, University of Wisconsin-Madison*, Madison, WI.
Taught an introductory course *Introduction to Programming* covering Computer Science fundamentals and the Java programming language. Planned four lectures per week, wrote four projects, and wrote and graded three exams. Supervised a teaching assistant.
- Summer 2013 **Instructor**, *Grandparents University, University of Wisconsin-Madison*, Madison, WI.
Led three sessions of a two-day (6 hours of instruction time) Computer Science major for grandparents and their grandchildren (ages 7-14); each session had approximately 25 participants. Activities were in Scratch and from CS Unplugged; materials adapted from a previous offering.
- Spring 2012 **Lecturer**, *Computer Sciences, University of Wisconsin-Madison*, Madison, WI.
Taught upper-level, semester-long elective *Introduction to Operating Systems*. Planned two lectures and one discussion section per week, wrote and graded weekly quizzes, projects, and a final exam. Supervised a teaching assistant.
- Mar 2007 - May 2009 **Tutor**, *Computer Science, Grinnell College*, Grinnell, IA.
Helped walk-in students in a lab setting, primarily with finishing labs or on weekly homework assignments from introductory Computer Science classes. Tutored an individual student on a weekly basis (March - May 2007).
- Fall 2006 - Fall 2008 **Teaching Assistant**, *Computer Science, Grinnell College*, Grinnell, IA.
Assisted in a workshop-style Computer Science 1 class (4 meetings/week). Held open lab hours once a week.

Professional Experience

- May - Aug 2009 **Freelance Web Programming**, *Northwestern University*, Evanston, IL.
Implemented a new website for the Segal Design Institute using Django.

Publications

Emily R. Jacobson, Andrew R. Bernat, William R. Williams, Barton P. Miller. Detecting Code Reuse Attacks with a Model of Conformant Program Execution. *International Symposium on Engineering Secure Software and Systems (ESSoS)*. Munich, Germany, February, 2014.

Emily R. Jacobson, Nathan Rosenblum, Barton P. Miller. Labeling Library Functions in Stripped Binaries. *10th ACM SIGPLAN-SIGSOFT Workshop on Program Analysis for Software Tools and Engineering (PASTE)*. Szeged, Hungary, September, 2011.

Emily R. Jacobson, Michael J. Brim, Barton P. Miller. A Lightweight Library for Building Scalable Tools. *PARA '10: The State of the Art in Scientific and Parallel Computing*. Reykjavik, Iceland, June, 2010.

Brandon L. Kaster, **Emily R. Jacobson**, Water Moreira, Brandon Paulson, Tracy A. Hammond. SOUSA v2.0: Automatically Generating Secure and Searchable Data Collection Studies. *International Workshop on Visual Languages and Computing (VLC)*. Redwood City, CA, September, 2009.

Posters

Emily R. Jacobson, Andrew R. Bernat, William R. Williams, and Barton P. Miller. Poster Abstract: Detecting Code Reuse Attacks with a Model of Conformant Program Execution. *Research in Attacks, Intrusions and Defenses (RAID)*. St. Lucia, October, 2013.

Emily Jacobson and Brandon Kaster. SOUSA: The Sketch-based Online User Study Application. *Texas A&M University Undergraduate Summer Research Grant Poster Sessions*. College Station, TX, August, 2008.

Ted Cooper and **Emily Jacobson**. Efficient Pixel Manipulation in the GIMP. *Midstates Consortium Undergraduate Research Symposium in the Physical Sciences, Mathematics, and Computer Sciences*. Chicago, IL, October, 2007.

Presentations

Emily Gember-Jacobson. The Evolution of Dyninst in Support of Cyber Security. *Dyninst/MRNet Users' Meeting*. Madison, WI, August, 2014.

Emily Jacobson. Detecting Code Reuse Attacks Using Dyninst Components. *Paradyn/HTCondor Week 2013*. Madison, WI, April, 2013.

Emily Jacobson. unstrip: Restoring Function Information to Stripped Binaries Using Dyninst. *Paradyn/Condor Week 2011*. Madison, WI, May, 2011.

Emily Jacobson. SOUSA: The Sketch-based Online User Study Application. *Midstates Consortium Undergraduate Research Symposium in the Physical Sciences, Mathematics, and Computer Sciences*. St. Louis, MO, October, 2008.

Awards

- 2013 **CRA-W Career Mentoring Workshop Travel Grant.**
- 2010 **CRA-W Graduate Cohort Workshop Travel Grant.**
- 2009 **Inducted into Phi Beta Kappa, Grinnell College.**
- 2005-2009 **Dean's List (5 semesters), Grinnell College.**
- 2005-2009 **Trustee Honor Scholarship, Grinnell College.**

Service

Student Groups

- Oct 2012 - Jul 2014 **President**, *University of Wisconsin-Madison ACM-W Chapter.*
Oct 2011 - Oct 2012 **Vice President**, *University of Wisconsin-Madison ACM-W Chapter.*
Oct 2010 - Oct 2011 **Secretary**, *University of Wisconsin-Madison ACM-W Chapter.*
Mar 2011 - Dec 2013 **Treasurer**, *University of Wisconsin-Madison ACM Chapter.*

Computer Science Outreach

- 2011 - 2014 **Reviewer**, *NCWIT Aspirations in Computing Award.*
2010, 2012, 2014 **Co-Leader**, *Expanding Your Horizons: Computer Science Career Session.*
Co-developed and led three sessions of a 50-minute overview of Computer Science and Computer Science jobs for middle school girls; activities were in Scratch (2010, 2012) or from CS Unplugged (2014). EYH is a one-day conference to help young women learn more about careers in STEM.
Sep 2013 **Volunteer**, *Wisconsin Science Festival: Programming for Science, Games and Art Session.*
Jul 2013 **Instructor**, *Wisconsin Alumni Association Grandparents University: Computer Science Major.*
Taught three sessions of a two-day introduction to Computer Science for kids 7-14 and their grandparents; activities were in Scratch and from CS Unplugged.
Jan 2013 **Co-Leader**, *WisconScientists: Computer Science Learning Station.*
Co-developed and led three sessions of a 40-minute overview of Computer Science for middle school students; activities were in Scratch and from CS Unplugged.
Jul 2012 **Volunteer**, *Wisconsin Alumni Association Grandparents University: Computer Science Major.*
Oct 2010 **Co-Leader**, *Scratch Workshop at Pauline Haass Public Library.*
Co-developed and led a two-hour overview of Computer Science for middle school students; activities were in Scratch and from CS Unplugged.

Departmental Committees

- Aug 2008 - May 2009 **Elected Member**, *Grinnell College Comp. Sci. Student Educational Policy Committee.*
Helped conduct student portion of departmental faculty review and several student activities.

Affiliations

Association for Computing Machinery (ACM),
ACM Special Interest Group on Computer Science Education (SIGCSE),
Computer Science Teachers Association (CSTA),
Phi Beta Kappa