

Emma Tosch

PhD Candidate

University of Massachusetts Amherst

College of Information and Computer Sciences

Programming Languages and Systems Lab (PLASMA)

Advisor: Dr. Emery Berger

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EDUCATION

Ph.D. **Computer Science**. University of Massachusetts, Amherst. Amherst, MA. 2011 – present.

M.S. **Computer Science**. University of Massachusetts Amherst. Amherst, MA. 2011 – 2015.

M.A. **Computer Science**. Brandeis University. Waltham, MA. 2009 – 2011.

B.A. **English Literature**. Wellesley College. Wellesley, MA. 2006 – 2008.

RESEARCH EXPERIENCE

Research Assistant. June 2013 – present. University of Massachusetts, Amherst. PLASMA Lab, Advisor : Emery Berger. Developed a domain specific programming language and runtime system to design, debug, and deploy scientific surveys on the web, at scale. Developing static analyses for experimental designs.

Research Intern. June 2015 – August 2015. Facebook, Inc. Menlo Park, CA. Core Data Science – Economic Research Team, Statistics and Decision Science Team. Mentor: Eytan Bakshy. Static Analysis for the PlanOut DSL.

Research Assistant. September 2011 – January 2013. University of Massachusetts, Amherst. CI Lab, Advisor : Lee Spector. Researched new metrics for evaluating parameters of evolutionary search based on techniques from nonparametric statistics.

Visiting Researcher. June 2010 – August 2010. Institute for Creative Technologies. Playa Vista, CA. Supervisor : Ron Artstein. Augmented and evaluated a natural language generation and question-answering system for virtual humans.

PUBLICATIONS

E. Bakshy, **E. Tosch**. Formal Verification and Automated Causal Inference for Internet-Scale Experiments. CODE@MIT 2015.

E. Tosch, E. Berger. SurveyMan: Programming and Debugging Surveys at Scale. *Proceedings of the 2014 ACM International Conference on Object Oriented Programming Systems Languages and Applications*. ACM New York, NY, USA. 2014. **Best Paper Award**.

E. Tosch, E. Berger. Programming and Debugging Surveys. POPL OBT Workshop 2014.

E. Tosch, L. Spector. Achieving COSMOS: A metric for determining when to give up and when to reach for the stars. *Proceedings of the 14th Intl. Conf. on Genetic and Evolutionary Computation Conference Companion*. ACM New York, NY, USA. 2012.

K. Harrington, **E. Tosch**, L. Spector, J. Pollack. Compositional Autoconstructive Dynamics *Proc. of the 8th Intl. Conf. on Complex Systems*. 2011.

G. Chen, **E. Tosch**, R. Artstein, A. Leuski, D. Traum. Evaluating Conversational Characters Created through Question Generation. FLAIRS Conference. 2011.

TEACHING
EXPERIENCE

Mentor. REUMass '16. Mentoring an undergraduate (Rosario Huamani Carpio, Pomona College '18). Summer 2016.

Mentor. Google Summer of Code. Official mentor for a GSoC student (Prakhar Srivastav) working on a SurveyMan graphical interface. Summer 2015.

Mentor. UMass Amherst. Mentoring an undergraduate (Molly McMahon) for a summer REU and an independent study with Emery Berger. Summer 2013, Spring 2014.

Teaching Assistant. Reasoning Under Uncertainty (Undergraduate), University of Massachusetts, Amherst. Prof. Andrew McGregor. Spring 2013.

Teaching Assistant, Guest Lecturer. Intro. to Theory of Computation (Undergraduate), Brandeis University. Antonella DiLillo. Spring 2011.

Teaching Assistant. Structure and Interpretation of Computer Programs (Undergraduate), Brandeis University. Prof. Harry Mairson. Fall 2010.

Teaching Assistant. Data Structures (Undergraduate), Brandeis University. Antonella DiLillo. Spring 2010.

Volunteer. Cahners Computer Place, Museum of Science, Boston. Oct. 2009 – May 2010, Sep. 2010 – May 2011

TEACHING
TRAINING

28 September 2015. Active Learning Training with Rachel Rybaczuk.

Fall 2015. CIRTl Course. Diversity in College Classroom: Teaching the STEM Undergraduate.

WORK
EXPERIENCE

Software Engineering Intern. Sept. 2014 – Dec. 2014. Google, Inc. Mountain View, CA.

Data Warehouse Analyst. March 2008 – May 2009. Recombinant Data Corp. Newton, MA.

Assistant Loan Processor. June 2005 – October 2006. Hoffman Companies. Brookline, MA.

Intern. June 2004 – August 2004. New Jersey Division of Law and Public Service. Trenton, NJ.

TALKS AND
PRESENTATIONS

Programming Language Research and Social Science.

30 June 2016. REUMass Summer '16 Lunch Series. Amherst, MA.

Programming Languages and Experimentation.

31 May 2016. NEPLS Spring 2016. Amherst, MA.

17 October 2015. CODE@MIT. Poster Presentation. Cambridge, MA.

Programming and Debugging Surveys.

13 May 2015. Google, Inc. Invited Talk. Cambridge, MA.

9 April 2015. Center for Data Science launch symposium. Poster session. Amherst, MA.

22 October 2014. OOPSLA 2014. Oral Presentation (full). Portland, OR.

11 June 2014. PLDI Student Research Competition. Poster session & short talk. Edinburgh, Scotland.

11 April 2014. CRA-W Graduate Cohort Workshop. Poster session. Santa Clara, CA.

12 March 2014. UMass CS Women. Oral presentation. Amherst, MA.

31 January 2014. Google PhD Summit. Lightning talk. Cambridge, MA.

25 January 2014. POPL OBT Workshop. Oral presentation (full). San Diego, CA.

Achieving COSMOS.

7 July 2012. GECCO UP Workshop. Oral presentation (full). Philadelphia, PA.

Women in Computing.

24 April 2015. MassMutual Women in Technology Conference. *Inspiring Women in Technology* Panelist.

PROFESSIONAL
ACTIVITIES
& SERVICE

CICS Graduate Representative. January 2016 – present.
Student Volunteer, PLDI 2016. June 2016.
UMass CS Women. Webmaster. June 2016 – present.
UMass CS Women. Treasurer. January 2016 – May 2016.
UMass CS Women. Co-Chair. January 2015 – January 2016.
PLDI External Review Committee. Member. 2016.
ECOOP External Review Committee. Member. 2016.
POPL OBT Workshop Program Committee. Member. 2016.
WPI STEM Faculty Launch. Participant. September 2015.
ACM-W Early Career Mentoring Workshop. Participant. June 2015.
Program Committee Member. ECOOP DSLDI Workshop 2016.
Artifact Evaluation Reviewer. PLDI 2016.
Computer Science Graduate Admissions Committee. Reviewer. December 2014 – February 2015.
NCWIT Aspirations Scholarship Reviewer. November 2014.
Artifact Evaluation Committee. Reviewer. POPL 2015.
Student Volunteer, SPLASH 2014. October 2014.
Graduate Employee Organization, UAW 2322. Steward. September 2011 – May 2014.
NSF REU Graduate Student Mentor. Summer 2013.
Oregon Programming Languages Summer School. Attendee. July – August 2013.
Brandeis University Women in Computing (for Undergraduates). Founder. April 2010 – May 2011.

HONORS,
SCHOLARSHIPS,
AND AWARDS

2015 WPI STEM Faculty Launch participant and travel grant.
2015 NCWIT Symantec Student Seed Funding (for UMass CS Women)
2015 UMass Amherst School of Computer Science Outstanding Synthesis Award
2014 OOPSLA Best Paper Award
2014 PLDI ACM Student Research Competition (1st Place)
2013 Future of Software Engineering Symposium Scholarship at Microsoft Research
2013 Programming Languages Mentoring Workshop Scholarship
2012 ACM-W conference scholarship (attended SIG-EVO)
2010 Grace Hopper Celebration of Women in Computing Scholarship
2005 Humanities Foundation Award in English Literature