ELENA LEAH GLASSMAN

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Interests

Human-computer interaction (HCI), learning at scale, and computer science education. Programming is now being taught at massive scales. I focus on systems for visualizing variation in student solutions to programming problems at scale. I aim to empower teachers with the information they need to assess students' understanding and provide feedback that is relevant to as many students as possible.

Education

Massachusetts Institute of Technology — Cambridge, MA
Ph.D., Electrical Engineering and Computer Science — Summer 2016 (Expected)
4.8/5.0 GPA
Advisor: Robert C. Miller

Massachusetts Institute of Technology — Cambridge, MA
Master of Eng., Electrical Engineering and Computer Science — Feb. 2010
Advisor: Russ Tedrake. Thesis: "A quadratic regulator-based heuristic for rapidly exploring state space."

Massachusetts Institute of Technology — Cambridge, MA
B.S., Electrical Science and Engineering — June 2008
4.8/5.0 GPA

Journal Articles

Elena L. Glassman, Jeremy Scott, Rishabh Singh, Philip J. Guo, and Robert C. Miller. "OverCode: Visualizing variation in student solutions to programming problems at scale." **Accepted for publication** in the Online Learning at Scale Special Issue of the *ACM Transactions on Computer-Human Interaction* (ACM TOCHI), 2015.

Elena L. Glassman. "A wavelet-like filter based on neuron action potentials for analysis of human scalp electroencephalographs." *IEEE Transactions on Biomedical Engineering* 52, no. 11 (2005).

Conference Papers

Elena L. Glassman, Ned Gulley, and Robert C. Miller. "Toward facilitating assistance to students attempting engineering design Problems." In *Proceedings of the Ninth Annual ACM Conference on International Computing Education Research* (ICER '13). ACM, New York, NY, USA, pp. 41-46, Aug. 2013.

Elena L. Glassman, Alexis Lussier Desbiens, Mark Tobenkin, Mark Cutkosky, and Russ Tedrake. "Region of Attraction Estimation for a Perching Aircraft: A Lyapunov Method Exploiting Barrier Certificates." In *Proceedings of the 2012 IEEE International Conference on Robotics and Automation* (ICRA '12), pp. 2235-2242, May 2012.

Elena L. Glassman and Russ Tedrake. "A quadratic regulator-based heuristic for rapidly exploring state space." In *Proceedings of the 2010 IEEE International Conference on Robotics and Automation* (ICRA '10), pp. 5021-5028, May 2010.

Elena L. Glassman and John V. Guttag. "Reducing the number of channels for an ambulatory patient-specific EEG-based epileptic seizure detector by applying recursive feature elimination." In *Proceedings of the 28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society* (EMBS '06), pp. 2175-2178, 30 Aug. - 3 Sept. 2006.

Patent Application

John V. Guttag, Ali Shoeb, **Elena L. Glassman**, Eugene I. Shih. "Method and apparatus for reducing the number of channels in an EEG-based epileptic seizure detector." US Patent App. 12/196,690, 2008.

Awards and Honors

- **Amar Bose Teaching Fellowship**, awarded to 3 nominated teaching assistants across MIT Jan. 2014 - Dec. 2014
- **NSF Graduate Research Fellowship** Sept. 2011 - Sept. 2014
- **National Defense Science and Engineering Graduate (NDSEG) Fellowship** Sept. 2008 - Sept. 2011
- **MIT EECS Dept. Masterworks Oral Thesis Presentation Award** May 2009
- Member, **Eta Kappa Nu**, an EECS honor society 2008
- **Intel Foundation Young Scientist Award**, given to the top 3 out of 1300 projects at Intel International Science and Engineering Fair May 2003

Research Talks

Conference Presentations

- **ACM ICER** International Conference on Computing Education Research. "Toward facilitating assistance to students attempting engineering design problems." August 2013.
- **IEEE ICRA** International Conference on Robotics and Automation. "A quadratic regulator-based heuristic for rapidly exploring state space." May 2010.

Seminar Talks

- **DUB Seminar, HCI & Design, University of Washington**. "OverCode: Visualizing variation in student solutions to programming problems at scale." July 2014.

Posters

- **ACM UIST** User Interface Software and Technology Symposium. "OverCode: Visualizing Variation in Student Solutions to Programming Problems at Scale." October 2014.
- **ACM Conference on Learning at Scale**. "Feature engineering for clustering student solutions." March 2014.
- **ACM ICER** International Conference on Computing Education Research. "Visualizing and classifying multiple solutions to engineering design problems." August 2013.
- **IEEE ICRA** International Conference on Robotics and Automation. "Region of attraction estimation for a perching aircraft: A Lyapunov method exploiting barrier certificates." May 2012.

Doctoral Consortiums

- **ACM UIST** User Interface Software and Technology Symposium October 2014.
- **ACM ICER** International Conference on Computing Education Research August 2013.

Teaching

- **Teaching Assistant, Computation Structures**, *MIT*
  Undergraduate lab course on computer architecture. Spring '12 - Fall '13, Fall '14
  Ran twice-weekly recitations, created new tools to support students, and assisted students in the course lab space.
- **Instructor**, *Software Carpentry* March 2014
  Center for Urban Science and Progress of the University of New York
  Worked with a team of instructors to teach a double-room workshop, featuring tracks for Python and R.
- **Instructor**, *Middle East Education through Technology* (MEET) Summer '13
  Jerusalem
  Taught the basics of programming and teamwork to Israeli and Palestinian gifted high school sophomores.
- **Educational video creator**, *MIT Teaching and Learning Lab* Spring '13
  Produced for the Singapore University of Technology and Design, explained radio receiver technology.
- **Instructor, Review of Signals and Systems**, *MIT* January '11, '12, '13
  Designed and co-taught the EECS Department's month-long course reviewing signals and systems for undergraduate and graduate students.
- **Teaching Assistant, Introduction to EECS 1**, *MIT* Fall '11
  Helped undergraduate students complete their first laboratory in the EECS Department, involving programming, building circuits, and controlling robots.
- **Tutor, Signals, Systems, & Probabilistic Systems Analysis**, *MIT* '06 - '11
  Assisted students enrolled in EECS courses through the EECS/HKN tutoring service

Training

- **Graduate Student Teaching Certificate Program**, *MIT* May '11
  A year-long seminar training graduate students in state-of-the-art teaching techniques, run by the MIT Teaching and Learning Lab.

Service

Leadership

- **President**, *Middle East Education through Technology's student group at MIT*
  Serving as an ambassador for the MEET program on campus, and recruiting MIT students as summer instructors Fall '13 - present
- **EdTech Reading Group Co-Organizer**, *MIT* Fall '12
  Formed a reading group for MIT students, faculty, and staff to discuss papers relevant to the growing interest in technology in education and education at scale.
- **Vice-President**, *Eta Kappa Nu, MIT Chapter* Spring '08 - '09
  MIT's EECS honor society

Program Committees

- ACM Computer-Human Interaction Works-in-Progress (**CHI WiP**) Jan. '15

Committee Memberships

- **EECS Department Education Committee**, *MIT* Dec. '06 - Fall '08
  Served as a student representative during a significant department-wide curriculum redesign.
- **MIT Council on Educational Technology** Spring '05

Research Positions

PhD Candidate, *MIT* Feb '13 - present
User Interface Design Group, Computer Science and Artificial Intelligence Lab
Cambridge, MA

- Building systems for visualizing and exploring thousands of programming solutions to help teachers more quickly develop a high-level view of students' understanding and misconceptions, and to provide feedback that is relevant to more students.

Research Intern, *Microsoft Research* May '14 - Aug. '14
neXus Research Team
Redmond, WA

- Created and studied a novel system for classroom use, supervised by Merrie Ringel Morris, Andrs Monroy-Hernndez, and Anoop Gupta.

Visiting Researcher, *Stanford University* Fall '10
Biomimetics and Dexterous Manipulation Lab
Stanford, CA

- As a representative of the MIT Robot Locomotion Group, I collaborated with Stanford University's Biomimetics and Dexterous Manipulation Lab, focusing on control algorithms for future dexterous autonomous aerial vehicles.

Graduate Research Assistant, *MIT* June '08 - May '12
Robot Locomotion Group, Computer Science and Artificial Intelligence Lab
Cambridge, MA

- Designed and published optimal control-based distance metrics for use in Rapidly-Exploring Random Trees (RRTs), which can increase the tractability of kinodynamic planning.

Undergraduate Researcher, *MIT* Feb. '05 - June '06
Networks & Mobile Systems Group, Computer Science and Artificial Intelligence Lab
Cambridge, MA

- Created a data-analysis algorithm for determining the smallest patient-specific subsets of electrodes that still allow an EEG-based epileptic seizure detector to perform at its most accurate level.

Selected Press

- Appeared in *Science*: "Rising Stars" (30 May 2003), *Science* 300 (5624), 1368d.
- Profiled on CNN's *Lou Dobbs Tonight*, in a segment titled "America's Bright Future" Fall '03
- Guest on CNN's *American Morning* May '03

Outreach

- Reddit AMA with Jean Yang and Neha Nerula, on behalf of MIT CSAIL Dec. '14
- New Hampshire TechFest, Agile robotics booth host Nov. '11
- Cambridge Science Festival, Agile robotics booth host May '11
- MIT Women's Technology Program July '08, '11
  Guest speaker for a summer program for high school girls interested in EECS

Other interests and activities

Wrestler

- Team Member, MIT's NCAA Div. III Varsity Wrestling Team Winter '08 - '09
- Competitor, US and Canada in regional & national women's tournaments '09 - '12
- Two-time Training Camp participant, US Olympic Training Center in Colorago Springs, CO Aug. '10, Sep '12
- Board member of the Massachusetts Chapter of USA Wrestling 2012