

Maggie K. Delano

MEDICAL DEVICE DESIGNER · PHD CANDIDATE

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Summary

Maggie Delano is a PhD candidate working with Professor Charlie Sodini on a wearable fluid status monitor for patients with Congestive Heart Failure. She is interested in the interface of technology and medicine, particularly if/how technology can empower individuals and break down existing power structures. Maggie is a four-time Electrical Engineering Instructor for MIT's medical device design course, where she has mentored over 10 different clinical design projects. Maggie is also a meetup organizer and diversity advocate in the Quantified Self community and an avid self-tracker.

Education

Massachusetts Institute of Technology

PHD IN ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Cambridge, MA, USA

Sept. 2012 - June 2017 (Expected)

Massachusetts Institute of Technology

MASTER'S OF ENGINEERING IN ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Cambridge, MA, USA

Aug. 2010 - June 2012

Massachusetts Institute of Technology

BACHELOR OF SCIENCE IN ELECTRICAL SCIENCE AND ENGINEERING

Cambridge, MA, USA

Sept. 2006 - June 2010

Experience

Sodini Medical Electronics Research Group

PHD THESIS PROJECT

Cambridge, MA, USA

Sept. 2012 - June 2017 (Expected)

- Designing a wearable bioimpedance system to help reduce heart failure re-admission rates.
- Analog front end circuit design for bioimpedance measurements (1 kHz - 1 MHz).
- Firmware development (MSP430).
- Electrode-skin interface characterization.
- Clinical testing in healthy participants (MIT) and hemodialysis patients (MGH).

Fitbit

RESEARCH INTERN

San Francisco, CA, USA

June 2012 - August 2012

- Lead Prototype Electrical Engineer on the Fitbit Surge.
- Designed second generation PCB, including board level design, layout, and firmware (MSP430).
- Characterized system and made preliminary measurements in humans.

Sodini Medical Electronics Research Group

MENG THESIS PROJECT

Cambridge, MA, USA

Jan. 2010 - June 2012

- Designed a wearable cardiac monitor based around an MSP430 microcontroller.
- Records electrocardiogram and 3-axis acceleration data continuously for up to one week.
- Validated cardiac monitor in the Clinical Research Center at MIT.
- Performed as well or better than a commercial monitor, especially during running.

Boston Scientific (Cardiac Rhythm Management)

RESEARCH INTERN

St. Paul, MN, USA

June 2009 - August 2009

- Developed and tested theories to characterize pacemaker lead heating in MRI.
- Wrote final report that became the basis for an FDA approval application.

Publications and Talks

PAPERS

- Canning J, Helbert K, Iashin G, Matthews J, Yang J, **Delano M**, Sodini C, Zhang Q, "Noninvasive and Continuous Blood Pressure Measurement via Superficial Temporal Artery Tonometry," submitted to Engineering in Medicine and Biology

(EMBC) Conference, March, 2016.

- **Delano M**, and Sodini C, “A Long Term Wearable Electrocardiogram Measurement System,” in *Body Sensor Networks Conference*, 2013; 1-6.
- Winokur E, **Delano M**, and Sodini C, “A Wearable Cardiac Monitor for Long-term Data Acquisition and Analysis,” *Transactions on Biomedical Engineering*, 2013 Jan; 60(1):189-92.
- Egner T, **Delano M**, and Hirsch J, “Separate conflict-specific cognitive control mechanisms in the human brain,” *Neuroimage* 2007; 35(2), 940-948.

CONFERENCE PRESENTATIONS

- **Delano M**, “Building Myself Back Up.” Show & Tell Talk, Quantified Self Global Conference, San Francisco, CA, June 18, 2015.
- **Delano M**, “ECG and Activity Tracking: What Can We Learn?” Show & Tell Talk, Quantified Self Global Conference, San Francisco, CA, October 10, 2013.

OTHER PRESENTATIONS

- **Delano M**, “Productivity and Quantified Self.” Guest Lecture, STS.091 (Critical Issues in STS: Data as Self), October 21, 2013.
- **Delano M**, “A Long-Term Wearable ECG Measurement System.” Center for Integrated Circuits and Systems (CICS) Review, Cambridge, MA, May 1, 2013.
- **Delano M**, “Motivation for the Quantified Self.” Show & Tell Talk, Quantified Self Boston, Cambridge, MA, January 8, 2013.
- Winokur E, He D, **Delano M**, and Sodini C, “Clinical and Lab Measurements Using Wearable Medical Monitors.” Center for Integrated Circuits and Systems (CICS) Review, Cambridge, MA, November 3, 2010.

POSTERS

- **Delano M** and Sodini C, “A Portable Bioimpedance Measurement System for Congestive Heart Failure (CHF) Management.” Poster, IEEE Symposium on Medical Electronic Devices and Systems (ISMEDS), Cambridge, MA, May 8, 2014. Also presented at ISMEDS 2015 and MTL Annual Research Conference (MARC) 2015.
- **Delano M** and Sodini C, “A Long-Term Wearable Electrocardiogram Measurement System.” Poster, Medical Electronic Device Realization Center (MEDRC) Workshop, Cambridge, MA, May 2, 2013. Also presented at MARC 2014.

Teaching

Design of Medical Devices (MIT 2.75/6.025)

Cambridge, MA, USA

ELECTRICAL ENGINEERING INSTRUCTOR

Sept. 2012 - Present

- Four-time Electrical Engineering Instructor.
- Weekly one-on-one mentoring of 3-5 person student teams, each prototyping medical devices.
- Develop curriculum and syllabus.
- Support student publications.
- Designed, wrote, and run yearly ECG lab.
- Designed, wrote, and graded problem sets.

Preparation for Undergraduate Thesis (MIT 6.UAT)

Cambridge, MA, USA

TEACHING ASSISTANT

Fall 2010

- TA for two recitation sections working closely with faculty instructors.
- Ran recitations day-to-day.
- Provided individualized feedback to help students improve presentation skills.
- Filmed in class presentations.
- Graded assignments.

Microcontroller Laboratory (MIT 6.115)

Cambridge, MA, USA

LABORATORY ASSISTANT

Spring 2010

- Helped students during staffed lab hours.
- Ran lab checkoffs.
- Graded laboratory notebooks.

Community Involvement

MIT Senior House

GRADUATE RESIDENCE TUTOR (GRT)

- Work as part of team of GRTs, faculty, and staff.
- Provide individualized and community support and resources for undergraduate students.
- Served on Housemaster Search Committee.
- Served on GRT Feedback Committee.
- Participated in GRT Role Meetings with Chancellor Barnhart.

Cambridge, MA, USA

Aug. 2014 - Present

Quantified Self (QS)

MEETUP ORGANIZER

- Started a Boston based women's meetup group.
- Select show & tell speakers for Quantified Self Boston meetups.
- Wrote Quantified Self's first Code of Conduct.
- Served on Quantified Self's diversity committee for the 2015 Global Conference.

Cambridge, MA, USA

Jan. 2013 - Present

MIT Undergraduate Association (UA)

VICE PRESIDENT

- Elected in four ticket election with 50% of undergraduate vote (919/1806).
- Represented MIT undergraduates on issues ranging from student life to academic policy.
- Oversaw over 10 UA Committees.
- Ran UA's Institute Committee Nomination Process (Nomcomm).

Cambridge, MA, USA

Spring 2009 - Spring 2010

Honors & Awards

2016	Top Pitch in Session , Microsystems Technology Lab Annual Research Conference	Bretton Woods, NH
2014	Top Pitch in Session , Microsystems Technology Lab Annual Research Conference	Bretton Woods, NH
2010	Analog Minority Scholarship , Texas Instruments	Dallas, TX
2006	Second Place in Category , Intel International Science and Engineering Fair (ISEF)	Indianapolis, IN
2006	Top 6 , National Junior Sciences and Humanities Symposium (JSHS)	Albuquerque, NM
2005	Semi-Finalist , Intel Science Talent Search (STS)	Washington, DC

Selected Writing and Press

WRITING

- **Delano M**, Using Inclusive Language in Research Articles. Medium, November 16 2015.
- **Delano M**, I tried tracking my period and it was even worse than I could have imagined. Medium, February 23, 2015.
- **Delano M**, "A Code of Conduct." Quantified Self Blog, June 27, 2014.
- **Delano M**, My Roommate Has An Iron Uterus. Period. The Zine., 2013.

PRESS

- "Ahead of What's Possible, Health Innovations Stem from Great Partnerships." MEDRC Research Feature, Analog.com, June, 2015.
- Eveleth R, "How Self-Tracking Apps Exclude Women." The Atlantic, December 15, 2014.
- Ramirez E, "Inclusion and Diversity at QS15." Quantified Self Blog, October 14, 2014.
- Dooe M. "Apps for Better Sleep, Apps to Keep you awake." WGBH Innovation Hub, April 11, 2014.
- Greenhall A, "Quantified Self at the Frontier of Feminism." Model View Culture Quarterly No. 1, 2014.

Skills

Hardware	Basic and Advanced Electronics Lab Skills (Soldering, Oscilloscopes, Impedance Analyzers, etc.)
PCB Layout	Altium, Eagle
Software	Embedded C, Objective C (iOS), MATLAB, LaTeX, Python, Javascript, Version Control (Git, SVN)
OS	Windows, Mac, Linux (Debian, Ubuntu, Fedora, RHEL)