

Kelly Brennan

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EDUCATION

Olin College of Engineering

September 2013-December 2017, 50% Olin Merit Scholarship value of \$80,000+
Bachelor's degree in Engineering with a concentration in bioengineering

Needham, MA
GPA: 3.96

ELECTRICAL AND SOFTWARE EXPERIENCE

Design that Matters

Electrical and Systems Engineering Fellow

Salem, MA
Summer 2017

- Designed electrical system for a complete, fully integrated looks-like and interacts like alpha prototype of [Otter](#), a newborn warming bassinet that is compatible with an existing double-sided phototherapy device
- Developed software for embedded closed-loop temperature control using user interface input
- Devised protocols and conducted tests for IEC warmer classification standards
- Wrote technical documentation on testing, decision making, and design choices

Engineering Capstone Course – Olin College of Engineering

Electrical and Software Controls Engineer on Newborn Warmer ([Otter](#)) from Design that Matters

Needham, MA
2016 - 2017

- Designed initial heating control circuit and developed initial proportional control software
- Modified the prototype design to meet IEC standards for newborn warmers
- Traveled to Vietnam twice to do rapid prototyping with the manufacturer and interview healthcare workers

Neurotechnology, Brains & Machines Course – Olin College of Engineering

Student and Team Member

Needham MA
Fall 2017

- Processed and analyzed multiple different sets of neuroscience data using frequentist statistical methods
- Developed an experimental design, recorded the neuronal signals, and filtered & processed data in MATLAB

Software Design Course – Olin College of Engineering

Artificial Intelligence Team

Needham, MA
Spring 2015

- Developed artificial intelligence agent in Python that learns from experience to play and win PacMan games with Q—learning algorithm
- Project website: <http://pdemetci.github.io/PacManAI/>

Real World Measurements Course - Olin College of Engineering

Eye-Tracking Team

Needham, MA
Spring 2014

- Designed three channel functional electronystagmogram (ENG) to track eye movement
- Characterized banpass filter characteristics and led functionality testing

Relevant Skills:

- **Programs:** SolidWorks, KiCAD, Python, MATLAB, Arduino, Adobe Suite (especially InDesign, Illustrator), LaTeX, Scrum software (slac & asana), Github ([//kbrennan711](#)), basic command line proficiency in Linux, Git & Python.
- **Software Development:** AI algorithm development, control software, data analysis, data visualization
- **Statistics:** Bayesian inference statistics and reasoning, frequentist statistics
- **Electrical Engineering:** Circuit and PCB design
- **Manufacturing:** 3D printing, laser cutter, vinyl cutter, soldering, most common wood shop machines

MEDICAL AND BIOSCIENCE EXPERIENCE

Tetragenetics Inc.

Research Intern

Arlington, MA

Summer 2016

- Optimized expression conditions of several recombinant human ion channels produced in the protist *Tetrahymena thermophila* for drug discovery
- Analyzed protein expression and localization by Western blots and fluorescence microscopy

Ayazh, social venture to develop livelihood solutions for maternal and infant health

Research and Design Fellow

Chennai, India

Summer 2015

- Developed two newborn kits in collaboration with OpenIDEO and CAMTech that are currently in the market
- Led ethnographic interviews with over 15 doctors and nurses at 5 different national and district hospitals
- Analyzed and wrote report on using chlorohexidine (CHX) in India that was used in CHX Roundtable conference
- Developed 10+ design concepts for newborn rescue cot and disposable birth kit
- Initiated and implemented preliminary study on rural women's narratives of their delivery experience

Applications of Microfluidics Course - Olin College of Engineering

Student & Team Member

Needham, MA

Spring 2015

- Studied basic physics, chemistry, fluid mechanics, engineering, and mathematics relevant to microfluidic devices
- Designed and fabricated microfluidic device to encapsulate bacteria in droplets and then collect and hold them for imaging over long time periods in team of four

User-Oriented Collaborative Design Course - Olin College of Engineering

Helpline Team Member

Needham, MA

Spring 2015

- Conducted user interviews with helpline volunteers from different rape crisis and mental health helplines; maintained relationships with them throughout our entire design process
- Developed detailed design concept, the **empath**, a wearable language analysis tool that addresses users' values of improving language and helping the community

University of Washington

Undergraduate Laboratory Intern in Kim Lab

Seattle, WA

Summer 2014

- Analyzed cell structure and focal adhesion for cardiac tissue engineering & regenerative medicine experiments
- Utilized the specific lab techniques of immunohistochemistry staining and confocal microscopy
- Nanofabricated materials for experiments and maintained ESC and iPSC cell cultures

Swedish Neuroscience Institute

Undergraduate Researcher

Seattle, WA

Summer 2014

- Collected data and analyzed temporal trends for how fingolimod (Gilenya) affects the architecture of the macula

Harborview Medical Center

Patient and Family Liaison Volunteer

Seattle, WA

2013–2015

- Support patients in recovery process by providing hospitality and accommodate families with support needs
- Over 200 hours of volunteering

Relevant Skills:

- **Leadership:** Olin College Student Director of Service: May 2015 – May 2017
- **Design:** User-Centered Design, UX/UI Research, co-design, prototyping
- **Laboratory techniques:** microbial cultivation (prokaryotic & eukaryotic), confocal microscopy, multielectrode array measurements, immunohistochemical staining, immunofluorescence microscopy, Southern and Western blotting, gel electrophoresis and PCR, recombinant protein expression and analysis, protein purification via affinity chromatography
- **Device design and fabrication:** Microfluidic devices and nanopatterns

ACTIVITIES AND INTERESTS

- **Athletics:** ultimate frisbee, basketball, soccer, and lacrosse
- **Outdoors:** running, hiking, biking, camping, rock climbing, sailing, and skiing
- **Arts & hobbies:** pottery, narrative writing, and cooking