Kelly Brennan

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https://kbrennan711.github.io

EDUCATION

Olin College of Engineering — Needham, MA
September 2013-December 2017, 50% Olin Merit Scholarship value of $80,000+ — GPA: 3.96
Bachelor's degree in Engineering with a concentration in bioengineering

ELECTRICAL AND SOFTWARE EXPERIENCE

Design that Matters — Salem, MA
Electrical and Systems Engineering Fellow — 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 — Needham, MA
Electrical and Software Controls Engineer on Newborn Warmer (Otter) from Design that Matters — 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 — Needham MA
Student and Team Member — 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 — Needham, MA
Artificial Intelligence Team — 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 — Needham, MA
Eye-Tracking Team — 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)
- **Software Development:** AI algorithm development, control software, data analysis
- **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. Arlington, MA
Research Intern 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

Ayzh, social venture to develop livelihood solutions for maternal and infant health Chennai, India
Research and Design Fellow Summer & Fall 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 Needham, MA
Student & Team Member 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 imagining over long time periods in team of four

User-Oriented Collaborative Design Course - Olin College of Engineering Needham, MA
Helpline Team Member Spring 2015

- Conducted over 13 users initial 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 emp**act**, a wearable language analysis tool that addresses users' values of improving language and helping the community

University of Washington Seattle, WA
Undergraduate Laboratory Intern in Kim Lab 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 Seattle, WA
Undergraduate Researcher Summer 2014

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

Harborview Medical Center Seattle, WA
Patient and Family Liaison Volunteer 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:** UX Research, ideation generation, co-design, sketch modeling with foam and cardboard, 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