Kelly Brennan

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EDUCATION

Olin College of Engineering — Needham, MA
September 2013-December 2017, 50% Olin Merit Scholarship value of $80,000 — GPA: 3.96
Major in Engineering; Concentration in Bioengineering

ELECTRICAL AND SOFTWARE EXPERIENCE

Design that Matters — Salem, MA
Electrical and Systems Engineering Fellow — Summer 2017

- Designed electrical system and circuit boards for a fully integrated looks-like and interacts-like 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 interface input
- Conducted heated water bag test and measured the change in water bag temperature for IEC classification standards
- Wrote extensive documentation on testing, decision making and design choices

Engineering Capstone Course – Olin College of Engineering — Needham, MA & Hanoi, Vietnam
Electrical and Software Controls Engineer on Newborn Warmer (Otter) from Design that Matters — 2016 - 2017

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

Neurotechnology, Brains & Machines Course – Olin College of Engineering — Seattle, WA
Student and Team Member — Fall 2017

- Processed and analyzed multiple different sets of neuroscience data using statistical methods
- Final project included implementing our own experimental design, recording the neuronal signals, and data processing

Software Design Course – Olin College of Engineering — Needham, MA
Artificial Intelligence Team — Spring Semester 2015

- Developed artificial intelligence agent 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 Semester 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
- **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 (pronounced "eyes"), social venture to develop livelihood solutions for maternal and infant health Chennai, India
Research and Design Fellow Summer & Fall 2015

- Designed and developed two newborn kits in collaboration with OpenIDEO and CAMTech that are currently on market
- Led ethnographic interviews with over 15 doctors and nurses at 5 different health facilities (national and district hospitals)
- Analyzed and wrote report on using chlorohexidine (CHX) in India that was used in CHX Roundtable conference
- Developed over 10 design concepts for newborn rescue cot and disposable birth kit. Presented ideas to CEO and design lead.
- 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 the basic physics, chemistry, fluid mechanics, engineering, and mathematic 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
- Taught by Dr. Daniel Irimia and instructors from Mehmet Toner's laboratory at Massachusetts General Hospital

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; kept 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
- Made posters to present personas and final prototype for design justification

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

- 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 – present
- **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
- **Certifications:** Lifeguarding, First Aid, CPR, AED, HIPAA

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