Eric Cao

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EDUCATION

Johns Hopkins University – GPA: 3.72 — Baltimore, MD
Bachelor of Science, Computer Science and Biomedical Engineering (double major) — Expected May 2020
Minor in Applied Mathematics and Statistics

Programming Languages: Java, Python, C++, C, MATLAB

Coursework: Artificial Intelligence, Computer Integrated Surgery, Systems, Controls, Data Science, Probability and Statistics, Linear Algebra, Differential Equations, Optimization

EXPERIENCE

PayPal Inc. — Timonium, MD
Software Engineering Intern — May 2019 – August 2019

- Instrumented components to log standardized metrics. Created dashboards in Grafana to visually display these new logs. Onboarded components to common alerting infrastructure.
- Onboarded component to continuous delivery pipeline.
- Technologies used: Java Spring, Maven, Jenkins, Terraform, Git, JUnit, TestNG, and Mockito.
- Followed Agile methodologies. Led a retrospective.

Haptics and Medical Robotics Laboratory — Baltimore, MD
Undergraduate Researcher — December 2017 – Present

- Leader of experiment to determine effects of haptic feedback on surgical robotics training. Showcased poster at endoscopic surgery conference (SAGES) as first author.
- Developed mechanical, electrical, and software setup. Conducted human subject trials. Used feedback from PI and other lab members to streamline data collection, resulting in 25% faster trial times.
- Wrote and created figures for journal publication to be submitted to *Surgical Endoscopy*.

AssistENT Technologies — Baltimore, MD
Product Development Engineer — December 2016 – August 2018

- Designed and 3D-printed a mechanical testing rig that supported many prototype shapes, allowing prototypes to be measured quickly and reproducibly. Data used to inform future iterations of design.
- Awards: Lemelson-MIT Student Prize 2018, NIH DEBUT Design Excellence Prize 2017, Collegiate Inventors Competition 2nd Prize 2017. Featured in Forbes and TechCrunch.

PROJECTS

Surgical Simulator Haptic Augmentation — January 2019 – May 2019

- Integrated haptic force feedback into a surgical simulator on the da Vinci Research Kit on ROS.
- Calculated frame transformations and force vectors based on spring-damper model.
- Collected human subject data. Writing paper to be submitted in Fall 2019.

Data Science Lab — September 2018 - December 2018

- Implemented data science techniques for use with biomedical data sets.
- Extracted PCA and Fourier features from time-series electrocardiogram data.
- Classified action potentials with linear, K-means, and nearest-neighbor classifiers.
- Performed Gaussian blur and convolutional edge detection on MRI data.

Battlecode Competition — January 2018

- Created AI in Python to play a real-time strategy game. Finished in top 64 teams.
- Implemented breadth-first-search for pathfinding. Allowed multiple units to efficiently navigate to different objectives for better multitasking.