

# Patrick Shi

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## Education:

University of Michigan Ann Arbor College of Engineering

August 2020 – present

- **Majors:** Computer Science and Biomedical Engineering
- **CSE Coursework:** Programs and Introductory Data Structures, Structures and Algorithms, Introduction to AI, Introduction to Computer Organization, Human Centered Software Design, Database Management Systems, Foundations of Computer Science, Computer Vision, Software Engineering
- **BME Coursework:** AI in BME, Biomechanics, Circuits and Systems for Biomedical Engineering, Biophysical Chemistry and Thermodynamics, Biostatistics and Data Analysis, Quantitative Cell Biology, Biomedical Instrumentation and Design, Introduction to Biomedical Engineering Design, Quantitative Physiology, Introduction to Biomedical Imaging, Biological Micro- and Nanotechnology, Senior Biomedical Design
- **GPA:** 3.870

## Projects

### Electrooculogram (Circuits/LabVIEW)

- Created an electrooculogram wired to a LabView program that is used for detecting horizontal nystagmus

### Euchre Project (C++)

- Simulated a game of Euchre with all known rules and a simple AI strategy for playing the game

### Zombie Shooter Simulation (C++)

- Wrote a zombie shooting simulator that utilized a priority queue for its AI strategy

### Easy Stocks (HTML and CSS)

- Designed a frontend for a mock app oriented towards low wage workers that simplifies the stock investment process

### Log-man Project (C++)

- Created a logging program that included functions such as sorting and searching with the use of hashing

### Bioinformatics/Biostatistics Analysis (MATLAB)

- Used both supervised and unsupervised learning to analyze a dataset conducted by a study on bacterial/viral infections

### Assembler Translator/Simulator (C)

- Simulated the translation and execution of assembly instructions

### Pipeline (C)

- Created a program that breaks down and simulates pipeline processing of assembly instructions

## Professional Experience

### Research Assistant at Sriram Chandrasekaran Lab

May 2023 – August 2023

- Conducted a project that studies cellular quiescence, which involved the use of metabolic models and COBRA Toolbox
- Employed MATLAB and R plotting/visual analysis along with other analysis techniques such as PCA and k-mean clustering
- Presented my findings via lab meetings and through a written summary report

### Instructional Aide for Biostatistics and Data Analysis Course

August – December 2023

- Taught students basic concepts in programming (in Python) and statistics and provided students assistance with homework and studying via hosting office hours

### Instructional Aide for Quantitative Cell Biology Course

January 2024 – Present

- Taught students basic concepts and computation aspects in cell biology and provided students assistance with homework and studying via hosting office hours

### Research Assistant at Cheng Yu Lee Lab

May - Aug 2022

- Gained wet lab experience with techniques such as pipetting, microscopic dissection, slide mounting, and antibody fixation

## Student Organizations

- **Member of Robo-Reach team for MedLaunch - Sep 2022 – April 2023**
  - Employed CAD, circuits, and soft robotics to help build the robotic arm
  - Helped with team planning and brainstorming ideas for the claw portion of the arm
- **Michigan Neuroprosthetics - Jan 2022 – Dec 2022**
  - Helped with team planning and brainstorming ideas for the grip of the prosthetic arm

## Skills

- Experience in C++, MATLAB, Python, Java, C, MySQL, HTML, CSS, and frontend design
- Proficient in speaking Mandarin Chinese
- Experience with LabView, analog circuits, breadboards, function generators, and oscilloscopes
- Proficient with using Microsoft Excel, Word, and PowerPoint
- Skilled in mathematics and problem solving
- Experience with lab techniques such as chromatography, IR, NMR, vacuum filtration, measuring melting point, and recrystallization