Brian Lu

https://brianlu.me | contact@brianlu.me | +1 (630) 717-9618 | **LinkedIn**: greencappuccino | **Github**: GreenCappuccino
2324 Pontiac Circle, Naperville, IL, United States of America

Education

Purdue University | *2022 - Now*

B.S. in Computer Engineering

- ECE 20001 — Electrical Engineering Fundamentals I — *Fall 2022*
- ECE 20002 — Electrical Engineering Fundamentals II — *Spring 2023*
- ECE 26400 — Advanced C Programming — *Spring 2023*
- ECE 27000 — Introduction to Digital Design — *Fall 2022*
- ECE 33700 — ASIC Design Lab — *Spring 2023*
- ECE 36900 — Discrete Math for Computer Engineering — *Spring 2023*
- MA 26600 — Differential Equations — *Fall 2022*

Skills: *C, Verilog, SystemVerilog, Test Benches, Circuit Analysis, Signal Analysis*

Experience

Merck Sharp & Dohme | *2022 - Now*

Student Researcher

- Architected Safety Data Sheet (SDS) parsing and insights software with team
- Software cuts down on **hours** of work per day reading SDS documents, currently being **integrated**
- Wrote **low-level** PDF parsing engine to extract document hierarchies, fields, and images
- Created **OpenCV**-based **classifier** to accurately detect GHS pictograms
- Developed automated **LaTeX**-based PDF templating pipeline to create reports of generated **insights**

Skills: *Python, pdfminer, OpenCV, Tabula, LaTeX, Jinja2, FastAPI*

High Oak Robotics |*2021 - 2023*

Robotics Coach

- Lead design of, wrote, and maintained Sequoia **asynchronous real-time** task scheduling library
- Taught robotics **control**, **navigation**, and programming concepts to team members

Skills: *Java, Kotlin, async, Motion Profiling, PID, VSLAM, Dead Reckoning, Sensor Fusion*

Projects

Shamrock Cluster

Homelab cluster composed of 3 Dell Poweredge r710 servers with **Proxmox**, Ceph, Windows Domain Controllers, k3s **Kubernetes**, **Istio**, **Argo CD**, MetalLB. **mTLS, full-disk encryption**, and secret rotation.

Sequoia

Asynchronous task scheduling system for FIRST Tech Challenge competitive robotics. Coordinates navigation and control loops. Allows tasks and subsystems to synchronize in **real-time**, run in parallel, or run in sequence.

Hackathons

Vaxfinder — *Solo* — IMSA Health and Wellness — *First Place*
Fetches COVID-19 vaccine availability data from over **29,000** locations every **15 seconds**. **Geolocates** user by street address, and **notifies** via phone call when vaccines are available nearby.

Notus — *Team* — Teens Take on COVID — *Best Future Impact*
Monte Carlo particle simulations of COVID-19 spread through various room layouts. Includes a **visual** room designer for users to easily modify simulated room layouts.