Maiko Lum

maiko.lum0401@gmail.com | 209-756-6863 | Vestal, NY | www.linkedin.com/in/maikolum

EDUCATION

Boston University, College of Engineering **2021 – 2025**
Bachelor of Science in Biomedical Engineering | Minor in Computer Engineering GPA: 3.43

Coursework: Circuits, Logic Design, Signals and Controls, Computer Organization, Algorithms, Biotransport, BME Data Analysis, Molecular Cell Biology, Thermodynamics, Systems Physiology, Mechanics, Statistics

SKILLS

Laboratory: DNA Sequencing, qPCR, EKG, Gel Electrophoresis
Programming Languages: C++, C#, C, Verilog, MATLAB, Python, MIPS Assembly
Mechanical Design: Autodesk Inventor, OnShape, CAD, Cura, Reconstruct
Language: English (Fluent), Japanese (Fluent)

WORK EXPERIENCE

Boston University Dept. of Electrical & Computer Engineering **Aug 2024 – May 2025**
Undergraduate Teaching Fellow – Logic Design Boston, MA

- Reinforce student understanding of logic design concepts by working with a professor to design and lead labs, demonstrating technologies such as Xilinx Vivado, FPGA boards, and Verilog HDL
- Instruct 80+ students by constructing homework problems, providing support with assignments, debug and host office hours for one-on-one and group help sessions
- Manage workflow of student graders by ensuring grades are logged before deadlines

Boston University School of Medicine Gong Lab **Jun 2022 – May 2025**
Undergraduate Research Assistant Boston, MA

- Experimented with different flow rates and effects on drainage of a human eye giant vacuole (GV) through 3D reconstruction (Reconstruct software) of over 200 GVs to better understand anatomy for micro-invasive surgical treatment of glaucoma
- Evaluate findings against published literature using serial block-face scanning electron microscopy (SBF-SEM)
- Presented work titled *Comparison of Giant Vacuoles to the Inner Wall Endothelium of Schlemm's Canal between Normal and Glaucomatous Human Donor Eye* at Boston University Undergraduate Research symposium

PROJECTS

3D Successive Over-Relaxation (C, Pthreads) **Apr 2025 – May 2025**

- Developed and parallelized a 3D SOR algorithm using pthreads with domain decomposition across x, y, and z axes
- Engineered thread-safe synchronization and dynamic convergence tracking, achieving optimal performance through z-axis partitioning and memory-aware design
- Benchmarked serial vs. multithreaded performance, demonstrating up to 4x speedup and identifying cache locality as critical factor in scalability through testing runtime improvement on large grid simulations

FPGA Board Game: LED Catcher **Apr 2024 – May 2024**

- Designed and implemented a real-time LED-catching game on FPGA using Verilog and Vivado, featuring responsive user input and dynamic LED movement
- Built a functional testbench to simulate gameplay logic and validated system performance through hardware testing
- Contributed to game design and display logic, optimizing visual feedback and timing performance

Android Application Game **Apr 2023 – May 2023**

- Coordinated with a team of four engineers to draft an Android application, enabling users to swipe incoming opponents through C++ back-end and Java front-end design
- Programmed front-end enhancement, integrating interactive elements and applying collision detection techniques
- Collaborated with back-end developers to establish user manuals, settings, difficulty levels, and character selection

Desk Lamp for Neurodiverse Learning Needs **May 2022 – Jun 2022**

- Designed and coded a working prototype of a desk lamp accommodating users with ADHD and learning disabilities, considering given specifications in a group project leveraging a budget of $400
- Managed creation of prototype enclosure utilizing CAD and operated metal sawing, milling, laser cutting, drilling, and tapping machines and assisted with programming Arduino Nano microcontroller using C

LEADERSHIP

Biomedical Engineering Society (President, 2024 – 2025), **Theta Tau Psi Delta Chapter** (Treasurer, 2022 – 2023)