Joseph Lee

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Education

University of Washington

B.S. Intended Computer Engineering, Minor in Physics

- GPA: 3.65
- Relevant Coursework: Data Structures and Algorithms (CSE 373), Introduction to Database Systems (CSE 414), Differential Equations (MATH 207), Thermal Physics (PHYS 224)

Experience

QT3 Lab

Undergraduate Research Scientist **January 2023 - PRESENT**

- Researcher under the supervision of Dr. Parsons at the QT3 Lab, a facility that performs research for quantum information science and engineering, at the University of Washington.
- Past project was implementing the pound-drever-hall technique, a method of active laser stabilization using a mechanically stable optical cavity, critical for registering qubit spin in nitrogen vacancy diamonds.
- Current project aims to use machine learning and computer vision to recognize qubit states in 2D cold atom arrays, with goals of incorporating into 3D.
- Future project is to create a compiler between low level quantum gates to higher level “programming languages”.

UW Formula Motorsports

Electrical Engineer **June 2023 - PRESENT**

- Part of the Electronics subteam, tasked with designing various PCBs for our fully electric 4WD formula car.
- Current project is the dashboard, the main interface for the driver. Takes inputs from the CANbus to display critical information. Working to integrate a custom LED driver circuit onto the dash controller PCB as well as resolving accessibility issues for flashing firmware.

Driverless Engineer **January 2023 - June 2023**

- Formerly on the Driverless subteam in UW Formula Motorsports. Worked with embedded systems to help implement autonomous racing capabilities.
- Used ROS as well as path planning algorithms such as SLAM and YOLO.

Washington NASA Space Grant Consortium

Summer Research Internship **June 2023 - August 2023**

- Participated in the NASA SURP program, continued work related to quantum technologies and presented findings.

Projects

Guitar Pedal **August 2023 - PRESENT**

- Working to create a custom guitar effects pedal.
- Schematics and inspiration taken from the iconic “fuzz face” pedal.

MPU-6050 Breakout Board **September 2023**

- Created an MPU-6050 breakout board, a simple inertial measurement unit
- Communicates via I2C

Optical Cavity Simulation **July 2023**

- To simulate the conditions of a cavity, derived an equation that mathematically represents an optical cavity.
- Using Python, Numpy, and MATPLOTLIB, was able to see the fluctuations in reflected intensity by manipulating multiple variables such as reflectivity constants, cavity length, and wavelength scanning range.

Skills

Python, Java, HTML & CSS, Git, Altium Designer, Onshape, Optics, RF Electronics