Brent Lee

Torrance, CA | (657) 731-5221 | brentlee785@gmail.com | linkedin.com/in/brent-lee-165806247

EDUCATION

BS: Electrical Engineering & Computer Science – 3.83 GPA **May 2028**
University of California, Berkeley
- Relevant Coursework: Linear Algebra, Multivariate Calculus, Data Structures, Intro to Circuits and Devices, Mechanics, Signals and Systems, Computer Architecture, Discrete Math and Probability

International Baccalaureate (IB) & ValTech (technology) Diploma – 4.76 GPA **June 2024**
Valencia High School, Placentia
- Relevant Coursework: Mechatronics (SOLIDWORKS), CS Classes (Java, C++), IB Math: Analysis and Approaches (Calculus 2), IB Physics

EXPERIENCE

Wireless and Navigation/Digital Communications Intern **May 2025 - August 2025**
The Aerospace Corporation *El Segundo, CA*
- Boosted transmitter block throughput by migrating signal processing codebase from Python to **C++**, applying Intel **Performance Primitives** and redesigning **data frame** creation algorithm to achieve higher processing efficiency
- Engineered a resilient **multi-link communication network** in **Python** with **ZeroMQ**, enabling dynamic remote TX/RX activation while integrating heartbeat protocols, live status monitoring, and YAML-based configuration for fault-tolerance
- Built custom Software Defined Radio (**SDR**) protocol stack with **2FSK modulation**, designing packet structures with **preamble synchronization**, Forward Error Correction (**FEC**), and **CRC** validation for reliable data RF transmission
- Assembled and tested **RF front end** for satellite signal reception combining low noise amplifiers, bandpass filters, and use of spectrum analyzer to amplify signal gain and reject out-of-band interferers

Software Development Intern **June 2023 - July 2023**
Parsec Automation Corp. *Yorba Linda, CA*
- Prototyped client and R&D solutions for TrakSYS web app using **C#**, **Javascript**, and **Azure API**
- Integrated **Azure** Optical Character Recognition (OCR) to reduce client data entry errors
- Assessed **Azure AI** (GPT-3.5) use with **SQL** database to improve user database search and access

Officer/Electronics Team Lead **September 2024 - Present**
Vertical Take-Off and Landing (VTOL) at Berkeley
- Using **Altium Designer** to develop a **power distribution board** for scaled-down prototype tilt-wing VTOL aircraft
- Schematic and layout for motors, servos, step-down buck converters, and current/voltage sensing with 6s battery configuration
- Learning **high-power** considerations for future full-scale tilt wing VTOL project

Avionics Deputy **September 2024 - Present**
Space Technologies and Rockery (STAR) at Berkeley
- Built fiberglass rocket with 2100ft apogee using **OpenRocket** simulation in team project
- Working on **LoRa wireless communication** board for wireless avionics data transmission
- Constructed an **ESP32-S3** avionics board for in-flight data collection by designing in **Altium Designer** and soldering components
- Programmed **firmware** for flash memory, barometer, and IMU in C using **Arduino IDE**

Programming Lead **August 2023 - June 2024**
Valencia Robotics Team 4470
- Directed and mentored a **10-member** programming team; engineered, & troubleshooted **PID** telescopic arm, pneumatic and motorized feeder, and **computer vision** systems for 2023/2024 FIRST Robotics Competition
- Oversaw project planning/task allocation, delivering competition-ready robot in **one month** & secured SoCal Showdown 2023 regional **2nd place** finish

PROJECTS

Custom 'Arduino Micro' Mechanical Keyboard **January 2022 – April 2022**
- Learned inner workings of mechanical keyboard and keyboard matrix functionality
- Used **KiCAD** to design printed circuit board (PCB) schematic and layout
- Interacted with vendors to laser cut stainless steel plate and used **C** for **Arduino** firmware

OpenCV Aim Automation **April 2022 – September 2022**
- Developed **Python** script to autonomously track and hit targets in non-competitive mode of aim trainer
- Attempted **TensorFlow object detection**, creating script to **annotate** additional training data with pre-trained model
- Used **OpenCV** to process image frames and color segmentation to isolate and detect targets

SKILLS

Programming Languages and Frameworks: Python | Java | C++ | C# | C | Javascript | HTML | CSS | Vue.js
Tools: Altium Designer | KiCAD | SOLIDWORKS | Spectrum Analyzer | Linux | Git | Jupyter | Arduino IDE
Specialized Skills: PCB Design | Signal Processing | CAD | Machine Learning | Cybersecurity
Soft Skills: Assisting/collaborating with peers, adaptability to new environments/problems