Michael Ibrahim

homes.cs.washington.edu/~micibr micibr@cs.washington.edu micbrahim micbrahim

Education

University of Washington, Seattle **June 2025**

Bachelor of Science - Computer Science (Departmental Honors) & Informatics *GPA: 3.8/4*

Coursework: Data Structures and Parallelism, Software Design and Implementation, The Hardware/Software Interface

Technical Skills & Certifications

Certifications: ACTIVE SECRET SECURITY CLEARANCE
Languages: Java, Python, SQL, C, C++, PHP, HTML, CSS, JavaScript, R
Libraries/Frameworks: React, Bootstrap, Sanity, Node.js, Zephyr RTOS, Nordic SDK
Software & Tools: LaTeX, Linux/UNIX, Git Version Control, KiCad, nRF Connect, Microsoft Azure

Experience

Iyer & ICTD Labs, University of Washington **August 2024 - Present**

Machine Learning Research Scientist *Seattle, WA*

- Developed and implemented a **TinyML** model using **TensorFlow** that enabled a micro-robot to classify and follow various insect species with **85%** accuracy leading to a **30%** improvement in task efficiency.
- Spearheaded the optimization of **real-time** data processing on constrained hardware, reducing model inference time by **40%** and enhancing the micro-robot's responsiveness in dynamic environments.
- Seamlessly integrated the TinyML model with **embedded** components, enhancing the micro-robot's classification and tracking capabilities while reducing power consumption by **20%** and maintaining system responsiveness.

Boeing **June 2024 - August 2024**

Software Engineer Intern (Non-Disclosure Agreement) *Kent, WA*

- Developed and maintained dynamic user interfaces utilizing **PHP** and **JavaScript**, enhancing user experience and interactivity for web applications.
- Collaborated with cross-functional teams to design and implement **RESTful APIs**, integrating backend **PHP** services with front-end **JavaScript** components.
- Conducted successful end-to-end testing of the interface with various networking components, ensuring seamless data exchange and robust performance across different environments.

NASA Undergraduate Research Program **June 2023 - June 2024**

Research Intern *Seattle, WA*

- Engineered pulse width modulation software using **C** on the Nordic nRF5340 microcontroller to control the tail rotor speed of a coin-sized helicopter, enabling precise yaw control and helicopter heading.
- Developed software modules for seamless integration of button inputs with the nRF5340, prioritizing code maintainability and scalability, and efficiently utilized GPIO ports for enhanced system responsiveness and robustness.
- Optimized pulse width modulation software to reduce power consumption from **45 mA** to only **6 mA**, resulting in a **87%** increase in efficiency.

Projects

SIMplicity | *Python, JavaScript, HTML, CSS* | *Git* **October 2023**

- Engineered "SIMplicity", a web-based calling application using T-Mobile's YNA API integrated with a **JavaScript**-driven interface, optimizing asynchronous communication to deliver real-time call functionality.
- Implemented robust security protocols with multi-layer encryption and periodic authentication checks, ensuring end-to-end encryption of calls and safeguarding user data from potential vulnerabilities.
- Architected an intuitive front-end experience using advanced **HTML/CSS** techniques combined with responsive design principles, optimizing user interaction and ensuring cross-platform compatibility across various devices and screen sizes.

Campus Maps | *Java, React, HTML, Spark Framework* | *Git* **July - August 2023**

- Engineered a comprehensive direction-providing application that leverages the principles of directed labeled graphs and Dijkstra's algorithm in **Java** to generate efficient pedestrain routes on the University of Washington campus.
- Innovated a user-friendly graphical interface using **React** and **HTML**, capable of visually depicting the selected travel routes on a map.
- Constructed the application's backend using **Spark Java Server**, ensuring efficient retrieval of data regarding building locations and their associated geographical coordinates.

Awards and Recognitions

- Tau Beta Pi Engineering Honor Society Scholar **June 2024 - Present**