Michael Ibrahim

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Education

University of Washington, Seattle **June 2025**

Bachelor of Science - Computer Engineering (Departmental Honors) *GPA: 3.9/4 (Dean's List)*

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

Experience

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

Research Assistant, Software Engineering and Embedded Systems *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.

DUBvelopers, University of Washington **September 2022 - June 2023**

Front-end Team Lead *Seattle, WA*

- Led a team of **4** front-end developers to successfully deliver multiple projects on time, achieving a high satisfaction rate, by implementing efficient project management strategies and ensuring adherence to coding best practices.
- Streamlined a responsive website using HTML, CSS, JavaScript, and React, resulting in an intuitive and engaging user experience, as measured by client feedback.
- Conducted weekly client meetings to provide project updates and questions, allowing for the fostering of strong positive client relationships, aligning deliverables with client expectations.

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.

Global Health-Spend Interface | *R, R Markdown* | *Link* **March 2023**

- Skillfully curated, cleansed, and integrated diverse global datasets using **R-based database tools**, ensuring optimized query performance and data integrity for seamless analysis and visualization in the Shiny dashboard.
- Leveraged **R** to synthesize vast said datasets, correlating countries' health spending with key socioeconomic and demographic indicators, enhancing insights for international health policy evaluation.
- Designed and deployed an interactive dashboard using R's **shiny framework**, hosted on shinyapps.io, allowing users to dynamically explore relationships between health expenditures and societal metrics.

COVID-19 Vaccine Appointment Reservation System | *Java, JDBC, SQL, Microsoft Azure* | *Git* **December 2022**

- Conceptualized and designed the database schema for an appointment reservation system, utilizing Entity - Relationship (ER) diagrams to streamline complex data relationships.
- Developed a robust reservation system for caregivers and patients using **SQL** and **Java**, facilitated via Java database connectivity (**JDBC**) to ensure smooth interactions between the database and user interface.
- Successfully integrated the appointment reservation system with **Microsoft Azure**, thereby enhancing cloud compatibility and ensuring data availability, resilience, and scalability.

Technical Skills

Languages: Java, Python, SQL, C, C++, 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