Michael Ibrahim

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Education

University of Washington, Seattle **December 2025**
Bachelor of Science - Computer Science (Departmental Honors) *GPA: 3.85/4.0*
Bachelor of Science - Informatics

Cascadia College **June 2022**
Associate of Science - Engineering *GPA: 3.95/4.0*

Research & Industry Experience

Amazon **June 2025 - September 2025**
Software Development Engineer Intern *Seattle, WA*

Iyer Lab, University of Washington **June 2023 - Present**
Undergraduate Research Assistant, Advisor: Vikram Iyer *Seattle, WA*

- Developed 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 accurate heading adjustment.
- Designed software modules to integrate button inputs with the nRF5340, emphasizing code maintainability and scalability, and effectively utilizing GPIO ports to improve system responsiveness and robustness.
- Optimized pulse width modulation software to reduce power consumption from 45 mA to 6 mA, achieving an 87% increase in energy efficiency.

Autonomous Insect Robotics (AIR) Lab, University of Washington **June 2023 - Present**
Undergraduate Research Assistant, Advisor: Sawyer Fuller *Seattle, WA*

- Conducted force measurement testing on a range of propellers using load cells, collecting quantitative data to analyze performance across varying thrust and torque conditions.
- Developed a data visualization tool using Python to dynamically display force measurement results, enabling real-time analysis of propeller performance metrics such as efficiency and stability.
- Utilized the visualization tool to compare and optimize propeller designs, facilitating informed decision-making and identifying key trends that led to improved force output and aerodynamic efficiency.

Boeing **June 2024 - August 2024**
Software Engineer Intern *Kent, WA*

- Developed and maintained dynamic user interfaces for embedded systems using PHP and JavaScript, enhancing user interaction and control over hardware functionalities
- Collaborated with cross-functional teams to design and implement RESTful APIs, enabling seamless integration between PHP backend services and JavaScript front-end components.
- Conducted thorough end-to-end testing of interfaces with embedded networking components, ensuring robust data exchange and reliable system performance across various hardware configurations.

Publications & Presentations

- Arroyos V*., **Ibrahim M***., Mensah E., Johnson K., Fuller S., Iyer V. "Battery-free Computer Vision on Insect-scale Microrobots". *IEEE International Conference on Robotics & Automation.* (May 2025)
- Johnson K., Arroyos V., Donahoe G., Yewondwossen S., Njie O., Arroyos R., Hernandez K., **Ibrahim M.** Iyer V., Fuller S. "Designing Near-gram Helicopters with Attitude Stability and Substantial Payload Capacity". *Science Robotics.* (in Preperation October 2024)
- **Ibrahim M.** "TinyML for Efficient Detection, Classification, and Control". *Task Focused IR in the Era of Generative AI Workshop, Microsoft Research.* (September 2024)
- **Ibrahim M.** "TinyML Solutions for Precision Detection and Control". *Washington NASA Space Grant Consortium Symposium.* (August 2024)
- **Ibrahim M.**, Donahoe G., Yewondwossen S., Njie O. "Aerodynamic Optimization and Control of a Coin-Sized Helicopter". *Washington NASA Space Grant Consortium Symposium.* (August 2024)
- **Ibrahim M.**, Hernandez K. "Coin Copter: A Coin-Sized Helicopter". *University of Washington Undergraduate Research Symposium.* (May 2024)
- **Ibrahim M.**, Hernandez K. "A Novel Coin-Sized Helicopter for Enhanced Precision and Maneuverability" *Washington NASA Space Grant Consortium Symposium.* (August 2023)

Teaching

Paul G. Allen School of Computer Science & Engineering **March 2025 - Present**
Teaching Assistant - CSE 461: Wireless Communication *Seattle, WA*

- Facilitated interactive lab sessions and office hours, helping students implement wireless communication systems and explore topics like channel capacity, frequency analysis, and error correction through software-based experimentation.
- Contributed to course administration by coordinating technical resources, troubleshooting simulation setups, and ensuring timely dissemination of instructional content.
- Assessed student programming tasks and final projects, providing targeted feedback to support their understanding of both theoretical principles and real-world applications such as cellular networks and IoT systems.

Paul G. Allen School of Computer Science & Engineering **September 2023 - June 2024**
Teaching Assistant - CSE 480: Computer Ethics *Seattle, WA*

- Led weekly discussion sections, guiding students through complex ethical topics in computing, such as algorithmic bias, privacy, and the social impact of emerging technologies.
- Assisted with course logistics, including organizing class materials, managing deadlines, and coordinating communication between students and the professor to ensure smooth course operation.
- Evaluated and provided feedback on student essays and assignments, assessing their critical analysis of ethical dilemmas in technology and helping them improve their argumentative writing skills.

AVELA - A Vision for Engineering Access & Literacy **September 2022 - September 2023**
Teacher, Outreach Mentor *Seattle, WA*

- Designed and delivered engaging, interactive STEM lessons, fostering curiosity, critical thinking, and problem-solving skills in students across diverse K-14 age groups and learning levels.
- Led and coordinated outreach initiatives aimed at inspiring and mentoring underrepresented students in STEM fields, actively promoting equity, in education.
- Collaborated with educators and community leaders to develop tailored STEM workshops and programs, aligning curriculum with the unique needs of diverse student populations and enhancing accessibility to STEM education.

Mentorship & Leadership

Paul G. Allen School of Computer Science & Engineering **September 2024 - Present**
Recruitment Representative *Seattle, WA*

- Led Allen School admissions information sessions, offering comprehensive guidance on the application process, including deadlines, required materials, and tips for writing strong personal statements.
- Engaged in targeted recruitment efforts by building connections with prospective students from underrepresented backgrounds, sharing insights into Allen School's culture, resources, and opportunities to foster a more inclusive computing community.

Washington State Opportunity Scholarship Foundation **August 2024 - Present**
Scholar Lead & Mentor *Seattle, WA*

- Provided one-on-one mentorship to 15 first-generation, low-income students, offering academic support, career guidance, and personal development strategies.
- Fostered an inclusive and empowering environment by facilitating workshops and check-ins focused on college navigation, financial literacy, and goal-setting.

Rawan Mentorship **September 2024 - Present**
Founding Mentor *Seattle, WA*

- Provided mentorship and guidance to high school students in the Uyghur diaspora, helping them set academic and personal goals while fostering growth in STEM subjects.
- Guided students through the college admissions process, offering support with application essays, interview preparation, and selecting schools aligned with their career aspirations.
- Developed and led workshops on critical thinking, problem-solving, and leadership skills, empowering students to pursue higher education and career opportunities.

Tau Beta Pi Engineering Honor Society, Washington Alpha Chapter **June 2023 - Present**
Treasuerer *Seattle, WA*

- Administered and managed the honor society's budget, ensuring accurate allocation of funds for events, scholarships, and operational costs, resulting in a 30% increase in financial efficiency year-over-year.
- Collaborated with society leaders, members, and external partners to identify financial needs, ensuring transparent and effective fund distribution, and played a pivotal role in securing sponsorships and fundraising efforts that boosted the society's reserves.

Paul G. Allen School of Computer Science & Engineering **June 2023 - June 2024**
Allen School Ambassador *Seattle, WA*

- Conducted outreach presentations and student panels to promote computer science education, focusing on underrepresented high school and community college students in Washington state.
- Facilitated "A Day in the Life of a College Student" sessions, sharing insights on classroom experiences, extracurricular activities, and pathways to success in computing fields, including Q&A discussions.

Grants & Funding

- Washington NASA Space Grant Consortium | **$11,150** **2023 - 2024**
  - Iyer & AIR Labs, Undergraduate Research

Awards & Fellowships

- Tau Beta Pi Engineering Honor Society Scholar **2024**
- CMD-IT/ACM Richard Tapia Conference Scholar **2024**
- Qualcomm QSA Delegate **2024**
- Allen Scholarship Awardee **2023**
- Washington State Opportunity Scholar **2022**