

# John Dale

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## Education

University of Massachusetts, Amherst

Bachelor of Science in Computer Engineering | GPA: 3.79/4.00

Amherst, MA

Sept. 2020 – Dec. 2024

## Skills

**Technologies:** Linux, Git, AWS, Docker, OpenCV, 5G, Unity, ROS2, Node.JS

**Programming Languages:** Python, C++, C, C#, SQL, Bash, MATLAB, JavaScript

## Experience

MITRE

*Incoming Computer Engineering Intern*

Bedford, MA

June 2024 – Aug 2024

MITRE

*Computer Engineering Intern*

McLean, VA

June 2023 – Aug. 2023

- Developed and scaled a Python application for testing private 5G network configurations in high device density scenarios, allowing for optimization of RAN and 5G Core for beamforming and MU-MIMO features.
- Utilized network interface isolation to consolidate devices, reducing required test resources by 80%.
- Led the configuration and deployment of a 5G femtocell with an open-source 5G core solution.

iRobot

*Systems Test Engineer Co-Op*

Bedford, MA

Jan. 2023 – May 2023

- Spearheaded the development of a Python application to extract robot vacuum performance metrics from Qualisys, an infrared motion capture system, reduced testing time by 70%.
- Enhanced the clock resolution of an embedded Linux platform 5x using C++ for a ground truth system.

National Science Foundation

*REU Drone Systems Research*

Amherst, MA

May 2022 – Aug. 2022

- Developed embedded software in C++ and server-side software in Python for a custom drone package delivery prototype; Enabled recipients to receive text message notifications and images confirming successful delivery.

## Projects

Photo Lock (1<sup>st</sup> Place Senior Design Project)

July 2023 – May 2024

*Lead Software Developer – Team of 4*

- Build an end-to-end camera system on an embedded Linux platform to ensure 100% integrity and authenticity of images/videos and metadata, including user fingerprint, date, time, and location.
- Utilized asymmetric encryption, digital signatures, AWS S3, AWS Lambda, Docker, and SQL.
- Developed two websites using Next.js for cloud media storage and social media integration (Twitter Clone), showcasing the infrastructure's potential for integration with existing media platforms.

RFID Hacking (1<sup>st</sup> Place Award HackUMass)

Nov. 2022

*Partner Project*

- Reverse-engineered RFID protocols using bit-banging to simulate malicious attacks on access control systems.
- Replicated a standard access control system with microcontrollers programmed in C++.
- Developed an inexpensive, injectable, sniffing device capable of remote replay and DoS attacks.

Electric Vehicle Design & Fabrication, 3-Seat Electric Couch

June 2022 – Aug. 2022

*Personal Project*

- Researched, designed, and programmed electrical sub-systems for a wirelessly controlled multi-passenger vehicle.
- Integrated digital potentiometers, level shifters, MOSFETs, DC-DC buck converters, and 18650 battery cells.

## Extracurricular Activities and Awards

IEEE-HKN National Honor Society, *President*

Feb 2022 – Present

1<sup>st</sup> Place Hack – HackUMass 36-Hour Hackathon, 800 participants

Nov. 2022

1<sup>st</sup> Place – Senior Design Project, 37 teams

May 2024

3<sup>rd</sup> Place – Entrepreneurial Tech Challenge, UMass

June 2023

Interim DoD Secret Clearance

Jan. 2023 – Present