

Charles Hodgins

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EDUCATION

Binghamton University, State University of New York

Master of Science in Electrical and Computer Engineering

Expected May 2026

Bachelor of Science in Computer Engineering

May 2025

Cumulative GPA: 3.58/4.00

Relevant Coursework: Data Structures and Algorithms, Operating Systems, Machine Learning, Neural Networks and Deep Learning, Detection Theory, Embedded Systems, Cryptography, Steganography

TECHNICAL SKILLS

Programming: Python (Pandas, Scikit-learn, PyTorch), C/C++, JavaScript(Node.js, React.js), Bash, MATLAB

Development Tools: Git, Github, Linux Os, Windows, Visual Studio, Arduino

PROFESSIONAL EXPERIENCE

Lockheed Martin, Senior Design Project Software Engineer | Vestal, NY

August 2024 – May 2025

- Spearheaded development of PyTorch deep learning perception models (camera CNN for tape-track following, LiDAR model for walled-course navigation) on NVIDIA Jetson Orin Nano with ROS2 framework
- Engineered a ROS2 data pipeline that automated collection and labeling of 200,000+ image/LiDAR training samples, enabling machine learning model deployment
- Accomplished design goals by completing 20+ autonomous laps at 8+ ft/s navigation speed during exposition demonstration

Binghamton University, Firmware Engineer Research Intern, | Vestal, NY

April 2024 – August 2024

- Designed a system to rapidly collect 3-channel accelerometer data, enabling real-time motion analysis
- Programmed a custom Arduino script that enabled microcontrollers to transmit precise PWM signals from RC car motors, streamlined the collection of training data for remote autonomous control of racing robot

Binghamton University, EECE Undergraduate Course Assistant | Vestal, NY

January 2024 – May 2024

- Assessed and guided students in EECE 287 Sophomore Design, an introductory class in embedded computer systems
- Aided in instructing class of more than 120 computer engineering students to reinforce material from lecture and lab
- Conducted student code reviews to over 20% of the class to supply feedback and help students improve coding practices

PROJECT EXPERIENCE

Sensor Fingerprinting Digital Forensics

May 2025

- Implemented MATLAB functions for PRNU preprocessing, noise residual extraction, and Fourier-domain cross-correlation, achieving $>10^3$ Peak-to-Correlation Energy (PCE) on 2 true Canon 6D images out of 34 tested
- Synthesized automated camera identification pipeline with thresholding ($PCE > 60$) to reliably attribute images to the Canon 6D sensor and detect cropped/shifted inputs

Next.js Portfolio Website

March 2025

- Built a responsive full stack website with Next.js, Supabase and Vercel to showcase engineering projects and streamline professional networking
- Produced interactive UI/UX elements including a lightweight MNIST classifier to increase engagement, and user input to send feedback on website features to the PostgreSQL database
- Structured content to highlight technical depth with direct links to codebases, demos, and technical write-ups

Metal Detector Embedded System

April 2024 – May 2024

- Implemented a comprehensive data processing algorithm for a metal detector system, streamlining magnetic sensor data analysis; quantified the sensor readings with 3 separate metrics
- Created a soft core processor in Xilinx Vivado, and wrote C program to distinguish between different thresholds of magnetic field strength, correctly identifying magnetic field strength with 93% accuracy

LEADERSHIP & INVOLVEMENT EXPERIENCE

Binghamton Rover Team, Firmware Engineer

May 2024 – May 2025

- Developed robust software solutions for the university's competition rover project, enhancing system reliability across multiple key functionalities utilized by team engineers.
- Program microcontroller boards to interface subsystems of rover network driven by Dart software on Raspberry Pis

Binghamton Skate Club, Vice-President

August 2023 – May 2025

- Collaborated with campus services to grow a 250+ member roller sports community for athletes of all skill levels.
- Campaigned to the club university financial committee to secure hundreds of dollars in funding and a designated skating space on campus