Abby Duke

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EDUCATION

University of Michigan **Ann Arbor, MI**

B.S.E. Computer Science; Minor in Applied Statistics | **GPA: 3.96** *May 2025*

- Coursework: Data Structures and Algorithms; Web Systems; Computer Vision; Intro to Computer Organization; Web Design, Development, and Accessibility; Practical Data Science for Engineers; Introduction to Statistical Computing

SKILLS

Python, C++, C, HTML, CSS, JavaScript, R, MATLAB

WORK EXPERIENCE

Leidos **Ann Arbor, MI**

Software and Signal Processing Intern *May 2023 - Present*

- Developed Python scripts to autonomously generate synthetic image data by embedding synthetic target signatures into Synthetic Aperture Radar imagery, utilizing OpenCV and Pytorch image augmentations to render realistic images
- Integrated synthetic image data into the training set for Convolutional Neural Network models and adjusted parameters to lower the False Alarm Rate to reach contract standards for target detection measured by False Alarm Rate
- Designed a streamlined pipeline in Python for converting complex synthetic image data into binary segmentation masks using U-Net Image Segmentation models to guide synthetic data pasting algorithms
- Optimized memory consumption of CNN models through static quantization to reduce model size by a factor of 4, improving model deployment on edge devices for efficient real-time computation and object identification

Teaching Aide – University of Michigan Computer Science **Ann Arbor, MI**

EECS 402 – Computer Programming For Scientists and Engineers *August 2023 - Present*

- Teach introductory C++ programming to master's students, leading a discussion section and office hour sessions covering data structures and algorithms and exemplifying proper software development practices

Booz Allen Hamilton **McLean, VA**

Software Consulting Intern *June - August 2022*

- Programmed a Cognitive Radio Engine in Python, implementing intelligent spectrum sensing and automating data visualizations on 28 million data points to display signal acquisition accuracy close to 100%
- Researched Cognitive Radio Theory optimization of radio transmissions to analyze each cognitive technique's ability to avoid interference and signal jamming in a congested spectrum environment
- Presented a plan to senior engineers for integrating a Cognitive Engine into a multi-waveform radio transceiver within the company's R&D contracts, simulating cognitive radio transceivers used in active military combat

PROJECT EXPERIENCE

Predicting Solar Radiation with Machine Learning *February - April 2022*

- Designed machine learning models in Python's sci-kit library to predict solar irradiation based on environmental data
- Programmed and tested Decision Tree, Random Forest, and K-Nearest Neighbors machine learning models on 30,000 data samples, using cross-validation and hyperparameter tuning for optimal results
- Won First Place in the George M. Landes Prize for Technical Communication for the written report detailing the project

LEADERSHIP EXPERIENCE

Society of Women Engineers – *Corporate & Alumni Relations Officer* *April 2023 - Present*

- Organize and host sponsored Corporate Information Sessions and publicize them to engineering students
- Communicate daily with company representatives about event accommodations and optimizing student attendance

BLUElab Metro Project Team – *Project Co-Lead* *April 2022 - April 2023*

- Supervise a team of 20+ students working on socially-engaged, sustainable projects to reduce local carbon emissions in Ann Arbor, including neighborhood electrification, waste reduction, and carbon data visualization

Alpha Chi Sigma Professional Fraternity – *Website Manager* *September 2022 - Present*

- Created a new website for the fraternity in HTML and CSS with JavaScript features and accessibility considerations