Tobias Alam

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EDUCATION

University of Michigan, College of Engineering **Ann Arbor, MI**
Bachelors of Science in Engineering in Computer Science *May 2025*
GPA: 3.92/4.00, Dean's Honor List Recipient (Fall 2022, Winter 2023)
Coursework: Algorithms and Data Structures, Introduction to Machine Learning, Computer Organization, Practical Data Science for Engineers

SKILLS

Languages: C++14, Python, C, HTML/CSS, Java, Latex, R, MATLAB
Frameworks/Libraries: Pandas, Tensorflow, Pytorch, Numpy, Scipy, Scikit-Learn
Developer Tools: Git, Docker, Linux, VIM, PyCharm

WORK EXPERIENCE

Field Data Technologies **Essex, MT**
Software Engineering Intern *May 2023 – Aug. 2023*

- Collaborated with an interdisciplinary team of software engineers and field biologists to develop a $700,000 smart trail camera funded by the USDA to detect endangered animal species in rural settings.
- Reduced $15,000 in annual costs by migrating the company's internal systems from using enterprise machine learning tool-kits to using well-documented, in-house deep neural networks developed in Python3, Tensorflow and Keras
- Deployed successfully ML models onto ARM-based microcontrollers by leveraging the STM32 Cube AI pipeline, achieving 95+% accuracy on object detection tasks.
- Translated project requirements from field biologists and other scientists into computer vision models that can locate and identify several endangered animal species in the wild.
- Developed machine-learning toolkits to allow biologists to effortless train neural network models on custom LiDAR and image datasets, helping research groups across the country to contribute to conservation efforts of endangered species.
- Utilized transfer learning to train computer vision models to identify endangered animals from camera footage.

University of Michigan Security and Privacy Research Group **Ann Arbor, MI**
Computer Science Research Assistant *Nov. 2022 – Present*

- Designing novel cyber-security attacks on hardware systems by leveraging digital signal processing and machine learning techniques
- Researched and implemented methods to breach the privacy of Android devices through targeting phone sensors with adversarial machine learning approaches, using C++, MATLAB, Python3, and PyTorch
- Developed and trained a R-CNN neural network in MATLAB to classify EM signals collected from an oscilloscope
- Collaborated with a PhD student to document and submit results of research process in 2 research papers

PROJECT EXPERIENCE

University of Michigan **Ann Arbor, MI**
Automated Disease Diagnosis Tool

- Led a team of 3 students to develop a machine-learning based disease diagnostic tool using Python and Scikit-Learn.
- Trained 3 different machine learning models (neural network, logistic regression, random forest) to predict diagnoses from lists of symptoms
- Communicated project motivations, decisions, and results to a client with both an informative presentation and an in-depth, stakeholder-centered report

SQL Interpreter

- Implemented a SQL interpreter from scratch in C++ that can process 7+ commands, applying OOP patterns and efficiently using data structures to take in commands and process user-inputted data.

Personal Projects
SampleGuard

- Created an Android app in Java which alerts a user whenever another app is utilizing any of the phone's sensors, protecting the user's privacy from malicious apps
- Utilized Git to seamlessly perform version control and integrate contributions from other developers

ACTIVITIES

Bangladeshi Students Association, *Member* *Aug. 2022 - Present*