Thomas Nathaniel Armstrong

410.916.5928 • ThomasArmstrong174@gmail.com
5462 Bluecoat Lane Columbia, MD 21045

EXPERIENCE

Undergraduate Research – University of Maryland College Park • Spring 2023 – Present

- Undergraduate Researcher – Worked on ensuring polyphase properties of transformer-based models for image classification. Trained several different iterations of vision transformers and tested them with different types of adversarial attacks.

Johns Hopkins University Applied Physics Laboratory • Summer 2020 – Present

- College Intern – Asymmetric Operations/QAC
    - Created two network agnostic machine learning models for detecting malicious network traffic in near-real time.
        - Created an LSTM model that minimized time to detect malicious network traffic.
        - Developed a Longformer model with comparable speed to the LSTM model and greatly improved accuracy to greater than 99%.
        - Constructed standardized methods for testing the models against each other.
        - Preprocessed data for entry into each model.
        - Tuned hyperparameters to optimize the models.
    - Built a TensorFlow LSTM model to extract relationships between entities in a given labeled text.
    - Established automated annotations of network traffic to train a supervised machine learning model in a classification task.
    - Developed a Siamese BERT model with PyTorch to extrapolate moral foundations from text.
    - Supported development in VMware vCenter of a cyber experiment center used to reconstruct networks and create ground truth network data to train machine learning models to detect anomalous network behavior.
    - Built communication infrastructure between Android devices using Python and Ruby.
    - Presented research and findings at the end of each summer to senior leadership.
    - Used Git for version control and to manage documentation on all projects.

Johns Hopkins University Applied Physics Laboratory • Summer 2018 and 2019

- Summer ASPIRE Program Intern – Focus: Asymmetric Operations/Cybersecurity. Developed system to transfer packet metadata in near-real time using Apache Kafka and performed further testing of an LSTM based machine learning model built with Keras designed for anomaly detection.

EDUCATION

University of Maryland College Park • Class of 2024

- Cumulative GPA: 3.82
- Major: Computer Science with Machine Learning Specialization
- Minor: Statistics
- Honors College • Advanced Cybersecurity Experience for Students (ACES) Living-Learning Program
- Cybersecurity Club, Game Dev Club, Board Game Club

TECHNICAL SKILLS

Python; TensorFlow; PyTorch; Pandas; NumPy; Git; Unix/Linux Systems; SQL; Ruby; Java; HTML