

Thomas Nathaniel Armstrong

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EXPERIENCE

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

- Undergraduate Researcher – Worked on creating a shift equivariant vision transformer 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