Zhenghao Tan

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EDUCATION

University of Michigan - Ann Arbor 09/2019-04/2021(expected)
Master of Science in Electrical and Computer Engineering
Major Area: Network, Communication and Information Systems

University of Wisconsin - Madison 09/2015-05/2019
Bachelor of Science in Computer Engineering

Core Courses: Data Structure, Computer Networks, Operating Systems, Database, Machine Learning, Computer Network Security, Natural Language Processing, Mobile Computing

EXPERIENCE

Nokia Deepfield 05/2020-08/2020
***Software Development Intern**, Ann Arbor, MI*

- Implemented HyperLogLog algorithm into Impala and significantly optimized memory usage for cardinality calculation
- Utilized InfluxDB and Kapacitor to query and monitor server data, and visualized them using Grafana
- Participated in software development for user data analysis and subscriber intelligence

Deep Learning Workshop 08/2018-10/2018

- Researched on deep learning topics and neural network models including ResNet, DenseNet
- Designed gradient masking approach to shift pixels in images towards target category
- Realized adversarial system robustness test cases to attack neural network models, examples are VGG19, ResNet50, MobileNet and InceptionV3, dataset is 1000 images and 1000 categories from ImageNet
- Compared and analyzed resistance level and proposed future improvement plan

PROJECT

Research Project: "NeuralMail" Towards Realism in Synthetic Emails 01/2020-04/2020

- Proposed the NeuralMail framework for generating a wide variety of high-quality synthetic phishing emails by fine-tuning language models
- Demonstrated that synthetic phishing emails can evade spam filtering systems of the world's largest email service provider at more than 50% of the time, and showed similar vulnerabilities for multiple other providers with potential attack improvements
- Revealed that GPT-2 output detector is inept at identifying synthetic phishing emails, with an empirical detection accuracy as low as 67%

Course Project: "Cold Start" Problem Alleviation 01/2020-05/2020

- Utilized NLP methods to explore possible solution for "cold start" problem in collaborative filtering for music recommendation
- Trained a Siamese style binary classification model for distinguishing similarity between a pair of songs by using LSTM and lyrics
- Experiments on testing data reached 93% accuracy and proved lyrics could be used for similarity prediction and "cold start" problem alleviation

SKILLS

Python, Java, C++, C, Pandas, PyTorch, TensorFlow, Keras, Flask, Spark, MySQL, Git, Bash, Docker, Scrum, Jenkins, Android Studio, R, Matlab, Network Programming, Multithreaded programming