Yuhang Lin

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EDUCATION

PhD in Computer Science (advisor: Xiaohui Gu) Aug 2018 – May 2023 (expected)
North Carolina State University, Raleigh, NC, USA GPA: 3.93
M.S. in Computer Science (advisor: Byung Suk Lee) Aug 2016 – May 2018
University of Vermont, Burlington, VT, USA GPA: 3.96

TECHNICAL SKILLS

- **Programming**: Java, Python, C, C++, Bash, PHP, JavaScript, XML, MATLAB, C#
- **Machine Learning:** scikit-learn, TensorFlow, Keras, Weka, Massive Online Analysis
- **Others:** Git, Kubernetes, Hadoop, Docker, AWS, Jmeter, Sysdig, MySQL, Reinforcement Learning

PROJECTS

Machine Learning Based Container Security Attack Detection and Patching

- Integrated **application classification** using random forest and autoencoder-based anomaly detection to overcome the challenge of insufficient training data while considering diversified behaviors among applications. Improved attack detection from 61% to 94% while reducing false positive rate from over 12% to 0.24%.
- Combined attack detection with **dynamic targeted patching** to provide efficient and effective security protection for containerized applications just in time, and reduced patching overhead by up to 84%.
- Introduced **hybrid learning** by combing anomaly detection with supervised learning and reduced false positive rate by 39-91% with similar or higher detection rate.

Container Scaling with Deep Reinforcement Learning

- Built an auto-scaling system for Docker containers using deep reinforcement learning in Python, Java and bash. Achieved accuracy of 81.35% by using the best model of policy gradient with LSTM.

Continuous Detection of Abnormal Heartbeats

- Created an efficient online detection system in Java to analyze electrocardiogram data stream using Micro-cluster-based Continuous Outlier Detection algorithm with 83% sensitivity and 88% specificity.

WORK EXPERIENCE

Software Engineer Intern, Meta Platforms Summer 2022

- Implemented and evaluated a cross-platform mobile tagging system in C++ for Facebook Messenger.
- Designed a Spark transformer based automatic tagging quality evaluation system.
- Over 67% messages have better tagging quality than the current Android Facebook Messenger app.

Software Engineer Intern, Facebook Summer 2021

- Designed and implemented a semi-supervised machine learning framework, aiming to quickly learn new listing imaging concepts, in Python for Facebook Marketplace.

SELECTED PUBLICATIONS

- **Lin, Y.,** Olufogorehan, T., Gu, X., He, J. and Latapie H., 2022. SHIL: Self-Supervised Hybrid Learning for Security Attack Detection in Containerized Applications. In Proc. of the 3rd IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS).
- He, J., **Lin, Y**., Gu, X., Yeh, C.C.M. and Zhuang, Z., 2022. PerfSig: Extracting Performance Bug Signatures via Multi-modality Causal Analysis. In Proc. of the 44th International Conference on Software Engineering (ICSE)
- **Lin, Y.,** Olufogorehan, T. and Gu, X., 2020. CDL: Classified Distributed Learning for Detecting Security Attacks in Containerized Applications. In Proc. of Annual Computer Security Applications Conference (ACSAC).