

LU YAN

Email: Lunaryan1998@gmail.com Website: <https://lunaryan.github.io/>

EDUCATION

Shanghai Jiao Tong University

Undergraduate in Department of Computer Science and Engineering

Shanghai, China

September 2016 – Present

- GPA since Sophomore: 3.75/4.3 Overall GPA: 3.51/4.3
- Zhiyuan Honors Program of Engineering

RESEARCH EXPERIENCES

Neural Networks Guided Fuzzing Framework

Jul. 2019 – Sept. 2019

Advisor: Prof. Suman Jana

Columbia University

- We designed a generic ML framework that can learn from different types of program- and input-specific information (e.g., branch distance, rare-edges) using a simple neural network, and further use a gradient-guided optimization technique to find optimal parameter values in an information-source-agnostic way. This work has been submitted to *ICSE'20*.
- Measured and compared the branch distance variation during the fuzzing process of American Fuzzy Loop (AFL) and our framework, providing compelling evidence in support of our method
- Assessed the reasons behind the outstanding performance of our method by ablation study of the benefits offered by seed selection and adaptive loss (two heuristics we proposed)

Android Apps' Privacy Leakage Risk Evaluation

Dec. 2018 – Jul. 2019

Advisor: Prof. Haojin Zhu

Shanghai Jiao Tong University

- Proposed benign Apps with similar functions utilize common limited permission combinations while malwares tend to require more permissions independent of their functions, evaluated it by finding frequent term sets
- Established correspondence between Apps' requested permissions and private information listed in their privacy policies, based on which introduced a new metric to evaluate privacy leakage risk of Android Apps

Dynamic Traffic Feature Camouflaging via GANs

Jun. 2018 – Jul. 2018

Advisor: Prof. Haojin Zhu

Shanghai Jiao Tong University

- We proposed a dynamic traffic camouflaging technique that automatically learns the features of the normal network flow, and dynamically morphs the on-going traffic flows based on the learned features by the adoption of the Generative Adversarial Networks (GAN) model
- Analyzed network flows using dpkt framework and identified each flow with 4-tuple (source address, source port, destination address, destination port)
- Transformed traffic data into normalized feature vectors; compared the effect of different generator and discriminator network structure on training result

PUBLICATION

Jie Li, Lu Zhou, Huaxin Li, **Lu Yan** and Haojin Zhu "Dynamic Traffic Feature Camouflaging via Generative Adversarial Networks", in IEEE Conference on Communications and Network Security (CNS'19)

SELECTED COURSE PROJECTS

Machine Learning (taught by Prof. Quanshi Zhang) [\[report\]](#)

- Created positive and negative training/test samples from [FDDDB dataset](#), trained logistic regressor, Fisher model, SVM with 3 kernels, Xgboost, AdaBoost, and CNN for binary classification
- Designed and implemented a new face detection method utilizing morphological transformation operations, beating state-of-the-art selective search algorithm when combined with SVM classifiers on test set
- Analyzed and visualized features with PCA and t-SNE; personal project report achieved the highest recognition among all projects presented in the class

Computer Networks (taught by Prof. Na Ruan) [\[report\]](#)

- Proposed the combination of Graph Neural Networks (GNN) and Generative adversarial Nets (GAN) to detect Sybil users in social networks
- Evaluated our method against 8 traditional ML models in [Cora](#) and real-world [Dianping](#) dataset, achieving $2.27\times$ and $1.61\times$ accuracy compared to KNN respectively

HONORS & SCHOLARSHIPS

- Overseas Research Scholarship, Shanghai Jiao Tong University
- Zhiyuan Honors Scholarship, Shanghai Jiao Tong University (top 5%)
- Zhiyuan Honors Research Program, Shanghai Jiao Tong University (The **only** EECS project out of 8 projects funded in 2018)

ADDITIONAL INFORMATION

- **Volunteer Experience:** International Volunteer teacher in Cambodia (2017) and Indonesia (2018)
- **Hobbies:** Traditional Chinese folk dance, Calligraphy