Kavian AmirMozafariSabet

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Education

FALL 2018 – FALL 2021
Master of Science (M.Sc.) in Computer Engineering—Security
CE Department, Sharif University of Technology, Tehran, Iran
Worked on code similarity detection using graph-matching networks to detect similar vulnerable C and C++ programs.
I extracted features from CFG and PDG graphs of existing vulnerable codes, and using GNN, I computed embeddings of these graphs.
Then, I used distance metrics in the vector space to calculate graph similarities.
GPA: 3.8

FALL 2013 – FALL 2017
Bachelor of Science (B.Sc.) in Computer Engineering
CE Department, Azad University, Tehran, Iran
Implemented a chat application that handles multiple users at the same time and also supports media and file transfer.
GPA: 3.4

Skills

Programming Languages:	Python, Java, C
Security:	Fuzzing, Taint Analysis, Slicing, Evasion Attacks, Poisoning Attacks
Database:	SQL Server, Redis, ClickHouse
Distributed Technologies:	Apache Kafka, Kafka Connect, Kafka Stream, RabbitMQ, Airflow
Web Development and Frameworks:	FastAPI, Django
DevOps and Tools:	Git, Linux, Docker
Documentation:	LaTeX
Machine Learning and Data Science:	Machine Learning, Deep Learning, Pandas, NumPy, scikit-learn, PyTorch

Research Interests

- System and Software Security
- Privacy
- Software Analysis
- Distributed Systems
- Adversarial Machine Learning

Language Skills

English

- TOEFL iBT: 100 (Reading: 29, Listening: 29, Speaking: 21, Writing: 21)
- GRE: Quantitative Reasoning: 162, Verbal Reasoning: 143, Analytical Writing: 3

Experience

JAN 2022 – PRESENT
Software Engineer / Mofid Securities, Tehran, Iran
- Mofid securities is the #1 Stock Broker in Iran with more than 30% of the online transactions of the market with 1000+ employees and 11M+ customers.
- Developed BourseView, the most sophisticated and detailed stock market analysis, for technical and fundamental analysis.
- Designed data pipelines to gather, refine, and analyze technical and fundamental stock market data.
- Conducted real-time fundamental financial analysis and financial metrics from companies' financial statements.
- Implemented a data mesh architecture for real-time stock market prices.
- Designed and developed Rest API for external and internal customers.
  bv.emofid.com – bourseview.com – emofid.com

APR 2020 – MAR 2021
Programming Instructor / Yasan Academy, Tehran, Iran
- Instructed three Python and Web classes.
  yasanacademy.ir

Teaching Experiences

Data & Network Security

Sharif University of Technology - Prof. M. Kharrazi - SPRING 2019
HW Designer and Grader, Chief TA

Secure Software Systems

Sharif University of Technology - Prof. M. Kharrazi - FALL 2019
HW Designer and Grader, Chief TA

Data & Network Security

Sharif University of Technology - B. Momeni - FALL 2019
HW Designer and Grader, Chief TA

Projects

1. **Data Mesh Architecture for Stock Market Prices** / Mofid Securities
   Designed and implemented data mesh architecture for stock market prices, in which data pipelines were designed to process real-time prices.
   Kafka, Kafka Connect, Kafka Stream, Java, ClickHouse

2. **Fundamental Financial Analysis** / Mofid Securities
   Conducted real-time fundamental financial analysis and financial metrics from companies' financial statements, catering to the needs of market analysis for capital market insights.
   Python, Kafka, SQL Server

3. **Rest API** / Mofid Securities
   Designed and developed Rest API for external and internal customers with 10K+ concurrent users' capability.
   Python, FastAPI, SQL Server, Redis

4. **Code Similarity Detection** / Sharif University of Technology – S4Lab
   Designed a code similarity model using graph-matching networks in order to detect equivalent vulnerabilities in C and C++ programs.
   LLVM, C++, Machine Learning

5. **Binary Analysis Tool** / Secure Software Systems Course
   Implemented a binary analysis tool that parses, disassembles, and plots the call graph of elf and PE executable programs.

6. **Exploits Vulnerabilities** / Data & Network Security Course
   Exploited several vulnerabilities, including buffer overflow, format string, ROP, CSRF, SQL injection, and XSS.

7. **Adversarial Attacks** / Security & Privacy in Machine Learning Course
   Adversarially trained a model on the CIFAR10 dataset and implemented PGD and FGSM adversarial attacks against a regular and trained model.

8. **Poisoning Attack** / Security & Privacy in Machine Learning Course
   Generated the poisoning attack and created a backdoor on the MNIST dataset.

9. **Trained a Substitute Model** / Security & Privacy in Machine Learning Course
   Created a substitute model using the Jacobian-based Data Augmentation Algorithm.

10. **Differential Privacy** / Security & Privacy in Machine Learning Course
    Trained a model with differential privacy using private aggregation of teacher ensembles (PATE) framework on the MNIST dataset.

11. **Implemented and Designed Various Machine Learning Models** / Machine Learning Course
    Implemented MLP and CNN on the MNIST dataset.
    Implemented a heart Disease Prediction using KNN and decision tree models.
    Implemented an SVM model on the CIFAR-10 dataset.
    Implemented spam detection using a Naive Bayesian classifier.
    Implemented K-means and GMM models and compared their results.
    Implemented Q-learning and SARSA on the Taxi-v3 environment from the Gym and compared their results.

Relevant Courses

- Secure Software Systems
- Machine Learning
- Data & Network Security
- Security and Privacy in Machine Learning

Honors and Awards

- Ranked 38th in the national university entrance exam for M.Sc. degree.

Voluntary Experiences

MAR 2020
CTF Competition / Sharif University of Technology – S4Lab

Helped hold a CTF competition.
ctftime.org/event/1007

Hobbies

Movies, Gym, CTF