Kianoush Arshi

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EDUCATION

University of Tehran   2019–2024
BSc in Computer Engineering (Software)   Cumulative GPA: 18.53/20.00

PUBLICATIONS

1. **K. Arshi** and A. Goharshady, "The Solitude of Greed: Congesting Blockchains with A Lonely Transaction", Under submission at *IEEE International Conference on Blockchain and Cryptocurrency (ICBC), December 2023*

EXPERIENCE

Hong Kong University of Science and Technology   Prof. Amir Goharshady
Research Intern   Summer 2023-Fall 2023

- Introduced and evaluated two attacks on Ethereum, resulting in a disruption of service on the blockchain. These attacks were not targeted at the network level but instead took advantage of the rationality of miners.
- Developing a private decentralized banking system.
- Presented a paper on probabilistic programming titled "Positive Almost-Sure Termination – Complexity and Proof Rules" to the ALPACAS research group.

University of Tehran
Research Assistant   Prof. Behnam Bahrak

- Smart Contract Security Audits   Spring 2023
    * Participated in Code4rena Security Audits and discovered security vulnerabilities in smart contracts developed for DeFi projects.
- A Comparative Analysis of MEV Transactions Pre- and Post-Ethereum Merge   Fall 2022-Winter 2023
    * Implemented a framework for collecting blockchain data with high speed without setting up a node.
    * Designed an MEV transaction classifier for detecting arbitrage and liquidation transactions.
    * Analysed arbitrage and liquidation transactions before and after the merge.
- Monero Miner Detector   Spring 2022
    * Developed a Monero Miner Classifier which uses the features of the network packets for detecting malicious mining on the user's browser.
    * Attempted to optimize the detector by filtering out network packets based on their frequency

Divar   Tehran, Iran
Full-stack Web Developer   Summer 2021

- Developed a platform with many different applications in a team of 4 developers.
- Utilized several software developing tools and frameworks.

Teaching Assistant   Fall 2020-Spring 2023

- Artificial Intelligence - Dr. Yaghoubzadeh, Dr. Fadaei   Fall 2022-Fall 2023
- Formal Languages and Automata Theory - Dr. Hojjat   Fall 2021-Spring 2023
- Engineering Probability and Statistics - Dr. Bahrak   Fall 2022
- Compiler Design and Programming Languages - Dr. Ghassemi   Spring 2022
- Advanced Programming - Dr. Khosravi   Fall 2021-Spring 2022
- Introduction to Computing Systems and Programming - Dr. Moradi   Fall 2020 and Fall 2021
- Technical English - Dr. Fatemi   Fall 2021-Fall 2022

Skills

Programming Languages: Python, Golang, Solidity, C++, C, Java, Bash, Javascript

Technologies and Paradigms: Blockchains, Smart Contracts, Zero Knowledge Proofs, Web3 and DeFi

Tools and Frameworks: Foundry, gnark, Slither, ReactJS, Docker, Spring, Maven, Django, Web3.py

Languages: English(Fluent, **IELTS score 8**), Persian(Native), German(Beginner)

Notable Projects

TLSC Inspector
Source code for data collection and analysis of the Solitude of Greed paper   Python, Web3, PostgresDB

- Implemented a framework for fast blockchain data collection without setting up a node
- Discovered vulnerabilities due to block information dependence in high-valued contracts
- Evaluated the effects of EIP-1559 and the merge on Ethereum

Bitcoin Protocol and Mechanisms   Crypto Currency Course
Two projects: Python, Bitcoinlib

- Evaluated the consensus protocol of Bitcoin using probabilistic analyses.
- Implemented Bitcoin address generation, transaction mechanisms, and mining.

Oak   Internet Engineering Course
Implemented a project similar to Amazon marketplace   Java, Docker, Spring, ReactJS, Maven

Smart Pot   Cyber Physical Systems Course
Implemented an automated plant irrigation manager   C++, Arduino

Distributed Sentence Formatter   Distributed Systems Course
Implemented a distributed sentence formatting tool.   Golang

Mini Kaggle   Divar Internship
A Kaggle clone made using the Django framework as a learning project.   Python, Django, Celery, PostgreSQL

New features for xv6 OS   OS Course
Added new features including new system calls, scheduling systems, hotkeys, etc.   C

TCP Server   Computer Networks Course
An implementation of a TCP server with congestion controls and sliding window.   C++

Image Classifier   AI Course
Two neural networks projects: Python, NumPy, Pandas, TensorFlow, Scikit-Learn

- Implemented a feed-forward neural network from scratch.
- Developed an animal classifier using Tensorflow.

CMM Compiler   Compiler Course
A compiler for a new functional Language called CMM. The project had four phases: Java, ANTLR, Jasmin

- Grammar specification   - Type Analysis
- Name Analysis   - ByteCode Generation