Pasha Barahimi

PashaBarahimi PashaBarahimi PashaBarahimi.github.io pashabarahimi@gmail.com

Senior undergraduate student at the School of ECE, University of Tehran

Education

2025 (Expected) **B.Sc. in Computer Engineering**; University of Tehran GPA: 19.39/20 (4.0/4.0)

Introduction to Cryptocurrencies	20/20	Computer Networks	20/20
Introduction to Distributed Computing	20/20	Operating Systems	19.9/20

Research Interests

- Distributed Systems
- Wireless Systems
- Operating Systems
- Computer Networks

Publications

Enforcing Control Flow Integrity on DeFi Smart Contracts 2024
Z. Chen, SM. Beillahi, **P. Barahimi**, C. Minwalla, H. Du, A. Veneris, F. Long
Submitted to IEEE/ACM International Conference on Software Engineering (ICSE) 2026

Research Experience

Bachelor's Thesis at University of Tehran Oct 2024 - Present
Supervised by Prof. Seyed Pooya Shariatpanahi

- Analyzing Ethereum's transactions in DEXs.
- Detecting anomalies and optimizing token portfolios to maximize profit.

Research Internship at University of Toronto (Remote) Aug 2024 - Sep 2024
Supervised by Prof. Fan Long
Project Repository

- Developed an efficient algorithm in Rust for the **Heimdall** toolkit to detect self-reverting storage slots, such as reentrancy guards and cache slots, helping to prevent reentrancy vulnerabilities.
- Overcame the challenge of interpreting unknown values as zero and distinguishing them from actual zero values in symbolic execution by providing initial storage slot values.
- The algorithm successfully identified self-reverting storage slots, contributing to improved security analysis of Ethereum smart contracts.
- The results contributed to a paper submitted to ICSE 2026 titled *"Enforcing Control Flow Integrity on DeFi Smart Contracts."*

Research Internship at Max Planck (SWS) Institute Jul 2023 - Sep 2023
Supervised by Prof. Rupak Majumdar
Project Repository

- Contributed to the implementation of the **TruSt** Dynamic Partial-Order Reduction (DPOR) algorithm within the **Lincheck** framework, a model-checking tool for testing concurrent data structures in JVM-based languages (Java, Kotlin).
- A list of challenges and their possible solutions is documented here.

Honors and Awards

2024 **Direct Admission to MSc Program**, Any University in Iran — Declined

2024 **Ranked 1^{st} in bachelor's degree among about 90 students** — GPA: 19.39/20 (4.0/4.0)

2021 **University of Tehran Supporters' Foundation Scholarship** — $100/year (for 3 years)

2020 **Ranked 161 in University Entrance Exam among over 160,000 participants**

Teaching Experience

Head Teaching Assistant
Advanced Programming
Fall 2023, Spring 2024

Teaching Assistant
Advanced Programming
Spring 2022, Fall 2022, Spring 2023

Teaching Assistant
Systems Analysis and Design
Spring 2024

Teaching Assistant
Algorithm Design
Fall 2022, Fall 2023

Head Teaching Assistant
Introduction to Software Testing
Fall 2024

Teaching Assistant
Machines and Language Theory
Fall 2022, Spring 2023, Fall 2023

Teaching Assistant
Artificial Intelligence
Spring 2023, Fall 2023, Spring 2024

Teaching Assistant
Data Structures and Algorithms
Fall 2022

Selected Projects

Introduction to Cryptocurrencies Course Projects — Python

- Generating wallet credentials (private/public keys and address) and vanity address
- Creating valid transactions in Bitcoin Testnet
- Creating a Bitcoin block with a single transaction

Distributed Computing Course Projects — Golang

- gRPC and Protobuf
- Concurrency in Golang
- Setting up GlusterFS on Xen

Network Security Course Projects

- Launching HTTP and HTTPS servers using Apache and utilizing Wireshark for capturing packets
- Encryption and Decryption using OpenSSL library
- Github OAuth and JWT
- Phishing demo using DHCP snooping and DNS spoofing, available here

Computer Networks Course Projects — C++

- Socket Programming
- Wireless LAN Simulation (NS3)
- Routing Protocols (Link State & Distance Vector)
- TCP Congestion Control (TCP Reno/NewReno/BBR)

Operating System Lab Projects C

- Introduction to xv6 operating system
- System Calls
- Scheduling
- Synchronization

Operating System Course Projects C++

- Socket Programming
- Pipe
- Multi-Threading

Work Experience

Software Engineer at Okala (Full-Time) Jan 2025 - Present

- Contributed to the platform's payment system.
- Implemented efficient algorithms to meet the real-time requirements of the system.

Junior Software Developer at Sotoon (Part-Time) Oct 2022 - Jan 2024

- Contributed to Sotoon's cloud infrastructure and services, supporting both development and operational goals.
- **Database Team:** Completed mentorship, gaining skills in Kubernetes controllers and PostgreSQL management.
- **Security Team:** Maintained and improved HuskyCI (security test orchestrator) and contributed to the Bug-Bounty backend.
- **Integration Team:** Developed features for the Announcer backend (automated announcements for Zoho, Slack, and Email) and improved the IAM service for secure identity management.

SRE Intern at Sotoon (Full-Time) Jun 2022 - Sep 2022

- Gained hands-on experience in Site Reliability Engineering (SRE).
- Implemented an API Gateway, optimizing service interactions and improving scalability.
- Worked with tools like Git, Docker, Kubernetes, Redis, Prometheus, Grafana, Makefile, and Ansible.
- Strengthened collaboration and communication skills, applying theoretical knowledge to real-world SRE challenges.

Skills

Programming

- Proficient: C++, C#, Python, Golang, SQL
- Intermediate: Java, Kotlin, Verilog, C, Bash
- Basic: Rust, R, JavaScript, Solidity

Technologies
Git, Docker, Kubernetes, Makefile, Ansible, Redis, Django, PostgreSQL, Microsoft Office, LaTeX

Operating Systems
Linux (Debian-Based), Microsoft Windows

Languages

Persian Native
English Advanced (C1) IELTS (Sep 2024): 8.0 (L: 8.5, R: 9.0, W: 8.0, S: 7.0)