

Pasha Barahimi

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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
Artificial Intelligence	20/20	Foundations of Data Science	19.4/20

RESEARCH INTERESTS

- Systems
- Blockchain & Smart Contracts
- Security & Privacy
- Cryptography

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 [ACM International Conference on the Foundations of Software Engineering \(FSE\) 2025](#)

RESEARCH EXPERIENCE

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 FSE 2025 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

Head Teaching Assistant

Introduction to Software Testing

FALL 2024

Teaching Assistant

Advanced Programming

SPRING 2022, FALL 2022, SPRING 2023

Teaching Assistant

Machines and Language Theory

FALL 2022, SPRING 2023, FALL 2023

Teaching Assistant

Systems Analysis and Design

SPRING 2024

Teaching Assistant

Artificial Intelligence

SPRING 2023, FALL 2023, SPRING 2024

Teaching Assistant

Algorithm Design

FALL 2022, FALL 2023

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](#)

API Gateway

Golang

A group project developed for the Sotoon internship

- Implementing fake upstreams and deploying them on Kubernetes using Ansible
- Implementing rate limiting with Redis
- Monitoring the gateway with Prometheus and Grafana
- Enabling live reloading of configurations

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

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)