Pasha Barahimi

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Senior undergraduate student at the School of ECE, University of Tehran
Currently living in Tehran, Iran

EDUCATION

2025 (Expected)	**B.Sc. in Computer Engineering**; University of Tehran		GPA: 19.39/20 (Rank: 1)
2020	**Diploma in Mathematics and Physics**; Danesh High School		GPA: 19.88/20

RESEARCH INTERESTS

- Distributed Systems
- Blockchain
- Security
- Operating Systems & Computer Networks

RELATED COURSES

Introduction to Cryptocurrencies	20/20	Computer Networks	20/20
Introduction to Distributed Computing	20/20	Operating Systems	19.9/20
Computer Networks Security	17.38/20		

RESEARCH EXPERIENCE

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

- Collaborated on enforcing control flow integrity for Ethereum smart contracts, initiated by Ph.D. student Zhiyang Chen.
- Contributed to the **Heimdall** toolkit by developing an algorithm in Rust to detect self-reverting storage slots, which helps prevent reentrancy vulnerabilities.
- Overcame challenges in symbolic execution by introducing initial values for storage slots.
- 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).

HONORS AND AWARDS

2023	**Ranked 2nd in senior year of bachelor's degree**	GPA: 19.14/20 (4.0/4.0)
2023	**Ranked 1st in junior year of bachelor's degree**	GPA: 19.86/20 (4.0/4.0)
2022	**Ranked 1st in sophomore year of bachelor's degree**	GPA: 19.50/20 (4.0/4.0)
2021	**Ranked 2nd in freshman year of bachelor's degree**	GPA: 19.01/20 (4.0/4.0)
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

My Responsibilities:
- 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 & 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

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)