

SHAYAN HOSSEINI

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EDUCATION

University of British Columbia , Vancouver, BC, Canada M.Sc. in Computer Science Thesis: <i>Verification of Distributed Systems</i>	2021 - present
University of Tehran , Tehran, Iran B.Sc. in Computer Engineering Thesis: <i>Verification of Microservices</i>	2015 - 2020

RESEARCH EXPERIENCE

Research Intern at Microsoft Research Remond , Remote <i>Under supervision of B. Arzani and D. Crankshaw</i> <ul style="list-style-type: none">Member of the Networking Research Group at Microsoft Research.Improved automatic mitigation of faulty datacenter links by 13% using reinforcement learning.	Summer 2022
Research Assistant at the University of British Columbia , Vancouver, BC, Canada <i>Under supervision of Prof. I. Beschastnikh</i> <ul style="list-style-type: none">Working on the PGo project, to compile verifiable models of the distributed system into implementations in Go.Built a verified model of Raft consensus protocol that can be compiled into Go. I came up with a solution to build verified fault-tolerant systems using PGo.Built several eventually consistent systems such as Conflict-free Replicated Data Types using PGo.	2021 - present
Research Intern at Max Planck Institute for Informatics , Saarbrücken, Germany <i>Under supervision of Prof. C. Lenzen</i> <ul style="list-style-type: none">Working to make routing algorithms fault-tolerant by using an augmentation process. I proved the lower bound for the minimum number of edges and vertices in the resulting augmented graph.	Summer 2019

PUBLICATIONS

1. Finn Hackett, **Shayan Hosseini**, Renato Costa, Matthew Do, and Ivan Beschastnikh. 2023. Compiling Distributed System Models with PGo. In Proceedings of the 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems, Volume 2 (ASPLOS 2023). Association for Computing Machinery, New York, NY, USA, 159–175. <https://doi.org/10.1145/3575693.3575695>

PROFESSIONAL EXPERIENCE

Software Engineering Manager at Cafe Bazaar , Tehran, Iran <ul style="list-style-type: none">Leading a team of 10 people working to integrate all public cloud services into a unified product.Built a billing system to automatically charge users for their usage of the services.Built a monitoring and alerting system that allowed users to monitor their resources in the cloud.	2020
Technical Lead and Product Manager at Cafe Bazaar , Tehran, Iran <ul style="list-style-type: none">Co-founded and led a team of 8 engineers to provide highly available and scalable cloud service to other technical teams and companies (now rebranded as Sotoon).Started and developed a distributed object storage service using Ceph. It serves more than 50TB of data and responds to more than hundreds of requests per second in production.Scaled our existing content delivery network 50% by developing a new architecture using cache servers.Designed and developed a new software architecture for the CDN nodes to be dynamically configurable and multi-tenant.	2017 - 2019
Software Engineer at Cafe Bazaar , Tehran, Iran <ul style="list-style-type: none">Developing Cafe Bazaar back-end codebase, which had more than 100,000 lines of Python code and 30 million users.System owner of Cafe Bazaar CDN and parts of the back-end. Managing these systems on more than 15 servers.Responsible for code reviews and system maintenance.	2015 - 2017

AWARDS AND HONORS

ICPC, International Collegiate Programming Contest

The International Collegiate Programming Contest is the most prestigious programming contest for college students.

- **56th team** in the 41th ICPC World Finals, South Dakota, USA 2017
Top 0.3% among more than 45,000 students from all over the world.
- **3rd team** in ICPC Pacific Northwest Regional Contest 2021
Among more than 100 teams participating from the area of Pacific NW (including Washington, Oregon, N. California, British Columbia).
- **3rd, 2nd, 2nd, 9th team** in Regional Contests of ICPC West Asia Region, Tehran site, respectively in 2018, 2017, 2016 and 2015.
Top 1% among more than 300 teams that participate in this contest every year.

Silver Medal in the 24th Iranian National Olympiad in Informatics

2014

Top 0.16% in the algorithmic programming contest among 10,000 participants in the country.

NOTABLE PROJECTS

Peydaa

2021 - present

Peydaa is a non-profit platform to make transparency in the Iranian job market. It is a website that people can anonymously share their salary and experience of working in companies with others. I founded Peydaa myself, working as both product manager and developer, and over time, four more people joined the team remotely. Until now, more than 600 users have shared their salaries and experiences on Peydaa.

PGo

2021 - present

PGo compiles verifiable formal specifications into Go implementations. I contributed to the PGo distributed runtime and built several distributed systems using PGo.

Tracing library

2021

A light-weight library for manual distributed system tracing. Has been used for precise automatic grading in CPSC 416 course. I was the main developer of the project.

gRPC Go Contracts

2020

A design by contract library for the gRPC Go framework; To verify the communication of microservices by writing contracts for their RPCs. I designed and implemented this project as a part of my B.Sc. thesis.

TEACHING EXPERIENCE

Teaching Assistant

University of British Columbia

- CPSC 416: Distributed Systems, I. Beschastnikh

Spring 2021

University of Tehran

- **Head TA**, Design and Analysis of Algorithms, H. Mahini
- Engineering Probability and Statistics, B. Bahrak

2018 - 2019

Fall 2018, 2019

Informatics Olympiad and ICPC related

Teaching topics in computer science including Algorithms, Data Structures, and Graph Theory to undergraduate students preparing for ICPC as well as high school students preparing for Informatics Olympiad.

- University of Tehran
- Iranian National Olympiad in Informatics Summer Camp
- Allameh Helli High School

2017

2015

2015

SKILLS AND QUALITIES

Programming Languages and Tools: Expert in Go, Python, Bash-Scripting, Git. Working knowledge in C/C++, SQL, Java, Lua, Javascript, Verilog, L^AT_EX.

Software Engineering: Familiar with different object-oriented design patterns, software development methodologies such as Agile and DevOps and, functional programming.

Web Application Development: Comfortable with Django, Flask, CSS3, HTML5 and ReactJS.

Site Reliability Engineering: Managed scalability and maintainability challenges in several web applications having

thousands of requests per second. Expert Linux user and experienced in system administration. Experience with Ceph storage platform, Kubernetes, Docker, NGINX, Networks.

Theoretical Background: Expert in design of algorithms, data structures, and discrete mathematical fields such as graph theory and combinatorics suggested by awards in ICPC and Olympiad in Informatics.

Languages: English (Full professional proficiency), Persian (Native).