Alireza Ghazanfari

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Research Interests

- Machine Learning and Deep Learning
- Software Engineering and Programming Languages
- AI for SE
- Large Language Models and NLP
- AI for PL
- Code generation and repair

Education

Sharif University Of Technology   Tehran - Iran
B.Sc in **Computer Engineering**   Sept. 2019 - Present

- GPA: 18.96/20 - 3.8 / 4 (Transcript ↗)

Shahid Qoddusi High School   Qom - Iran
Dimploma in **Mathematics and Physics**   Sept. 2016 - Jun. 2019

- GPA: 19.89/20
- Affiliated with National Organization for Development of Exceptional Talents

Research Experience

Automatic Real-time Detection of Brain Aneurysm via Multi-View YOLOv5
A. Ghazanfari, A. Pourmand, E. Farahani, R. Ghavami, H. Bahrami, HR. Rabiee
Data Science & Machine Learning Lab, Sharif University of Technology
Submitted to Computers in Biology and Medicine on October 1, 2024, under review, 20 pages

- In this paper, I played a key role in developing a model for the automatic real-time detection of brain aneurysms using multi-view YOLOv5. My contributions included introducing several techniques to make YOLOv5 model suitable for detecting aneurysms lesions in CTA images. I also developed a significantly faster model for the detection of aneurysms lesions, achieving performance levels comparable to other similar studies.

Automated Code Reviewer Recommendation for Pull Requests
MS. Moosareza, A. Heydarnoori
Contributed under the supervision of A. Heydarnoori, Intelligent Software Engineering Lab, Sharif University of Technology
published at EISEJ, 22 pages

- In this research project, spearheaded by MS. Moosareza, I played a key role in developing a heuristic algorithm to automate reviewer recommendations for GitHub pull requests. My contributions included implementing state-of-the-art methods such as Sofia, cHRev, and RevFinder in Python to serve as benchmarks for comparison. To facilitate this analysis, I extracted the necessary data and features from our gathered dataset and conducted a thorough comparative analysis between the performance of the novel algorithm and existing approaches. Furthermore, I expanded the scope of the research by developing crawlers to extract valuable feature data from both GitHub repositories and Gerrit projects. ⟳

A Simulator for Edge Network and Cloud Computing Systems
B.Sc. Thesis, under the supervision of Prof. Izadi and Prof. Dolati
Distributed and Multiagent Systems Lab, Sharif University of Technology

- My B.Sc. thesis builds upon research led by Prof. Dolati, exploring the optimization of resource usage in edge networks, as detailed in the paper "Layer-Aware Containerized Service Orchestration in Edge Networks." For my thesis, I am developing a user-friendly network simulator with a graphical interface. This software tool will enable users to interact with and implement the algorithms proposed in the paper, facilitating further experimentation and validation of the research. Moreover, my work involves refining and improving these algorithms. The results of these enhancements, along with the simulator, will be published in journal and conference papers upon completion of my thesis.

Notable Course Projects

Design of Programming Languages
A Python interpreter developed using Racket ⟳   Fall 2023

Advanced Programming

An online shop developed by Java and JavaFX, using socket programming for network communication. ⊙
Spring 2020

Software Engineering

A web application, similar to Splitwise, built with the Django framework, to easily track and share expenses. ⊙
Spring 2023

Compiler Design

A compiler for Decaf programming language developed in Python. ⊙
Fall 2022

Computer Networks

An SDN controller developed in Python using different tools, such as Mininet and RYU frameworks. ⊙
Spring 2023

Academic Highlights

Linear Algebra	20/20	Engineering Probability and Statistics	20/20
Artificial Intelligence	19.4/20	Machine Learning (graduate course)	19.8/20
Fundamentals of 3D Computer Vision	20/20	Compiler Design	20/20
Design of Programming Languages	20/20	Theory of Formal Languages and Machines	19.9/20
Software Engineering	20/20	SE Requirements Engineering (graduate course)	19.8/20
Computer Networks	19.4/20	Database Design	20/20

Achievements

Ranked 17th nationally out of **164,278** candidates in the Nationwide Universities' Entrance Exam.
June. 2019

Completed a co-op program in the Computer Engineering under the supervision of Prof. Kharrazi.
Feb. 2023

Academic Teaching Experience

- Machine Learning: Prepared course materials, designed and graded assignments (Spring 2024, Fall 2023).
- Linear Algebra: Designed and graded assignments (Spring 2024, Fall 2023).
- Compiler Design: Designed and graded project (Spring 2024).
- Theory Of Formal Languages And Machines: Graded assignments (Spring 2024)
- Software Engineering: Designed assignments (Spring 2024).
- Computer Networks: Designed assignments and project (Spring 2024, Fall 2023).
- Advanced Programming: held TA sessions (Spring 2024).
- Database Design: Designed and graded assignments (Fall 2023).
- Technical Presentation: Designed and graded exams (Fall 2023).
- Engineering Probability And Statistics: Designed and graded project (Fall 2023, Fall 2022, Spring 2022).
- Logic Design: Designed and graded assignments (Fall 2022).

Work Experience

Digikala (The leading E-Commerce platform in Iran)

Software Engineer
Jul. 2022 - Feb. 2023

- As a backend developer, I gained valuable experience in Agile and Scrum methodologies while utilizing tools like Docker, Kubernetes, and Jira. During my role on the Promotions and Pricing team, I worked with PHP, Symfony, Redis, and Memcached.

Yektanet (The leading online advertising platform in Iran)

Software Engineer
Feb. 2021 - Oct. 2021

- As a backend developer, I gained invaluable experience working with various tools and frameworks such as `PostgreSQL`, Celery, Django, REST API, and Nginx, as well as developing Telegram bots in Python.

Technical Skills

Programming Languages	Python, Java, C, Php, Racket
Frameworks and Tools	LaTeX, Linux, Git, Docker, SQL and NOSQL DBs
Deep and Machine Learning Libraries	Pytorch, Numpy, Pandas, Scikit-Learn, Matplotlib, OpenCV, Seaborn
Languages	Persian (Native), English (Proficient): TOEFL score - 103 (R29 L28 S22 W24)
	[Report ↗]