M. Ali Hosseinnezhad

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EDUCATION

- **Sharif University of Technology** — Tehran, Iran
  Bachelor of Computer Engineering, GPA: 17.1/20, 3.49/4 — *2019 – 2024*
  - **Thesis: Semantics-Aware Customizable Data Flow Control for Smart Home Privacy Protection**: Under the mentorship of Dr. Amini, I am developing a semantics-aware and customizable data flow control framework to enhance privacy protection in smart home environments. This ongoing research addresses critical challenges in IoT security and contributes to pioneering methodologies for smart home privacy.

- **National Organization for Development of Exceptional Talents (SAMPAD)** — Tabriz, Iran
  High School Diploma in Mathematics and Physics, GPA: 18.50/20 — *2016 – 2019*

RESEARCH INTERESTS

- Software Engineering
- Natural Language Processing

RELEVANT COURSEWORK

- Advanced Programming : 20/20
- Software Engineering: 20/20
- Operating Systems: 19.7/20
- Design of Algorithms : 19.1/20
- Natural Languages Processing : 18.6/20

RESEARCH EXPERIENCES

- **Real Time Systems Lab, Optimizing Energy Usage for Mixed-Criticality Systems** — Summer 2024 - Present
  Dr. Safari — *SUT, Tehran, Iran*
  - I am currently working on optimizing the energy efficiency of mixed-criticality systems with resource sharing by enhancing task mapping and partitioning, drawing inspiration from Particle Swarm Optimization (PSO) and Harris Hawks Optimization (HHO), and utilizing Dynamic Voltage and Frequency Scaling (DVFS) and Dynamic Power Management (DPM) techniques.

TEACHING ASSISTANT EXPERIENCE

- **Teaching Assistant, Software Engineering** — Fall 2024
  Dr. Rivadeh — *SUT, Tehran, Iran*
  - I assisted in designing, reviewing, and correcting the course assignments.
  - I took part in designing and grading midterm exams.

- **Teaching Assistant, Systems Analysis & Design** — Winter 2023 - Spring 2024
  Dr. Aghamohammadi — *SUT, Tehran, Iran*
  - I assisted in designing the course project and mentored students.

- **Teaching Assistant, Database Design** — Fall 2023
  Dr. Baharifard — *SUT, Tehran, Iran*
  - I designed course assignments.

- **Teaching Assistant, Advanced Programming** — Fall 2023
  Dr. Fazli — *SUT, Tehran, Iran*
  - I designed the course projects and assignments.

WORK EXPERIENCE

Divar (Iran's largest classified ad company with more than 60 million users) 🔗   Tehran, Iran
Software Engineer   *September 2023 - Present*

- Implemented a wallet solution for business users and developed new payment methods.
- Refactored existing services, optimized queries, and improved API designs, enhancing system performance and reliability.
- Reduced the impact of third parties on service reliability by writing an auto-switch mechanism.

Sotoon 🔗   Tehran, Iran
Software Engineer   *July 2023 - September 2023*

- Developed a dynamic NLP project system for managing projects from various data sources.
- Leveraged Kubernetes and NLP expertise to create adaptable and efficient solutions.

Hengam 🔗   Tehran, Iran
Senior Back-End Developer   *July 2022 - Octobor 2022*

- Developed features for products that were extension apps for Shopify stores.
- Embraced Test-Driven Development (TDD) to ensure clean, structured, and high-quality code.
- Focused on delivering robust and maintainable solutions in a fast-paced development environment.

Yektanet 🔗   Tehran, Iran
Software Engineer   *January 2021 - July 2022*

- Designed and implemented solutions for team requirements across various projects.
- Developed video ads microservices using Node.js and Django, ensuring efficient and scalable ad delivery. Utilized technologies such as CDN, S3 to optimize system performance and reliability
- Worked on Digikala's ad system, implementing data retrieval using Elasticsearch and optimizing complex queries.
- Implemented Query Augmentation with Graph Algorithms to increase the coverage and relevance of ads.

PROJECTS

- **C-Minus Compiler**: ☉
  - Implemented a C-minus compiler for the Compiler Course, specifically designed to compile the C-minus language.
  - Developed the compiler using Python, demonstrating proficiency in language processing and compiler construction.

- **End-to-End Encrypted Messenger**: ☉
  - Implemented an end-to-end encrypted messenger using Python sockets, featuring a resilient server-client architecture to provide secure and confidential communication.
  - Prioritized advanced security measures including forward security, key freshness, integrity, confidentiality, and algorithm robustness to safeguard message exchanges.
  - Ensured compliance with comprehensive security requirements, offering protection against replay attacks, man-in-the-middle attacks, and unauthorized access while maintaining message authenticity and non-repudiation.

- **Task Offloading in Fog Layer Using PPO**: (Google Colab)
  - Implemented task offloading in the fog layer of an embedded system using Proximal Policy Optimization (PPO) to optimize resource allocation and reduce latency.
  - Improved system performance and efficiency by leveraging PPO for dynamic task distribution across edge and fog nodes.
- **Real-Time Scheduling and Task Assignment Optimization in Mixed-Criticality Systems**: ☉
  - Implemented EDF-VD scheduling with MSRP to improve real-time task management in mixed-criticality systems.
  - Developed a resource congestion-aware task assignment algorithm.

- **Movie Search Engine**: ☉
  - Developed a RAG-based model for movie retrieval and recommendation, enhancing user experience by providing accurate movie suggestions based on descriptions.
  - Implemented a Telegram bot interface for user interaction, utilizing Python and Jupyter Notebook for development.
  - Managed data preparation and vectorstore creation processes to ensure efficient document comparison and query handling.

* Collaborated on the integration of various datasets and models, optimizing the system for performance and scalability.
- **Articles Search Engine**: ⌂
  * Employed Information Retrieval methods such as TF-IDF, Transformers, and Word Embedding to systematically retrieve information from a collection of article documents, enhancing search accuracy and efficiency.
  * Implemented the project using tools such as Django and Elasticsearch.

- **Flight Service - Authorization service Node.js/Golang**: ⌂
  * Developed a flight service using microservice architecture, with an authorization service implemented in Golang and a ticket service in Node.js, designed to handle queries and panel page requests.
  * Integrated the microservices with gRPC for efficient communication, ensuring robust and seamless interaction between authorization and ticket services.

SKILLS

Programming Languages: Python, Go, Java, C, C++
Technologies and Tools: Django, PostgreSQL, Elasticsearch, Redis, Node.js, HTML, CSS, MySQL, GitHub, Docker, Trello, Postman
Soft Skills: Teamwork, Creativity, Problem-Solving, Prioritization, Motivation

LANGUAGE PROFICIENCY

- **Persian**: Native
- **English**: Fluent