

# Hossein Aghaei

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## Education

### Sharif University of Technology (SUT)

2019 - Present

- Bachelor of Science, Computer Engineering
- **GPA: 19.12/20** (Last 2 years: **19.83/20**) ([Transcript](#))

## RESEARCH INTERESTS

- Software Engineering & Applied ML
- Database & Information System
- Programming Language & Compilers
- Distributed System & Operating System
- Embedded & Real Time System
- IoT & Cyber-Physical System

## RESEARCH EXPERIENCES

### RADIAN Lab

Sep:2023 - Present

- Working under the direct supervision of [Dr.Bardia Safaei](#).
- Suggest and start a project on **Databases** in whole department for the first time.
- Compare existing **SQL/No-SQL/Time-Series** databases for **IoT** ([Detail and Presentation Link](#)).
- Collect several **Time-Series** datasets and **profile** the **IoTDB** in a **cluster** using the **MQTT** protocol.

### Cyber Physical System Lab

Feb:2024 - Present

- Paper “**Thermal-Aware Fault-Tolerance in Heterogeneous Multi-Core Systems Using Adaptive Machine Learning**” (Under Preparation) in cooperation with Mr. Amirhossein Ansari and [Dr.Mohsen Ansari](#) .
- Present Several papers on **Thermal-Aware Multi-Core Systems** (e.g. [paper 1](#) and [paper 2](#)).
- Rewrite **MiBench** codes to Python and Java.
- Execute MiBench codes in the **gem5** x86 and ARM architecture simulator, convert the outputs to **McPAT** input, and get the **power usage and area** ([github](#)).
- Cooperating on a survey about **Resource Sharing in Real-Time Systems** with Professor Ansari and Dr.Safari.

### Setaerh Group

Jul:2021 - Sep:2021

- Write a reliable Nugget package to run **multiple programming language scripts**, such as **.NET, Python, R**, and **Matlab** with extensive data in a remote **Jupyter Notebook server**.
- Prototype for several network protocol like HTTP and **WebSocket**.

## PROFESSIONAL EXPERIENCES

### Senior Software engineer at [Digikala](#)

Jul:2022 - Present

- Conduct several **advanced MySQL** courses for about **200** engineers.
- Member of the **database disaster management** team.
- **Lead** of the promotion team for **2 Black Friday** campaigns with **800k** online **users**.
- Develop features on our native framework to **decrease 21% of Redis queue sizes**.
- Develop a **micro-service** for stock management with **distributed transactions** and about **50k** requests/second.

### Software engineer at Mohaymen

Feb:2021 - Nov:2021

- Develop a fast multi-operational CSV parser in **.NET** to read a **4G file in 8 seconds**.
- Develop a **logging** system to track a request among **different services**.

## SKILLS

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- **Programming language:** Java, .NET, Python, Node.js, PHP, C, C++, R, Assembly, Verilog.
- **Technology:** Git, Docker, Redis, Kafka, Memcached, Elasticsearch, MySQL, PostgreSQL, MongoDB, IPTable.
- **Coding:** SOLID, Test (Unit, Integration), Design Patterns, Agile methodologies, Clean Architecture, CI/CD

## VOLUNTEER EXPERIENCES

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### Teaching Assistant

- Technical Presentation (7 times)
- Database Design (2 times, 1 time as the **Head**)
- Signals And Systems (1 time)
- Software Engineering (1 time)
- Basic programming (2 times)
- Linear algebra (1 time)
- ADV information retrieval (1 time)
- Embedded System (1 time)

### Teaching And Mentorship

- Teaching Chemistry and Math in my **own educational group (ALPHA)** to more than **1000 students** from 2019.
- **Edit 7 books** in Chemistry for the university entrance exam- Konkur.
- **Author of a book** for the preparation of students in Chemistry for Konkur.

## RELATED COURSES

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- Database Design (19.2) ([github](#))
- Compiler Design (20) ([github](#))
- Real Time Systems (20) ([github](#))
- Agile Software Development (20) ([github](#))
- Operating System (19.5) ([github](#))
- Embedded Systems (20) ([github](#))
- System Analysis & Design (20) ([github](#))
- Computer Networks (20) ([github](#))
- Software Engineering (20)

## RELATED PROJECTS

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- **PintOS:** Implement OS features like **syscalls**, an **inode-based filesystem**, directories, **priority inversion**, buffer cache, and **locking** mechanisms (mutex, semaphore).
- **Kafka:** An MVP of the Kafka streaming platform for **multiple producers/subscribers** to guarantee **the exact one** recipient.
- **Torrent:** An MVP of the **Torrent protocol** for **distributed file sharing** using Python sockets.
- **DayPay:** This is my **startup MVP** in Jango about a platform to facilitate **employee advance payments**.
- **C-Minus:** A compiler for a **simplified C language** called c-minus.

## HONOURS AND AWARDS

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- **Ranked 24th**, in Iranian University Entrance Exam among 164k students.

## LANGUAGES

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- **Persian:** Native
- **English:** TOEFL iBT ?/120 (R: ?, L: ?, S: ?, W: ?) (the exam is in October)