Erfan **Khadem**

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An Electrical Engineering student looking for research oppurtunities

Education

Bachelors of Science in Electrical Engineering
Sharif University of Technolog
2022 - 2026
Tehran, Iran

- Courses: Realtime Embedded Systems | Operating Systems | Cryptography | Advanced Programming
- GPA: 18.07 / 20 | Department Average: 15.72

Highschool Diploma in Physics and Mathematics
Dastgheib 1 Highschool of Shiraz
2019 - 2022
Shiraz, Iran

- Shahid Dastgheib 1 highschool is under the supervision of NODET, National Organization for Development of Exceptional Talents, and is the most prestigious highschool in south of Iran.
- GPA: 19.75 / 20

Professional Experience

Embedded Hardware and Backend Developer
Home Automation Project at National Elites Foundation
2023 - Present
Tehran, Iran

- Lead a team of computer security experts, electrical engineers and developers to build home automation appliances and smart gateways using TI's Zigbee chips and Espressif System's ESP32 and ESP8266 microcontroller series
- Guide our team to implement Test-Driven Development practices and integrate solutions produced by other teams in our product.
- Coordinate efforts between our team members and set goals and deadlines according to our timeline.
- Technologies:
  - FreeRTOS
  - Websocket
  - Nodejs
  - Embedded Linux
  - Svelte

Fullstack Developer and Systems Administrator
Abarkelas
2022 - 2023
Tehran, Iran

- Develop Django backend using django-rest-framework
- Fix bugs and improve UX at our frontend using SSR and Vue.js
- Improve monitoring and alerting for our backend systems
- Implement self-healing procedures for our backend systems
- A/B test our user base to guide our product development process
- Technologies:
  - Django REST Framework
  - Vue.js
  - Docker
  - Postgres + Redis
  - Grafana + Prometheus

Fullstack Developer and Systems Administrator
Niroutrans Co.
2020 - 2022
Shiraz, Iran

- Complete development of an advanced monitoring system for Niroutrans' solar power plant, the biggest roof-mounted solar power plant in Iran
- Design advanced data visualization for our power plant monitoring system
- Design and implement online product documentation center to improve our customers' experience
- Technologies:
  - Microsoft SQL Server + Redis
  - Bootstrap 4 & 5
  - Modbus TCP
  - Protobuf
  - Nginx

Projects & Associations

Advanced Algorithms in Rust
2022

TheAlgorithms/Rust
Github

- Implement advanced graph algorithms such as centroid decomposition and max-flow.
- Implement various cryptographic algorithms including Salsa20 and HMAC.
- Improve and optimize the implementation of various algorithms like SHA256 and DSU.
- Various other improvments and implementation.

SSH Anti-Censorship Tool
2023

SSH-liberty-bridge
Github

- Implemented in go with the user management componenet written in python.
- Has been used successfully for bypassing GFW restrictions in Iran and bringing internet freedom to the citizens.
- Integrated in hiddify's excellent GFW bypass solution.
- This has been implemented with great care regarding its security and performance and uses redis as its database

Path Tracing Ray-Tracer
2022

ptrt
Github

- A simple path tracer implemented in pure C++.
- Using various statistical and SIMD tricks to improve performance
- Parallel processing implemented using OpenMP

Jungle Marble Blast Clone
2023

bp-cpp
Github

- This was the project for our basic-programming course.
- Implemented using SDL and Dear ImGui libraries in C++.

Certificates

2021	**Scientific Computing with Python**, Free Code Camp	*view*
2021	**Javascript Algorithms and Data Structures**, Free Code Camp	*view*

Skills

Languages English | Persian | Arabic (basic)

Tech Stack JS (Svelte/Vue.js) | Python (Pandas/Numpy/Django) | Rust | Go | C/C++ (HW/RTOS/Linux)

Hobbies Mathematics | Cryptography | Bicycle | Electronics