

# Erfan Khadem

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*An Electrical Engineering student looking for research opportunities*

## Education



### Bachelors of Science in Electrical Engineering

SHARIF UNIVERSITY OF TECHNOLOGY

2022 - 2026

Tehran, Iran

- Optional Courses: Realtime Embedded Systems | Operating Systems | Cryptography | Advanced Programming
- GPA: 18.34 | Department Average: 15.72 / 20



### 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.
- 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
- Technologies:
  - FreeRTOS
  - Websocket
  - Nodejs
  - Embedded Linux
  - Svelte



### Fullstack Developer and Systems Administrator

ABARKELAS

2022 - 2023

Tehran, Iran

- 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 new features 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

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

# Projects & Associations

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## Advanced Algorithms in Rust

[THEALGORITHMS/RUST](#)

2022

[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.
- Many other big and small improvements and implementation.

## SSH Anti-Censorship Tool

[SSH-LIBERTY-BRIDGE](#)

2023

[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.

## Path Tracing Ray-Tracer

[PTRT](#)

2022

[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 Game Clone

[BP-CPP](#)

2023

[Github](#)

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

# Certificates

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2021 **Scientific Computing with Python**, Free Code Camp

[view](#)

2021 **Javascript Algorithms and Data Structures**, Free Code Camp

[view](#)

# Skills

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**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