

# REZA KARBASI

## Machine Learning Engineer

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### SUMMARY

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Experienced in different fields of AI from path planning and decision making all the way to audio signal classification and image processing. Participated in developing various Python and C/C++ programs and deploying them. I have a master's in **AI and Robotics** and I'm passionate about multidisciplinary projects to expand my horizons.

### SKILLS

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**Programming** Python(Advanced), C(Advanced), C++(Intermediate), Matlab(familiar)  
**Frameworks** Pytorch(Advanced), Tensorflow(Advanced), Mlflow(Intermediate), Simulink  
**Libraries** Numpy, Pandas, Matplotlib, Plotly, Selenium, OpenCV  
**Databases** SQL, InfluxDB, MongoDB  
**Misc** Git, Linux, Bash Scripting, Docker, REST API, Software Testing, Confluence, Jira, Django, GTest

### WORK EXPERIENCE

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#### Algorithm Engineer

Apr. 2023 - Present

*SoftwareMotion*

*Remote, China*

SoftwareMotion is a company that develops Advanced Driver Assistance Systems(ADAS). I worked there as an Algorithm Engineer in the Decision Planning and Control(DPC) team. My major projects was to implement a CI procedure in gitlab and making a visualization app for debugging our functionalities. These tools reduced debugging time significantly.

#### ML Engineer

Jun. 2022 - Mar. 2023 (10 months)

*Hara AI Company*

*Tehran, Iran*

Hara AI is a B2B company specializing in AI services for businesses, including OCR and STT.

- As part of my responsibilities at the company, I implemented a network to assign tags to audio files, such as gender, age, sentiment, and satisfaction. Additionally, I developed a filter to detect frequent interruptions by the operator, as well as poor voice quality.
- Assessing the company's STT model in various real-world conditions, such as applying different levels and types of noise to the sound, helped identify its vulnerabilities related to gender, age, and signal quality. This analysis enabled the development of more robust AI-driven solutions for call centers, ultimately improving customer experiences.
- By implementing **MLflow** workflow, we established a standard for deep learning workflows, enabling us to track experiments, capture experiences, and create referable documents.

#### AI Engineer

Oct. 2022 - Dec. 2023 (14 months)

*Iran's National Elites Foundation*

*Tehran, Iran*

Our team developed a path planning algorithm for an aerial vehicle to avoid collisions with obstacles and remain undetectable from surveillance devices. We created a graph using our knowledge of the obstacles and put the weights based on the formula for detection (based on SNR). We then applied various algorithms, such as DP, A\*, etc., to address the problem. As the project manager and responsible party, I optimized the older graph-making process **10 times**.

#### Designer of a Trader Bot

Apr. 2019 - Jan. 2020 (10 months)

*QDM*

*Tehran, Iran*

QDM was a company that worked for 10 years in stock market trading. I was responsible for designing an automatic trader bot using RL.

- I made a trader bot in **Metatrader** and set the parameters using the Deep Q network in Python. Metatrader and the RL algorithm were connected by a socket. I published a minor version of the app in this [medium blog](#) and this [Github repository](#).

### Instructor

Jun. 2021 - Aug. 2021 (3 months)

[Aras Academy](#)

Tehran, Iran

Aras Academy offers workshops and robotic courses for bachelor and master students. In the 2021 summer school, I presented **an Introduction to Reinforcement Learning**.

### Embedded Software Engineer

Dec. 2017 - Jun. 2019 (19 months)

[Raiwan](#)

Tehran, Iran

Raiwan specializes in designing and building IoT and industrial manufacturing and laboratory devices. I was the main responsible for designing **Inner Hospital Communication** devices and involved in **Taxi Payment Device** project.

### Student Researcher

May 2015 - Sep. 2017 (2 years and 4 months)

[KN2C Robotic Lab](#)

Tehran, Iran

KN2C Robotic Lab is a robotic lab that works on various robotic devices and projects from UAVs to Small Size football leagues. I was there as an electronic and control engineer in the SSL team (Small Size League).

## NOTABLE PROJECTS

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### Localizing of A Robot

- In this project, we aimed to localize the Anki robot in a **Gazebo** environment using **particle filter** and extended Kalman filter (**EKF**) algorithms. This was our final project for the Advanced Robotics Course.

### Implementing Transformer Network

- In this project, we aimed to implement the encoder part of a **transformer** network and use it for a translation application (English to Persian). This was one of the projects of the Deep Learning course.

### Semantic Segmentation

- In this project, we aimed to implement a SegNet neural network for **semantic segmentation**. This was one of the projects of the Deep Learning course.

### EEG Signal Classification

Feb. 2021 - Aug. 2021

- Our project aimed to use **EEG** signals to play a simple video game. My task was to implement an Adaptive Neuro-Fuzzy Inference System (**ANFIS**) algorithm to classify the brain signals into two distinctive actions in the game.

### Online Analysis of News in Soroush App

- This was the final project of the Big Data Course. In this project we were supposed to crawl [Soroush app](#) (a social medium in Iran) and make an analysis on the public channels to be shown to the admin. I was responsible for the web crawling of Soroush messenger (I did it with **Selenium**) and establishing data transmission through **Kafka**. We stored the codes in this [repository](#).

## EDUCATION

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### University of Tehran (It has the best ranking in Iran)

Tehran, Iran

MS in Artificial Intelligence and Robotics; **GPA: 18.86/20**

Sep. 2019 - Jan. 2022

### K. N. Toosi University of Technology (top 5 universities in Iran)

Tehran, Iran

BS in Electrical Engineering (major in Control Engineering); **GPA: 17.4/20**

Sep. 2014 - Jan. 2019

## HONORS & CERTIFICATES

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**The National University Entrance Exam for M.Sc. degree in AI:** Ranked 28th (top 0.2%)

**National University Entrance Exams in Mathematics:** Ranked 888th (top 0.7%)

**Iran Open Robocup:** Ranked 5th in 2016's Small Sized League (SSL)

**Snake League:** Ranked 3rd in 2019's Snake League in Nasir Cup

**Certificate in Database Principles and SQL Server:** [Link to the certificate](#)

**Certificate in Django Web Framework:** [Link to the certificate](#)