

REZA KARBASI

Software Developer

☎ +98 936 085 1787 @ arzkarbasi@gmail.com | [LinkedIn](#) | [Reza Karbasi](#) | [Portfolio](#) | 📍 Tajrish Sq., Tehran, Iran

SUMMARY

Experienced programmer 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.

WORK EXPERIENCE

Automotive Software Engineer

[SoftwareMotion](#)

04/2023 - Now

Remote, China

- Made a **CI/CD** pipeline in **Gitlab** with **GTest** for the Autosar-based codebase, reducing on-field testing through automated unit and integration tests by 30%
- Built a **PyQT** visualization software for AEB and ACC systems, integrating BEV plots to drastically reduce debugging time. Processed MF4 and CAN signals (BLF, DBC) to expedite vehicle issue diagnosis.

Machine Learning Engineer

[Hara AI Company](#)

06/2022 - 03/2023

Tehran, Iran

- Automated audio file categorization by gender and age using Google's [YamNet](#) (in the TensorFlow framework) as the backbone, fine-tuning the model with the company's labeled data. Developed a custom metric to accurately evaluate classification accuracy, with equal emphasis on precision and recall.
- Building a filter for detecting operator interruptions and poor voice quality using VAD algorithms.
- Conducted an in-depth assessment and visualization of the company's Speech-to-Text (**STT**) models under varied real-world conditions (such as noise and reverberation) to pinpoint vulnerabilities.

AI Engineer

[Iran's National Elites Foundation](#)

10/2022 - 12/2023

Tehran, Iran

Leading a team, we developed a microservice-based platform for aerial vehicle monitoring, focusing on a graph-based path planning module. By implementing advanced algorithms like Dynamic Programming and A*, we enhanced navigation precision and system responsiveness, achieving a tenfold increase in processing speed over the initial version.

Robotic Researcher

[KN2C Robotic Lab](#)

05/2015 - 09/2017

Tehran, Iran

- Led the electronics team in KN2C's SSL, enhancing robot performance by designing, soldering, and maintaining Xmega and ST processor boards for motor control and precise **PID** calibration. Fostered collaboration with mechanical and software teams to integrate system improvements.
- Boosted ball detection precision by implementing a **Kalman Filter** in **C++**, leveraging the Armadillo library.
- Crafted a real-time GUI in C# using Visual Studio for simultaneous condition monitoring of all robots, enhancing strategic decision-making.

Designer of a Trader Bot

04/2019 - 01/2020

QDM

Tehran, Iran

Engineered a Metatrader trading bot with a technical strategy, incorporating a **Deep Q Network** in **PyTorch**. Utilized a socket connection for data streaming and applied the algorithm on historical data spanning 2007-2019 in Metatrader. Documented a version on this [Medium blog](#) and this [Github repo](#).

Instructor

06/2021 - 09/2021

[Aras Academy](#)

Tehran, Iran

Presented **an Introduction to Reinforcement Learning** at Aras Academy's 2021 summer school, basing the syllabus on Sutton's book, "Reinforcement Learning: An Introduction."

NOTABLE PROJECTS

- Led the web crawling of the [Soroush app](#) for the Big Data Course's final project, utilizing **Selenium** for data extraction and **Kafka** for transmission. Facilitated team collaboration for data analysis, with all contributions and code housed in our [GitHub repository](#).
- Led sentiment analysis of mobile phone reviews on Digikala for a Social Network course project, developing a metric to quantify device opinions. Spearheaded website crawling with **Selenium** and crafted the analysis network. Code available in [this repository](#).
- Implemented an Adaptive Neuro-Fuzzy Inference System (**ANFIS**) algorithm in **Pytorch** for EEG signal classification, facilitating video game control through brain activity.
- Developed a gym environment with a Deep RL **A3C** agent to optimize station power settings and maximize coverage area while minimizing conflicts.
- Conducted a comprehensive data analysis on surgical outcomes for various medical centers and procedures. Assessed performance, compared surgery types, and provided insights to enhance medical service quality.

HONORS & CERTIFICATES

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](#)

SKILLS

Programming C++ (Advanced), Python (Advanced), C (Advanced), Matlab (familiar), Java (Intermediate)

Frameworks Pytorch (Advanced), Tensorflow (Advanced), MLflow (Intermediate)

Libraries Numpy, Pandas, Matplotlib, Plotly, Selenium, OpenCV

Databases SQL, InfluxDB, MongoDB

Misc Git, Linux, Docker, Software Testing, GTest, Bash Scripting, REST API, Confluence, Jira

EDUCATION

MSc. in AI and Robotics	Tehran University	GPA: 18.8/20	2019-2022
BSc. in Electrical Engineering	Khaje Nasir University	GPA: 17.4/20	2014-2019