REZA KARBASI

Data Scientist

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SUMMARY

with 4+ years of experience. Proficient in **Python**, **C/C++**. Proven expertise in developing RL algorithms, machine learning solutions and path planning. Contributed to open-source projects like DeepFace. Adept at collaborating in multidisciplinary and international teams.

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.
- Deployed **MLflow** to facilitate experiment tracking.
- 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 reverbation) to pinpoint vulnerabilities.

AI Engineer   *Iran's National Elites Foundation*
10/2022 - 12/2023   *Tehran, Iran*

Led a team to develop a microservice-based vehicle monitoring platform, focusing on graph-based path planning. Enhanced navigation precision and responsiveness using **DP** and **A***, achieving a tenfold increase in processing speed.

Designer of a Trader Bot   *QDM*
04/2019 - 01/2020   *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   *Aras Academy*
06/2021 - 09/2021   *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

- Implemented the encoder component of a **Transformer** network for a translation application (English to Persian) as part of a project in the Deep Learning course.

- Dockerized a **face recognition system** in videos using **Flask** and **deepface** library for identifying individuals by comparing faces with reference images, handling video processing, face embedding, matching, and output generation for applications like surveillance. Project link.

- Applied an image captioning application using **Resnet18** and **LSTM** models in **PyTorch**.

- 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.

- 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.

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

Skills

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

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

Libraries Numpy, Pandas, Matplotlib, OpenCV, Plotly

Databases SQL, InfluxDB, MongoDB

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

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

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