



Fateme Bafghi

MACHINE LEARNING ENGINEER

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Summary

Results-driven **machine learning engineer** with over **5 years** of hands-on experience. Proficient in designing, developing, and integrating AI applications using **PyTorch**, **Keras**, and **TensorFlow** for development, and **Docker**, **TensorRT**, and **ONNX** for deployment. Successfully delivered **6 impactful AI projects** in collaborative team settings, demonstrating **precision** and **creativity**. Recognized for achieving project milestones and adapting strategies to meet evolving requirements. Thrives on embracing and **overcoming complex challenges**. Committed to **continual professional development**, evidenced by staying current with the latest advancements in the field.

Experience

Nojan Co

May 2023 - Present

Computer Vision Engineer

- **Explain Models:** Implemented a method in order to explain models using **shap**, **Lime** and **Gradcam** for understanding and improving models more efficiently
- **Data Pruning:** Improved the utilized models by extracting **most informative data** from dataset using different **Data Pruning** methods such as finding the nearest or most distant data in the **embedding space** using **kmeans** which improved the model's accuracy from 97.2 to 98.5.
- **Dataset Background Changing:** created a background changing method using **SAM model** in order to create a **diverse dataset** with multiple background colors
- **Dataset Subset Clustering:** Implemented a **clustering method** using **self-supervised training** in ConvnextV2 and **Clip model** in order to cluster each class of dataset into multiple subclasses
- **Pistachio Classification Model:** Designed and developed an innovative Pistachio Classification system utilizing **Vision Transformer networks** and State of the art Augmentation methods like **MixUp** and **SnapMix**, achieving **rapid** and **accurate** sorting.
- **Multi-View Pistachio Classification:** Developed a comprehensive **multi-view image recognition model** tailored for pistachio sorting, ensuring **precise recognition** of varieties from **various angles** using Vision Transformer networks

Revivoto (Iran Office)

JUL 2022 - Present

Machine Learning Engineer

- **Inpainting Model:** Developed an inpainting model using **Stable Diffusion** and **Pix2Pix** to enhance image restoration and completion capabilities, contributing to the advancement of image processing technologies.
- **Scene Classification:** Designed and developed advanced Scene Classification networks utilizing **transformer networks** and **data pruning techniques** to achieve an **accuracy of 97.3%** in recognizing various areas of a residential property.
- **Optimizing Models** Achieved impressive results by **deploying** and **optimizing** Image-Enhancement, Scene Classification, and Object Removal networks. **Reduced model size** and **memory consumption by 70%**, and also **Decreased processing time by 50%** while improving accuracy.
- **Serving and Calibrating Models:** Serving multiple models efficiently using **TensorRT** by **calibrating** and **quantizing** models.
- **Data Engine:** Developed and designed an **efficient** Data Engine that **streamlined the dataflow, development, and deployment process**, utilizing **MongoDB** to manage and optimize large datasets

Amerandish

March 2020 - JUL 2022

AI Developer

- **AI Answering Machine:** Developed an automatic answering machine based on AI, which achieved a call response accuracy of **92.45%** in Persian language Using **Pjsua**.
- **AI based Call Center Analysis:** Developed an **analyzer system** for Iranian call centers that **processed 1000 number of data packets per day**, resulting in improved call center performance and customer satisfaction Using **TCPdump**, **Pyshark** and **Redis**.
- **AI based Question Answering:** Developed a Persian Automatic Question Answering system on telephone for Irancell Customers, providing accurate responses to 92.45% of customer inquiries using **Pjsua**.
- **Dashboard and Database Design:** Developing a Dashboard for monitoring different services using **Kibana** and **ElasticSearch**.

Education

University of Isfahan

Isfahan, Iran

M.SC in Artificial Intelligence

2016 - 2019

Thesis: Multiple Object Tracking in Highways Using Appearance Models and Visual Object Tracking

Isfahan University of Technology

Isfahan, Iran

B.SC in Software Engineering

2012 - 2016

Thesis: Developing a restaurant recommendation system in android with routing abilities

Skills

Machine Learning and Deep Learning Tools	Pytorch, TensorRT, ONNX, Keras and Sklearn, Tensorflow, Opencv, Pandas
Programming Languages	Python, C/C++, AVR
Database Systems	MS SQL SERVER, SQLite, Redis, ElasticSearch, MongoDB
Operating System	Windows, Linux (Ubuntu)
Other	Docker, Git, Restapi, Fastapi, Kibana

Projects

Detecting all open windows on Microsoft Windows desktop

University of Isfahan

Tools: OpenCV, Matlab

Isfahan, Iran

- Developed a high-performance system to accurately detect all open windows on desktop using advanced morphological algorithms, optimizing user experience and improving overall system efficiency.

Age and Gender Classification using Convolutional Neural Networks

University of Isfahan

Tools: OpenCV, Keras, Python

Isfahan, Iran

- Employed cutting-edge Deep Neural Networks to develop a highly accurate Age and Gender Classification model, leveraging advanced machine learning techniques to train the model and deliver precise results.

FaceKit

Freelance

Tools: Face-recognition, Dlib, Sklearn, Python, OpenCV

Tehran, Iran

- Developed a robust toolkit using advanced computer vision techniques to detect, cluster, and track faces in videos or batches of images, improving accuracy and performance and enhancing the overall efficiency of face-related applications.

Lung fibrosis segmentation

Freelance

Tools: Pytorch, Pydicom, OpenCV

Tehran, Iran

- Utilized the state-of-the-art U-Net architecture to develop a highly accurate Lung Fibrosis Segmentation model, improving diagnosis and treatment of pulmonary fibrosis, a chronic and progressive lung disease.

Indoor Scene Classification

Freelance

Tools: Pytorch, Pillow, Numpy

Tehran, Iran

- Training a Convolutional Network on MIT indoor recognition dataset

Visional Transformers

Freelance

Tools: HuggingFace, OpenCV, Numpy, Docker

Tehran, Iran

- Training Vision Transformer Networks for Detecting and Classifying Vehicles

Recognizing Trend Images of Telegram Channels

University of Isfahan

Tools: Inception V3, Kafka, Fastapi

Isfahan, Iran

- Discovering trend images from streaming images of multiple telegram channels in a specific period

Publication And Technical Reports

Multiple-Vehicle Tracking in the Highway Using Appearance Model and Visual Object Tracking.

Fateme Bafghi, Bijan shoushtarian

The 11 Iranian and the first International Conference on Machine Vision and Image Processing (MVIP)

2020

Human Activity Recognition in Smart Homes

Fateme Bafghi

University of Isfahan

2018

Developing a Restaurant Recommendation System in Android with Routing Abilities

Fateme Bafghi

Isfahan University of Technology

2016

Language Proficiency

2021 **TOEFL : Overall:**106 **Listening:**30 **Reading:**26 **Speaking:**26 **Writing:**24

2022 **GRE: Overall:**313 **Quantitative Reasoning:**165 **Verbal Reasoning:**148 **Writing:**3.5

Online Courses

Deep Learning Specializaion

Coursera

- An online credit course authorized by Stanford University, presented by Dr. Andrew Ng

2021

Data Mining

- [An online credit course authorized by University of Michigan, presented by Dr. Christopher Brooks](#)

Coursera

2021