AMIN MALEKMOHAMMADI

MACHINE LEARNING ENGINEER

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HIGHLIGHTS

- Machine Learning Engineer: 1.5 years of professional experience in designing, developing, and deploying machine learning pipelines.
- Medical Image Analysis: 3+ years of research experience in conventional and learning-based image processing algorithms.

RESEARCH INTERESTS

- Computer Vision
- Explainability of Deep Models
- Medical Image Analysis

EDUCATION

M.Sc. of Computer Engineering : Artificial Intelligence

Iran University of Science and Technology (IUST)
2019 - 2022

- GPA: 3.53/4
- Thesis:
  - Mass detection and segmentation in Automated Breast Ultrasound images.
  - Supervisor: Dr. Mohsen Soryani

B.Sc. of Computer Engineering : Information Technology

Tabriz University
2014-2018

- GPA: 3.2/4
  - Capstone Project: Music Genre Recognition with CNN.

WORK EXPERIENCE

Graduate Research Assistant

IUST computer vision lab
05/2022 - 09/2022

- Conducted research on ABUS mass classification.
- Designed a novel attention module for CNNs.

Machine Learning Engineer

RCDAT
09/2022 - Present

- Fine-tuned models for various tasks (e.g., object detection, crowd counting).
- Optimized model throughput and memory consumption with TensorRT and ONNX.
- Reduced pre and post processing time in inference pipelines through optimization techniques by **33%**.
- Served multi-model pipelines in RESTful APIs using Docker.

PUBLICATIONS

- Malekmohammadi, Amin, Mohsen Soryani, and Ehsan Kozegar. "Mass segmentation in automated breast ultrasound using an enhanced attentive UNet." Expert Systems with Applications (2024): 123095.
- Malekmohammadi, Amin, Sepideh Barekatrezaei, Ehsan Kozegar, and Mohsen Soryani. "Mass detection in automated 3-D breast ultrasound using a patch Bi-ConvLSTM network." Ultrasonics 129 (2023): 106891.
- Barekatrezaei, Sepideh, Amin Malekmohammadi, Ehsan Kozegar, Masoumeh Salamati, and Mohsen Soryani. "Mass Detection in Automated Three Dimensional Breast Ultrasound using Improved Inception 3D U-Net." Journal of Machine Vision and Image Processing 10, no. 1 (2023): 49-59.

PROJECTS

Natural Language Processing for Sentiment Analysis *IUST*

- Conducted an study on Natural Language Processing (NLP) techniques for sentiment analysis.
- Employed BOW, Word2Vec, and BERT for word embeddings.
- Adopted SVM, Decision Tree, and Random Forests for classification.

Boosting Algorithms for Data Imbalance *IUST*

- Conducted research on sampling techniques for dealing with severe data imbalance.
- Implemented Ada M.2, SMOTE, RUS, and RB Boosting in python.
- Compared the performance of the implemented methods on a database.

Persian Classical Music Instrument Recognition *IUST*

- Converted audio signals to sequences of Mel spectrograms.
- Experimented with an LSTM network to recognize instruments of a raw signal both in overall and time-distributed schemes.

Video Augmented Reality *IUST*

- Applied Harris corner detection algorithm for key point extraction.
- Tracked key points across successive frames using the Lucas-Kanade algorithm.
- Computed the Homography matrix to insert an image into the specified area within the frame.

HONORS AND AWARDS

- Member of Iran's National Elites Foundation.
- Attained a top 0.3% ranking out of about 30,000 candidates in the National Entrance Examination for master's degree.

SKILLS

- Programming: Python, C, C++
- Frameworks: Tensorflow, Pytorch, FLASK
- Image Processing: OpenCV, Scikit-image, ITK, MONAI
- NLP: NLTK, Gensim
- Miscellaneous: Linux, Git, Docker
- Soft Skills: Teamwork, Problem-solving, Documentation

LANGUAGES

- English
  - IELTS (S: W: R: L:)
- Turkish and Persian
  - Fluent

REFERENCES

- Mohsen Soryani
  - Co-Supervisor (soryani@iust.ac.ir)
- Ehsan Kozegar
  - Co-Supervisor (kozegar@guilan.ac.ir)