Mohammadreza Mowlai
Machine Learning Engineer

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Summary

- An enthusiastic master's student in data science with a passion for doing research in AI, especially in the intersection of vision and language.
- More than two years of industrial experience as an ML engineer and Data scientist in Europe.

Education

M.Sc. in **Data Science**, Sapienza University of Rome, Italy   2019 - 2022

> Thesis title: *VAE pose forecasting* - human pose(3d keypoints) forecasting in industrial human robot collaboration using motion attention and multi-style networks. GPA: 4/4

B.Sc. in **Industrial Engineering**, University of Qom, Iran   2015 - 2019

> GPA: 3.7/4

Research Interests

- Computer Vision
- Medical Image Processing
- Vision and Language
- Vision Transformers
- Pattern recognition
- Human Motion Analysis

Work Experience

Machine Learning Engineer   03/2022 - *present*

DIDO Srl, Milan, Italy

- Developing machine learning, reinforcement learning and bayesian statistical algorithms for different projects and making them to a product using Python, Flask, JS, HTML and cloud services. (AWS and Azure)

Data Scientist and Analyst   09/2021 -03/2022

Digital Attitude Srl, Milan, Italy

- Worked on four main sections: 1. Data science: to build real-time time-series anomaly detection systems. 2. Product analysis: ensuring the platform normally acts via system monitoring, bug finding, and resolving. 3. User behavioral analytics: to ensure users have the desired experience through making dashboards/reports. 4. Data engineering: to maintain the ETL pipeline.

Teaching Assistant and ML instructor   02/2021 - 06/2022

st. Bonaventure University, New York, USA (remote)

- Teaching python programming and anomaly detection systems.

- Facilitating and conducting tutorials and workshops for master students in the courses of *ML with applications in cyber security* and *Data mining for cyber security*.
- Mentored students on python programming and applied machine learning techniques in cyber security.

Award & Honors

- Received outstanding positive student feedback for the courses, workshops, and individual delivery at st. bonaventure university. (2021-2022)
- University study scholarship *awarding institution: Lazio Disco, Italy, 2019*
- Second Top student among all the bachelor students in the Industrial Engineering program of the university
- Best Industrial Engineering scientific association award

Technical & Research Experience
Publication
Under progress:

1. Thesis: Multi-Style pose forecasting in industrial human-robot collaboration.
   My on-going thesis is to use motion-attention models and transformers to forecast the human pose in order to prevent human-Cobots (Collaborative robots) collisions in a shared workspace.

2. PSOR-AI: BSA and PASI score calculation via AI algorithm using a commercial smartphone camera. (2022)
   Psoriasis is an inflammatory, recurring disease that is commonly well-circumscribed papules and plaques covered with silvery scales. Diagnosis is based on the appearance and distribution of lesions. Dermatologists grade psoriasis extension and severity according to the Body Surface Area (BSA) and Psoriasis Area and Severity Index (PASI).

   Knowing that these scores are of pivotal importance in dermatology, they lack objectivity and reproducibility since they are clinician-dependent, meaning that they're associated with a high inter/intra-observer variability and require high expertise to obtain a proper evaluation of the patient.

   Our goal is to develop a novel deep-learning medical image analysis method for the clinician to autonomously obtain a clinically meaningful estimation of BSA and PASI scores by using a commercial smartphone alone.

3. Optimization models for green closed-loop supply chain network design of perishable goods (2018, Literature review)
   Literature review of "optimization models green closed-loop supply chain network design of perishable goods" as a part of the final bachelor project.

Projects:

1. Google training camp to build our own *Image search Engine* (GitHub).
   Main goal was to build an image search engine on COCO dataset in two steps:

- Train a model for image captioning.
- Build a similarity function for generated queries.

2. **Shannon information for pixels and computer vision.**

The project aimed to improve the accuracy of an image classifier via the introduction of the notion of Shannon information/ information content for pixels in the image.

3. **Traffic Sign Recognition and Adversarial Attacks (GitHub).**

Developed a deep convolutional neural network model consisting of a Max-Pooling layer and Batch normalization to avoid overfitting, LSTM as the second, and using transfer learning to implement Resnet50 and VGG16 models to compare the results. The TensorFlow framework has implemented the project, which first detects the objects and then classifies the signs. In the end, an Adversarial attack has been applied to fool the models and prevent them in the future.

4. **PELU activation function(GitHub).**

Developed parametric RELU(PELU) activation function from scratch in TensorFlow and compared its effectiveness to RELU on MNIST datasets.

5. **Cloud Computing – SMS verification web application" (using Flask, Docker, MongoDB) (GitHub)**

English Proficiency

The entire master's program was held in English.   Advanced knowledge of English.

Computer Skills

- Proficient in Python programming and deep learning frameworks
- Good command of Flask, HTML, and JS
- TensorFlow, PyTorch, Scikit-learn
- Object Oriented Programming
- SQL and NoSQL database management systems
- Git, Docker, cloud services like AWS and GCP
- Power BI and Tableau

Hobbies

Hiking, climbing and swimming.
Documentaries and TV series.

References

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