Phone: +98 9370986941
Ebimsv0501@gmail.com
LinkedIn Profile
Google Scholar
GitHub
Medium

EBRAHIM MOUSAVI

Curriculum Vitae

Summary

Ambitious PhD candidate with a Master's degree in Information Technology, specializing in Deep Learning, Computer Vision, and Natural Language Processing. Skilled in developing and deploying sophisticated machine learning models, currently concentrating on bioinformatics applications, including protein language models. Demonstrated success in publishing peer-reviewed research and mentoring in AI. Eager to join a premier research lab to advance innovative work in protein design and bioinformatics.

Education

Master of Science in Information Technology

Tarbiat Modares University, Tehran, Iran

Sep 2018 - Sep 2021

- **Thesis title**: Designing a fashion recommendation system based on the similarity between clothes and analyzing users' sentiment analysis.
- **Supervisor**: prof. Gholam Ali Montazer

Bachelor of Software Engineering

Sep 2009 – Feb 2015

- **Thesis title**: Implementation of a pyramid security system with firewall for computer networks

Research Interests

- Large Language Models (LLM)
- Natural Language Processing (NLP)
- Computer Vision

Publications

- Pourmirzaei, M., Montazer G.A., **Moosavi, E**. "ATTENDEE: an AffecTive Tutoring system based on facial EmotioN recognition and heaD posE Estimation to personalize e-learning environment". (**Accepted** in International Journal of Computers in Education) **(Q1, IF 6.1, SJR 1.442)**
- Beygi, M., Fallahi, M., Vali, R., **Mousavi, E.**, Lie, J., Saberian, M.. "FELA-DNN framework to predict the seismic bearing capacity of skirted strip footing placed on a non-cohesive slope". (**Accepted** in International Journal of Soil Dynamics and Earthquake Engineering) **(Q1, IF 4.25, SJR 1.426)**
- Pourmirzaei, M., Montazer G.A., Esmaili, F., **Mousavi, E**., Karamizadeh, S.. "How Self-Supervised Learning Can be Used for Fine-Grained Head Pose Estimation?".
- **Mousavi E.**, Montazer G.A., Pourmirzaei M., "Designing a fashion recommendation system based on the similarity between clothes and analyzing users' preferences". (Accepted in CSICC2022)

Teaching and Research Experience

May 2024 – Present

Research Assistant at Laboratory of Systems Biology and Bioinformatics, University of Tehran

Supervised by Prof. Ali Masoudi-Nejad, contributing to projects at the intersection of systems biology and artificial intelligence.

March 2020 – Present

Research Assistant and Teaching Assistant, Tarbiat Modares University, Tehran, Iran

Supervised by Prof. Gholam Ali Montazer

Teacher and Research Assistant in Machine learning and Pattern Recognition (Five semesters)

- Assisted in both theoretical and practical components of the Machine Learning course.
- Developed and maintained course-related code repositories on GitHub
- Authored multiple blog posts on advanced machine learning topics on Medium
- Prepared test questions and graded assignments (e.g., homework, quizzes, lab reports).

Career Experience

Aug 2024 – Now

Freelance Machine Learning and Deep Learning Instructor

- Offer personalized online courses and mentorship in machine learning and deep learning for various skill levels.
- Create hands-on projects and coding exercises to enhance practical skills and real-world application.
- Stay current with AI advancements to keep the curriculum relevant and impactful.
- My goal is to equip learners with the skills needed to excel in the rapidly evolving field of artificial intelligence.
- Explore more on my Medium

Feb 2024 – Aug 2024

AI Team Lead at Resana (in partnership with Rutelia Company, **Japan**)

- Developed and led the implementation of Defective Image Generative AI, an innovative AI technology designed to learn from product image data and generate numerous good/defective product images
- Leveraged diffusion models to generate defective product images from a minimal dataset, thereby improving system accuracy
- Collaborated with Rutelia Company in Japan to integrate and deploy advanced AI solutions in manufacturing environments.

Sep 2023 – Feb 2024

Computer Vision Developer / AIHomeDesign in Vancouver, **Canada** (Tehran's office)

- Developed **Item Removal (IR)** to mask and remove objects from images realistically.
- Led **Image Enhancement (IE)** projects using InstructPix2Pix for enhancement and reconstruction.
- Executed **Virtual Staging (VS)** and **Interior Design (ID)** projects to digitally furnish and enhance real estate properties.
- Implemented **Day to Dusk (D2D)** transformations using InstructPix2Pix for interior design simulations.
- Applied advanced segmentation/detection models (OneFormer, SAM, SegGPT, Conditional DETR).
- Optimized diffusion models using pruning techniques for improved efficiency.
- Built image-to-image search systems with CLIP and Faiss.
- Deployed and managed services using TorchServe.

Apr 2022 – Aug 2023

Deep Learning Freelancer

- Chest cancer classification images with PyTorch and EfficientNet (Github)
- Language Modeling with PyTorch (Github)
- Facial Age Estimation with PyTorch (Github)
- Using Vision Transformer for blood cancer detection (Github)

Jan 2021 – Mar 2022

Deep Learning Researcher and Developer / Baharan company in Tehran, Iran.

- Implementing three computer vision projects which include Face detection, Object detection and Optical Character Recognition (OCR)
- Fine-tune BERT Model for Sentiment classification

Technical Skills

Machine Learning

- Regression, Logistic Regression, Classification, Clustering, K-NN, Decision Trees & Random Forests
- Ensemble Learning
  - Bagging and boosting techniques
  - Boosting models: AdaBoost, Gradient Boost
- Support Vector Machine (Regression and Classification, Kernel SVM)
- Dimensionality Reduction (Kernel PCA, LDA, ICA)
- Experience with Scikit-learn library

Deep learning

- Experienced with SOTA Computer Vision models & Architectures, Transformers, CNNs
- Experience working on time series data and models (RNN, LSTM, GRU), Graph Neural Networks (GNN)
- Experienced with Self-supervised & Multi-task learning for fine-grained classification tasks
- Experienced with PyTorch

Image Processing

- Proficient in image/video analysis (OpenCV, geometric transformations, color spaces).
- Skilled in filtering (spatial, frequency, Fourier transforms) and intensity transformations (histograms, linear/non-linear).
- Expertise in binary image processing (thresholding, morphology) and feature detection (edges, contours, Hough transform).
- Experienced in image segmentation (clustering, watershed) and feature extraction (boundary, region, whole image).
- Knowledgeable in object detection (template matching, Viola-Jones) and video processing (motion detection, tracking).

Computer Vision

Image

- Object Recognition, Detection, Segmentation, Pose Estimation, 3D Vision, Text in Computer Vision, OCR

Video

- Objects Tracking, Human Action Recognition

NLP

- **Fine-Tuning & Distilling LLMs**: Proficient in fine-tuning and distilling models like BERT and GPT for downstream tasks using HuggingFace and PyTorch.
- **Advanced NLP Libraries**: Skilled in leveraging libraries such as SpaCy, NLTK, Gensim, and Torchtext for text processing, analysis, and modeling.
- **LLM Architectures & Techniques**: Deep understanding of transformer-based models, embeddings, attention mechanisms, and semantic search.
- **Retrieval-Augmented Generation (RAG)**: Experienced in deploying RAG systems to enhance retrieval and generation capabilities in production environments.
- **NLP Data Pipelines**: Expertise in building and managing efficient data pipelines for NLP tasks using HuggingFace tools.

Speech & Audio

- Audio Classification, Speech Recognition
- Familiar with general audio processing techniques and concepts such as discrete Fourier transform (DFT), Short-Time Fourier Transform (STFT), Spectrogram, melSpectrogram

Generative Models

- Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs)
- Transformer-based Models (GPT, BERT)
- Diffusion Models (Diffusers library, ControlNet, InstructPix2Pix, Stable Diffusion, SDXL)

Programming and Data Analysis

- Python, Numpy, Matplotlib, Pandas, Scikit-learn, OpenCV

Software Development and Deployment

- PyTorch, TensorFlow/Keras
- Linux (LPIC1: Linux System Architecture, Installation and Package Management, GNU and Unix Commands, Devices, Linux Filesystems, Shells, Administrative Tasks and Essential System Services, Networking Fundamentals)
- Git, FastAPI, MinIO, Gradio, Docker (Containerization, Dockerfile, Docker Compose, Docker Volumes)
- TorchServe (Model Deployment, Model Management, Request Processing, Monitoring and Scaling)

Selected Courses

- Machine learning
- Computer Vision
- Linear algebra
- Deep Learning
- NLP
- Probability and Statistics

Languages

- Persian: Native
- English: IELTS 6.0
- Turkish: Intermediate

References

- Gholam Ali Montazer (Professor of Information Technology at Tarbiat Modares University)
  - **Email**: Montazer@modares.ac.ir
  - **Phone**: +989123230540
  - **Google** Scholar

- Ali Masoudi-Nejad (Professor of Biology and Bioinformatics at University of Tehran)
  - **Email**: Amasoudin@ut.ac.ir
  - **Phone**: +989125851148
  - **Google** Scholar