Mohammad Hossein **Mohammadi**

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Education

Islamic Azad University, Najafabad Branch — *Najafabad, Iran*

BSc in Computer Engineering (Information Technology) — *Sep. 2015 – Sep. 2021*

- **Thesis Title**: Semantic segmentation of breast cancer pathology images using the **U-Net** model
  Developed a deep learning pipeline for semantic segmentation of breast cancer pathology images using the U-Net architecture, enhancing tumor region detection accuracy. Implemented data preprocessing and model training procedures for precise tissue boundary delineation. The project demonstrated improved diagnostic potential and automation capability in medical image analysis.
  Supervisor: Dr. Mehdi Jabalameli

Research Interests

- Deep Learning & Neural Network Optimization
- Computer Vision & Medical Image Analysis
- Natural Language Processing (NLP) & Multimodal AI
- Generative AI & Diffusion Models
- Explainable and Trustworthy AI Systems
- Edge and Federated Machine Learning
- Human–AI Interaction & Intelligent Interface Design
- AI-Driven Software Engineering and Automation

Selected Projects

Image Caption Generation using Deep Learning (CNN + LSTM Architecture) — ***Academic***

Python, TensorFlow, Keras, NumPy, OpenCV [GitHub] – [Software Video] — *Feb. 2023*

- **Project Summary and Goal:** The project aimed to develop an AI-powered system capable of generating meaningful and contextually relevant textual descriptions for images. By combining Convolutional Neural Networks (CNN) for feature extraction and Long Short-Term Memory (LSTM) networks for sequence generation, the system performs image captioning—a challenging task at the intersection of computer vision and natural language processing (NLP).
- **Achievements: (1):** Implemented a CNN + LSTM model to generate accurate image captions.
  (2): Trained and validated the system on Flickr8k, achieving meaningful and human-like descriptions.

Object Recognition using Recurrent Neural Network — ***Academic***

Python, TensorFlow, Keras, OpenCV — *May. 2022*

- **Project Summary and Goal:** The project aimed to develop a Recurrent Neural Network (RNN) model for object recognition in images, focusing on sequential data processing for identifying objects in videos or temporal sequences.
- **Achievements: (1):** Successfully trained an RNN model capable of recognizing objects in sequential data with high accuracy.
  (2): Implemented the model to detect and track objects in real-time video streams, demonstrating its practical application.
  (3): Presented the project findings at a departmental seminar, receiving commendation for innovative use of RNN in object recognition.

Automatic number-plate recognition with Deeplearning using pytorch — ***Academic***

Python, PyTorch, OpenCV — *Nov. 2021*

- **Overview**: The project aimed to develop an automatic number-plate recognition system using deep learning techniques with PyTorch, focusing on accurately detecting and extracting license plate numbers from images.
- **Achievements: (1):** Successfully trained a deep learning model using PyTorch to recognize license plates with high accuracy, even in varied lighting and weather conditions.
  (2): Implemented the system into a user-friendly application capable of processing images and extracting license plate numbers in real-time.

Work Experience

Freelancer — *Remote*

Product Designer (Design System Specialist) — *Sep. 2023 – Present*

- Contributed to global open-source design system projects, enhancing accessibility, scalability, and usability. Specialized in localizing design systems for Persian-speaking users, addressing RTL layout and typographic challenges. Improved UX in Persian interfaces through culturally relevant design and refined visual consistency.

PizzaBar — *Copenhagen, Denmark*

UI/UX Designer — *Feb. 2022 – Sep. 2023*

- Designed and delivered a custom CRM solution using user-centered design principles to improve operational efficiency and user satisfaction. Led end-to-end design from research and prototyping to system deployment, ensuring scalability and usability. Developed a scalable design system and interactive prototypes in Figma, enhancing consistency and collaboration across teams. Conducted user research and usability testing to align business goals with user needs, resulting in a polished, high-impact product.

Honors & Awards

2nd Team Rank – 7th Mobile Programming Marathon (Sharif University of Technology) *Tehran, Iran*

Competition Link *Sep. 2019*

- 7th Mobile Programming Marathon along with the "Chelesme" team members, 85 teams participated from Iran, Sharif University of Technology.

3rd Team Rank - 4th Mobile Programming Marathon (Sharif University of Technology) *Tehran, Iran*

Competition Link *Sep. 2017*

- 4th Mobile Programming Marathon along with the "Yakhmak" team members, 90 teams participated from Iran, Sharif University of Technology.

Publications

Patents

2021	**IR Patent. ir 139850140003011312,** The system for early detection of Heterochromia disease in the neonates. S.Y.Moradi, M.H.Mohammadi.	*Approved*
2020	**IR Patent. ir 139850140003011419,** Pocket Protector Of Sensitive Injective And Inhalant Vials Against Temperature And Impact Changes. S.Y.Moradi, M.H.Mohammadi, P.Mohammadi.	*Approved*

Books

2020	**Arna, ISBN 978-600-356-922-8,** A Step-By-Step Guide to Patenting in Iran. M.H.Mohammadi, A.Karimi, S.Y.Moradi. View on Amazon	***English***
2021	**Arna, ISBN 978-622-291-016-7,** Basics of Artificial Intelligence. M.H.Mohammadi, S.Y.Moradi, M.Mohammadi.	*Persian*
2021	**Arna, ISBN 978-622-2910-14-3,** Basics of Internet of Things (IoT). S.Y.Moradi, M.H.Mohammadi.	*Persian*

Skills

Programming Languages	Python, C++, Java, JavaScript, SQL.
Deep Learning	Transformers, CNNs, RNNs, LSTMs, Attention Mechanisms, Diffusion Models, Autoencoders, GANs.
Machine Learning	Supervised & Unsupervised Learning, Reinforcement Learning (RL), Graph Neural Networks (GNNs), Transfer Learning, Multi-task Learning.
Computer Vision	OpenCV, PyTorch, TensorFlow, Image Segmentation (U-Net, Mask R-CNN), Object Detection (YOLOv8, DETR), Vision Transformers (ViT), Medical Image Analysis.
Natural Language Processing	Transformer models (BERT, T5, GPT), LLM Fine-Tuning, Tokenization, Sentiment Analysis, Machine Translation, Multimodal AI, Retrieval-Augmented Generation (RAG).
Generative AI	Text-to-Image & Text-to-Video Models, Prompt Engineering, Stable Diffusion, Hugging Face, LangChain, OpenAI API, Synthetic Data Generation.
Data Science & Statistics	Feature Engineering, Data Preprocessing, Model Evaluation, Explainable AI (SHAP, LIME), A/B Testing, Visualization (Matplotlib, Seaborn).
AI Infrastructure & MLOps	MLflow, Docker, FastAPI, DVC, ONNX, Model Optimization, Edge & Federated Learning, GitHub Actions CI/CD.
Big Data & Cloud Platforms	Apache Spark, Hadoop, Google Colab, AWS, Azure ML, Vertex AI, Databricks (Basics).
Version Control & Collaboration	Git, GitHub, GitLab, Agile/Scrum Workflow, Jupyter Notebooks.

Languages

English	**Advance**
Persian	Native proficiency

References available upon request.