Parsa Mohammadi | Curriculum Vitae

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| [GitHub](https://github.com/PARSA-MHMDI) | | [Linkedin - Free social media iconsLinkedIn](http://www.linkedin.com/in/parsa-mohammadi-0b079620a) | [Google scholar Icons, Logos, Symbole – Kostenloser Download ...Google Scholar](https://scholar.google.com/citations?user=zwg4308AAAAJ&hl=en&oi=sra) | |

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| EDUCATION |
| * **Amirkabir University of Technology (AUT)**,Tehran, IranSep 2020 – Present * B.S. in Electrical Engineering * **GPA:** **3.56 (17.42 out of 20)**, Last 2 years: **3.88 (18.1 out of 20).** * Ranked within the top 1% of the Iranian University Entrance exam.  |  |  | | --- | --- | | RESEARCH INTERESTS | | | * Natural Language Processing (NLP) * Large Language Models (LLM) | * Computer Vision * AI for Healthcare |  |  | | --- | | PUBLICATIONS | | * Mohammadi, P., Sharifian, S., *Med Mini-Gemini: Chest X-ray Images Diagnosis and Report Generation. (In Preparation).* * Mohammadi, P., Malakouti, M., Suratgar, A., Menhaj, M. *Eye Pupil Control Analysis*. Vision Research Journal (Under Review) ([*https://doi.org/10.21203/rs.3.rs-4504934/v1*](https://doi.org/10.21203/rs.3.rs-4504934/v1)) | |

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| RESEARCH EXPERIENCES |
| Medical Images Report Generation - HPCRC Lab Jan 2024   * Fine-tuned **COCA Vision-Language** Model achieving **80%** accuracy on the **MIMIC-CXR** dataset. * Applied a fine-tuned **BERT** model, achieving an **81%** accuracy rate on the **MIMIC-III** dataset. * *Supervisor: Dr. Saeed Sharifian (Amirkabir University of Technology, Tehran, Iran)*   **Tondguyan Petrochemical Company Maintenance System** Jul 2023 – Sep 2023   * Performed feature reduction on a dataset of mechanical properties of facilities. * Implemented the K-means algorithm to identify anomalous data clusters. * *Supervisor: Dr. Somaye Mohammadi (Sharif University of Technology, Tehran, Iran)*   **Eye Pupil Control Analysis – DIOR Lab** Oct 2022 – Mar 2023   * Linearized a complex, non-linear model of human eye pupil control to facilitate further analysis. * Conducted linear control analysis on the linearized model. * *Supervisor: Dr. AmirAbolfazl Suratgar (Amirkabir University of Technology, Tehran, Iran)*   Data-driven Maintenance of Urban Infrastructure in Smart City Dec 2021 – Jul 2022   * Utilized Random Forest, K-means algorithms and MLP to optimize the cost of maintenance and repair of power networks. Achieved 90% accuracy for predicting power network failures. * Developed a Decision Support web application for control centers using Django framework.  |  | | --- | | WORK EXPERIENCES | | **Machine Learning Intern -** [Asr Gooyesh Pardaz](https://asr-gooyesh.com/en/) · Full-time, Tehran, Iran Jul 2023 – Sep 2023   * Developed an end-to-end Automatic Speech Recognition (ASR) model using **E-Branchformer** architecture and **ESPNet framwork** on a Persian dataset. * Achieved **2.0 WER** on Mozilla’s Common Voice dataset (Persian). * Implemented the trained model on **Hugging Face Space** with **Gradio**, providing an interactive user interface. Link to [online demo](https://huggingface.co/spaces/parsa-mhmdi/persian-asr). * *Supervisor: Dr. Hossien Sameti (Sharif University of Technology, Tehran, Iran)* | |

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| TEACHING EXPERIENCES |
| Sharif University of Technology (SUT), Tehran, Iran Sep 2023 – Present   * Automatic Speech Recognition *–* **For the past three semesters** * Conducted weekly quizzes and workshops on ESPNet framework. * *Supervisor: Dr. Hossien Sameti (Sharif University of Technology, Tehran, Iran)*   Amirkabir University of Technology (AUT), Tehran, Iran   * **Logical Circuits** Sep 2024 – Present   + Taught VHDL programing with Vivado and ISE. * *Supervisor: Dr. Zahra Shariatmadar (Amirkabir University of Technology, Tehran, Iran)* * Computer **Architecture & Microprocessors** Sep 2023 – Feb 2024 * Created educational materials, including projects and weekly homework. * *Supervisor: Dr. Ahad Shabani (Amirkabir University of Technology, Tehran, Iran)* * **Linear Control Systems - Electrical Engineering** Feb 2023 – Jul 2023 * Taught MATLAB and Simulink basics to students. * *Supervisor: Dr. Amir A. Suratgar (Amirkabir University of Technology, Tehran, Iran)* |

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| SKILLS | | |
| • Programming Skills  Python   * TensorFlow * PyTorch * NumPy * Pandas * Sklearn * Gradio * OpenCV * Threading   C/C++  HTML/CSS  JavaScript  Matlab | * Machine Learning Skills   NLP   * NER * Semantic Analysis * Vision-Language * LLM * NLTK   Speech Processing   * ASR * ESPNet   Computer Vision   * Segmentation * Object detection   Classical AI Algorithms | * Others   Linux  Git  Docker  Jupyter Notebook  VSCode  LaTeX |

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| SELECTED PROJECTS |
| Bachelor thesis: Chest X-ray Images Diagnosis and Report Generation Mar 2024 – Present   * Tuned Mini-Gemini (Pre-trained VLM) on a large dataset of radiology images for VQA task. * Created a new dataset of paired images and reports for training. * Achieved significant performance improvements on the test set.   + *Supervisor: Dr. Saeed Sharifian (Amirkabir University of Technology, Tehran, Iran)*   Radiology Image Diagnosis Feb 2024 – Mar 2024   * Trained **COCA Vision-Language Model** on the U-Xray dataset to diagnose TB and pneumonia from chest X-ray images, achieving **84.6%** accuracy. * Implemented Low-Rank Adaptation (**LoRA**) to optimize memory usage during model training. * Conducted comparative evaluation using **Gemini 1.5 Pro** API to verify results against ground truth data.   + *Supervisor: Dr. Saeed Sharifian (Amirkabir University of Technology, Tehran, Iran)*   Cancer Detection with CT images Feb 2024 – Mar 2024   * Fine-tuned **YOLOv8** on the Lung-PET-CT-Dx dataset for cancer detection, achieving 79% accuracy on the test set.   + *Supervisor: Dr. Saeed Sharifian (Amirkabir University of Technology, Tehran, Iran)*   Sentiment Analysis of Twitter Posts Sep 2023 – Feb 2024   * Preprocessed a large dataset of Twitter posts, including tokenization, stemming, and normalization, for sentiment analysis. * Employed **TF-IDF** for feature extraction and fine-tuned a **BERT-based uncased** model, achieving 95% accuracy on the test set.   **Clinical NER and Report Classification** Sep 2023 – Feb 2024   * Fine-tuned **BioBERT** on MHN and CHM datasets for NER and classification of chest X-ray reports into 10 disease categories. * Achieved 86% accuracy in disease classification with precise recognition of clinical entities.   **Fine-tuned DistilBERT for QA Task**  Sep 2023 – Feb 2024   * Fine-tuned **DistilBERT** on the **bAbI** dataset for extractive QA using PyTorch, addressing challenges in alig ning tokenized inputs with answer spans. * Achieved an F1 score of ~**85**%, effectively extracting precise answers from text.  |  |  | | --- | --- | | COURSES | | | * Artificial Intelligence [Fall 2021] * Machine Learning [Fall 2023] | * Advanced Programming [Winter 2023] * Computer Vision [Winter 2024] | | * Online Certificated Courses: | | | * Machine Learning * *Dr. Andrew Ng* * Django for Everybody * *Dr. Charles Severance* * Analysis of Intelligent Biomedical Images * *Dr. Mohammad H, Rohban* * Building and Evaluating Advanced RAG Applications * *Deeplearning.ai* | * Deep Learning Specialization * Convolutional Neural Networks * Sequence Models (Transformers) * *Dr. Andrew Ng* * Finetuning Large Language Models * *Deeplearning.ai* * Prompt Engineering with Llama 2 & 3 * *Deeplearning.ai* * Prompt Engineering for Vision Models * *Deeplearning.ai* |  |  | | --- | | VOLUNTEERING EXPERIENCES | | * Participated in a Charity Market Feb 2024 * Created and sold handmade goods to raise funds supporting underprivileged students. * Member of Amirkabir Astronomy Club Apr 2023 * Designed and implemented astronomical events, engaging students and the public in astronomy-related activities. * Member of “Amirkabir 2021 International Summer School,” Executive Team Mar – Sep 2021    + Invited Dr. Larry Cheng from Penn State University to participate in the summer school.   + Assisted Dr. Larry Cheng during the summer school sessions.  |  |  | | --- | --- | | Honors | | | * Won **1st** place prize in the IEEE Open Data Hackathon Competition.[Certificate link](https://drive.google.com/uc?export=download&id=14m-we5luWAGr5DW_X6Emrd3uJPh2riot)Nov 2022 * Ranked among **top teams** in Irancell Labs AI Hackathon.[Certificate link](https://quera.org/certificate/qlCweFPd/).Aug 2023 | | |

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| **LANGUAGE PROFICIENCY** | | |
| * English (IELTS: L:8, R:8, S:7, W:6.5, overall: **7.5**) | * Persian(Native) | * Kurdish (Native) |