

Mory Gharasuie

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Education

Old Dominion University | Norfolk, USA

Aug 2019 – present

PhD candidate in computer science

GPA: 3.84/4.0

Research Interests: Self-Supervised Learning and Semi-supervised Learning in Imbalanced datasets (Image, Text and Tabular Domains)

University of NabiAkram | Tabriz, Iran

Master of Science in Computer Engineering

University of Shamsipoor | Tehran, Iran

Bachelor of Science in Computer Engineering

Technical Skills

Languages & databases: python, Java, C++, ASP Webform, C#, SQL, MySQL, HTML

Libraries: Tensorflow, Keras, PyTorch, OpenCV, Scikit-learn, NLP toolkit, HuggingFace, Pandas, Matplotlib, Seaborn, LangChain, Dask, BeautifulSoup, Flask

Development tools: Anaconda, Jupyter Notebook, Google Colab, Visual Studio, Git, Docker, AWS

Operating Systems: Windows, Linux, Mac OS X

Certifications

LanGraph: [Link](#)

LLM Engineering: [Link](#)

AWS SageMaker: [Link](#)

Awards and Honors

Received "Best Teaching Assistant" award, Spring 2025

Experience

Royan Communication Company | Qom, Iran

2013 - 2019

Software Developer

- Developing websites for small and medium-sized enterprises.
- Customizing web-based administration interfaces for applications on Linux server machine (such as chat server, FreeRadius server, and Elastix).
- Enhancing the panels with support for multiple languages and designing them to be more intuitive and user-friendly, tailored to meet the specific needs and preferences of the customers.

Old Dominion University | Norfolk, USA

Aug 2019 – Present

• Research Assistantship

- Developing applications for mobile and serverless domains by leveraging ML, DL and CV.
- Doing research on Improving the performance of ML and DL models on classification problems for tabular data in SSL setting.
- research on mitigating the impact of bias in imbalanced data in training ML and DL models in Image and tabular domains.

• Teaching Assistantship

- Programming with C/C++ and Java (CS150, CS250, CS251)
 - Teaching Labs and recitations
 - assignment Development
 - Grading

- Collaboration in Developing a ChatBot utilizing Large Language Models (LLMs) and Retrieval-Augmented Generation.
- Medical data extraction with reference to papers or resource
- Presentation of results based on standard medical format
- Providing relevant questions or considerations from recent papers for better diagnosis

Projects

Data Science and Machine Learning Projects | *Tensorflow, PyTorch, TorchVision, OpenCV, Scikit-learn, Seaborn, Matplotlib, Pandas, Git, BeautifulSoup, AWS*

[GitHub](#)

Created and managed a repository featuring data science and machine learning projects. These projects involve working with various datasets, and machine learning algorithms from traditional to STOA. The repository includes:

- Data processing and preprocessing
- Exploring data analysis (EDA)
- Feature engineering and selection
- Machine learning development and evaluation (DNNs, Decision-Tree based models, Regression, Recommendation models, etc)
- Data visualization and interpretation

Large Language Models | *HuggingFace, Pytorch, Pandas, Dask, LangChain, PEFT, RAY, OpenAI APIs*

[GitHub](#)

In this repository, I investigate the realm of retrieval-augmented generation (RAG) systems, embedding models, prompt engineering, and fine-tuning large language models. Throughout this journey, I am learning about Generative AI and leveraging some embedding models for practical applications. The repository showcases my ongoing exploration in this exciting field and will be continually updated with new insights and findings.

Pricer (Agentic LLM) | *HuggingFace, Pytorch, LangChain, Chormadb, BeautifulSoup, Scikit-learn*

[GitHub](#)

An autonomous price estimation framework using LLMs (GPT-4o, Claude, Llama 3.1-8B) and traditional ML models (Random Forest, SVM, Word2Vec). GPT-4o-mini's performance (average price difference) with RAG, improves from 80.9 to 55.57. I fine-tuned Llama3.1-8B and achieved 46.67 average error. I developed an agent that creates an ensemble model combining RAG+GPT-4o-mini, fine-tuned Llama, and Random Forest, achieving 54.62 error. I use a Gradio-based UI and integrated Pushover API for real-time deal alerts from DealNews.Com.

Tabular Data and Semi-Supervised Learning (SSL) | *Pytorch, Tensorflow, Tensorboard, Scikit-learn, Matplotlib, Seaborn, Self-supervised, Unsupervised, Semi-Supervised*

This research addresses two major challenges in machine learning with large tabular datasets: class imbalance and the transformation of heterogeneous features, particularly non-numerical ones. I have developed domain-specific architectures for tabular data, including Transformer-based models designed for self-supervised and semi-supervised learning scenarios. Additionally, I introduced target-encoding transformations within semi-supervised frameworks, incorporating the imbalance characteristics of the data. The effectiveness of these methods, which demonstrate improvements over the state-of-the-art, is documented in my publications.

Computer Vision Projects | *Pytorch, Tensorflow, Scikit-learn, Matplotlib, Seaborn, OpenCV, Pose Estimation & Object detection frameworks*

- **Exercise Performance Monitoring:** Developed a smartphone-based system that uses pose estimation to track movements during weight training. The system detects repetitions, analyzes range of motion, duration, and velocity, and assesses fatigue by tracking variations in rest times.
- **Hand Gesture Recognition:** Designed a system to recognize numbers written in mid-air using Hidden Markov Models. Implemented motion tracking with Kalman filters, trajectory segmentation, background subtraction, and action recognition techniques.
- **Video Analytics System:** Built an object detection and tracking pipeline for mobile edge cloud computing (MECC). Integrated detection and tracking into a unified framework with a graphical interface for real-time video processing. [Link](#)

Publications

CAIP2025: LTBoost: Boosting Recall Uniformity for Long-Tailed Image Classification (Under Review)

PAKDD 2024: SAWTab: Smoothed Adaptive Weighting for Tabular Data in Semi-Supervised Learning | [Link](#)

ICKG 2022: Progressive Feature Upgrade in Semi-supervised Learning on Tabular Domain | [Link](#)

BodySys 2021: Performance Monitoring for Exercise Movements using Mobile cameras | [Link](#)

MVIP 2015: An efficient run-based method for connected component labeling | [Link](#)

MVIP 2013: Real-time dynamic hand gesture recognition using hidden Markov models | [Link](#)