NIMA DARYABAR

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• Authorized to work in Italy under Job Seeker Visa (Permesso Attesa Occupazione)

Computer Scientist specializing in **AI** and **software development**, with hands-on experience in RAG systems, fine-tuning LLMs, and building scalable machine learning pipelines. Skilled in Python, PyTorch, and TensorFlow. Actively seeking roles in AI engineering and software development to apply research-driven, production-ready solutions.

EDUCATION

M.Sc. in Computer Science - University of Padua, Padua, Italy   Sep 2021 – Sep 2024
- PyTorch, Tensorflow (ML), Deep Learning (RNN, CNN, LSTM, Transformers, Autoencoders)

B.Eng. in Computer Engineering - Bu-Ali Sina University, Hamedan, Iran   Sep 2010 – Sep 2015

WORK EXPERIENCE

AI Research Intern - LLMs - ICIS, Radboud University, Nijmegen, Netherlands   Oct 2023 – Mar 2024
- Conducted research on vulnerabilities of **LLMs** within **RAG systems** through poisoned vector databases, demonstrating up to **40% performance degradation**.
- Implemented memory-efficient fine-tuning for LLaMA-2 models (**LoRA**, **QLoRA**, **8-bit/4-bit quantization**), enhancing scalability.
- Developed a **semantic search-driven QA** pipeline using **ChromaDB** and **InstructorEmbedding** for high-quality contextual retrieval; using **LangChain** for task integration.
- Streamlined document preprocessing and embedding workflows using **PyPDFLoader** and **SentenceTransformers**, optimizing processing of large unstructured datasets.

Freelance Software Developer - Freelance, Hamedan, Iran   Oct 2017 – Jul 2021
- Delivered machine learning solutions, including a second-hand car price prediction system that explained over 90% of price variability (R^2) using **Python**, **Scikit-learn**, and **Decision Tree Regression**. Enhanced data quality through preprocessing and categorical encoding, implemented web scraping with **BeautifulSoup** and **Requests**, and managed data storage using **MySQL**.
- Led the development of a personalized fitness coach android app at Mecatec using **Java** and **Android Studio**.
- Built scalable web applications using **Django**, and **SQLite** with responsive interfaces and seamless database integration.

Front-End Developer - Jahankit Electronics, Tehran, Iran   Mar 2017 – Sep 2017
- Developed an e-commerce platform using **JavaScript** and **Bootstrap**, enhancing user engagement and contributing to a **20% increase** in online sales. Collaborated with cross-functional teams to ensure seamless integration and user-centric design.

PROJECTS

Emotion-Aware Chatbot with Real-Time Face Detection (In Progress)
- Built a real-time face detection and emotion classification system using **OpenCV**, **Streamlit**, and **ResNet SSD** (Caffe-based) for face localization, and **EfficientNetB0** (TensorFlow/Keras) for emotion recognition.
- Converted the EfficientNetB0 model to **TensorFlow Lite** and applied **float16 quantization** to enable efficient mobile deployment with reduced inference latency.
- Designed an interactive **Streamlit** interface with **webcam support**, **bounding box toggling**, and **confidence threshold tuning**, allowing live visualization and user feedback.
- Currently integrating a **Hugging Face Transformers**-powered chatbot using **LangChain** that dynamically adapts conversation flow based on the user's detected emotion (e.g., cheerful for "happy", empathetic for "sad").
- Containerizing the full application with **Docker** to support reproducible, cross-platform deployment across local and cloud environments.

Optimizing Question-Answering in LLMs
- Collaborated on Developing a medical Question-Answering (QA) assistant using **Mistral 7B v0.2** LLM, employing **Parameter-Efficient Fine-Tuning techniques** (**LoRA**, **QLoRA**), and enhancing model responses with **Retrieval-Augmented Generation** (**RAG**) and **Retrieval-Augmented Fine-Tuning** (**RAFT**) methodologies.
- Built a robust **QA system** fine-tuned on a domain-specific medical dataset (**MedQuad-MedicalQA**), utilizing **Hugging Face**, and **LangChain**, to significantly improve responses accuracy from a baseline of **84%** to over **95%**.

Diabetic Retinopathy Detection
- Developed a deep learning model utilizing **Inception V3** (**TensorFlow**/**Keras**) with transfer learning and fine-tuning techniques to classify retinal images into five diabetic retinopathy severity categories, achieving **79% accuracy** on the **APTOS 2019 Blindness Detection dataset**.

- Evaluated the impact of various preprocessing techniques, including **Gaussian blur**, **CLAHE** (**Contrast Limited Adaptive Histogram Equalization**), and edge detection methods (**Sobel** and **Canny**) implemented with **OpenCV**, highlighting improved performance on rare or severe diagnostic cases.

Machine Learning-based Surge Pricing Predictor

- Developed **machine learning models** (**XGBoost**, **Random Forest**, **SVM**, **Neural Networks**) to predict price surges and identify large market movements in hourly time frames, achieving **76% on precision**.
- Utilized **Principal Component Analysis** (**PCA**) for feature selection and dimensionality reduction to enhance model performance optimizing prediction performance.

TECHNICAL SKILLS

Python, C++, R, SQL, NoSQL (MongoDB), TensorFlow, PyTorch, Scikit-learn, LangChain, OpenCV, pandas, Fine-tuning (LoRA/QLoRA), RAG, Prompt Engineering, Data Preprocessing, Computer Vision, Azure, Docker, Git

CERTIFICATIONS & ACHIEVEMENTS

Product Management Fundamentals   -   edX, University of Maryland (In Progress, 2025)

Open Source Models with Hugging Face   -   DeepLearning.AI (2025)

Erasmus+ Traineeship Scholarship for AI Research   -   Radboud University, The Netherlands (Oct 2023 - Mar 2024)

Azure Administration Essential Training   -   LinkedIn Learning (2024)

Introduction to Prompt Engineering for Generative AI   -   LinkedIn Learning (2024)

Unsupervised Learning, Recommenders, Reinforcement Learning   -   Stanford University (2024)

Supervised Machine Learning: Regression and Classification   -   Stanford University (2024)

Python for Data Science and AI   -   IBM (2024)

Machine Learning in Python   -   365 Data Science (2022)

LANGUAGES

English: Fluent | **Italian**: Basic | **Dutch**: Basic