Mohammad Hossein Hashemi

Machine Learning Engineer – Python Developer

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Profile

Dedicated Machine Learning Engineer with 4+ years of experience in deep learning, computer vision, and backend development. Proven track record in building scalable AI-powered solutions for embedded systems and developing robust RESTful APIs. Passionate about innovation, high-impact project delivery, and continuous learning.

Work Experience

Computer Vision Engineer | Arooj | January 2021 – July 2024 | On-Site

- Built and optimized a **Hand Vein Detection Device** using deep learning models (**U-Net(89%)**, **SegNet**, **YOLO**) for real-time performance on **Raspberry Pi**, improving accuracy and processing speed.
- Developed a **Shrimp Head Cutter** system using **OpenCV** techniques (histogram equalization, edge detection), achieving >95% accuracy in real-time processing.
- Reduced model inference time by **30%** through advanced optimization techniques.

Machine Learning & Backend Engineer | Rayan Pezhohan | OCTOBER 2024-JUNE 2025| Remote

- Designed and trained a YOLO-based deep learning model achieving **95% accuracy** for **license plate detection** and **92.5% accuracy** for **character recognition** using **PyTorch**.
- Accelerated model training and inference by implementing **parallel computing techniques** with **CUDA-based GPU optimization.**
- Developed a demo **GUI** using **Tkinter** and **Flask** for real-time streaming and database management with **SQLite**.
- Built and maintained the company's **backend architecture** using **Django**, **Flask**, and **Socket programming** for real-time server-client communication.
- Developed and deployed **RESTful APIs**, managed databases with **PostgreSQL** and **Redis**, and integrated server-client synchronization and real-time event handling.
- Implemented server-client synchronization protocols and user authentication(**JWT**) systems.

Optimization Engineer | JULY 2025–Present | Remote (Poland)

- Developed C++ optimization algorithms for the Maximum Clique Problem, exploring **Genetic Algorithms**, **Tabu Search**, **Reinforcement Learning**, and other metaheuristics.
- Performed comparative testing on multiple datasets using **PyTest**, improving solution performance by **38%** over baseline models.
- Implemented **GitHub Actions pipelines** for **automated testing** and deployment, ensuring code reliability and maintainability.

Projects

Baby Crying Translator – App Link1 - Applink2

- Design and train **CNN** model for Infant Crying Detection (**94%**) & Classification (**92%**) Realtime.
- Developed an efficient API service using Django to integrate the ML model into production.
- Deployed backend applications in **Docker containers** for portability and scalability.
- Configured **Nginx** as a reverse proxy to serve Django applications efficiently and improve security.
- Write Methodology and Review Scientific Article

LLM-Agent

- Developed an LLM-powered agent using OpenAI's GPT-3.5/4 API and LangChain , enabling intelligent query handling, dynamic content generation, and rule-based decision-making for chatbots.
- Built a scalable backend using Django and PostgreSQL and developed RESTful APIs to serve model outputs and manage conversation history, user context, and other interaction data for personalized, state-aware experiences.

Other Projects

- Image to PDF - Tomato Leaf Disease Detection - Oral Cancer diagnosis - Cat Voice Translator - *ADHD Diagnosis*

Education

Bachelor of Electrical Engineering (Telecommunications) – Persian Gulf University

Skills & Abilities

- **Programming Languages:** Python, MATLAB, C, C++, JavaScript
- **Core Expertise:** Machine Learning, Backend Development, Computer Vision, Data Science, Natural Language Processing, IoT Systems
- **Frameworks & Libraries:** TensorFlow, PyTorch, OpenCV, Pandas, NumPy, Scikit-learn
- **Backend & Cloud:** REST APIs, AWS, GraphQL, Kafka, Docker, Nginx, FastAPI, Flask, Django
- **Databases:** PostgreSQL, Redis, SQLite, MongoDB, MySQL
- **Tools & Platforms:** Git, Docker, Linux, Raspberry Pi, Nginx

Certifications

Structuring Machine Learning Projects - Neural Networks and Deep Learning - Improving Deep Neural Networks: Hyperparameter Tuning - Regularization and Optimization - Convolutional Neural Networks - Fundamentals of Reinforcement Learning - Sample-based Learning Methods