Hadi Kassem

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OBJECTIVE

Passionate about building and deploying AI and machine learning models with practical experience in deep learning, LLMs, and computer vision. Strong background in algorithmic problem solving and competitive programming, enabling efficient model implementation and optimization. Seeking to contribute to cutting-edge AI projects in a professional engineering environment.

EDUCATION

- **Lebanese University - Faculty of Engineering** — Al Hadath, Beirut
  Bachelor of Engineering in Computer and Communication Engineering; GPA: 4.00 — *Oct 2023 – June 2028*

- **TheAIEngineering Program** — Remotely
  Comprehensive training covering deep learning, computer vision, LLMs, MLOps, unsupervised learning, and development tools like Python, Git, Scikit-learn, and TensorFlow. — *May 2025 – Sep 2025*

EXPERIENCE

- **GEOAI – National Center for Remote Sensing (CNRS)** — Mansourieh, Lebanon - Hybrid
  AI Research Intern — *Mar 2025 – Apr 2025*
  - **Project Contribution**: Contributed to the development of the `geopy.py` library for geospatial AI applications using Python and QGIS.
  - **Team Collaboration**: Worked with a research team to test and improve geographic data processing tools.
  - **Research Communication**: Summarized and presented AI research papers to the team.
  - **Skills Gained**: Improved proficiency in Python, Git/GitHub, and Research skills.

PROJECTS

- **Arxiv RAG Bot – AI-Powered Research Assistant**
  GitHub: Hadi-Kassem/Arxiv-RAG-bot — *Sep 2025*
  - **Dynamic PDF Upload**: Enabled users to upload arXiv PDFs via Gradio without restarting the app.
  - **Text Chunking & Embeddings**: Implemented `RecursiveCharacterTextSplitter` and `sentence-transformers/all-MiniLM-L6-v2` for semantic embeddings.
  - **Vector Store & Retrieval**: Used ChromaDB for local vector storage and efficient document retrieval.
  - **Local LLM Integration**: Integrated Ollama with the Mistral model for fully offline, privacy-preserving LLM inference.

- **Disease Detection from Chest X-Rays – Deep Learning Project**
  GitHub: Hadi-Kassem/Disease-detection-from-Chest-X-Ray — *Aug 2025*
  - **Dataset & Preprocessing**: Used Kaggle Chest X-Ray Images (Pneumonia) dataset; applied resizing, normalization, and data augmentation for robustness.
  - **Model Architecture**: Built a Convolutional Neural Network (CNN) to classify X-rays into Normal and Pneumonia categories.
  - **Training & Optimization**: Implemented class weighting to handle class imbalance; trained the model with early stopping and learning rate scheduling.
  - **Evaluation**: Achieved high accuracy and F1-score; evaluated model performance using confusion matrix and classification report.

- **Safety Helmet Detection – YOLOv8 Object Detection**
  GitHub: Hadi-Kassem/Safety-Helmet-Detection-YOLO-V8 — *Aug 2025*
  - **Model Training & Evaluation**: Trained YOLOv8s on a custom dataset (5,000 images) to detect helmets, heads, and persons.
  - **Data Preparation**: Converted Pascal VOC annotations to YOLO format and resized images to 640×640.
  - **Performance Metrics**: Achieved high precision and recall; evaluated using mAP@0.5 and FPS metrics.
  - **Deployment**: Implemented real-time detection for construction site safety monitoring.

Skills

- **Programming Languages:** Python, C, Java (OOP), C# (OOP), SQL

- **Technologies & Tools:** Git/GitHub, MySQL/PostgreSQL, Jupyter Notebook, VS Code, Gradio, ChromaDB, Ollama

- **Data Science & ML:** Python, scikit-learn, TensorFlow, Keras, PyTorch, Pandas, NumPy, Matplotlib, Seaborn, Data Preprocessing, Pipelines, Feature Engineering, Model Evaluation, Data Augmentation, Embeddings

- **Concepts:** Supervised/Unsupervised Learning, Neural Networks (CNNs, Logistic Regression, RAG-based LLMs), NLP (Tokenization, Attention, Embeddings), Object Detection (YOLOv8), Anomaly Detection

- **Competitive Programming:** Solved 310+ problems on LeetCode using C/C++, Java, and Python

Personal & Volunteer Activities

- **IEEE Student Branch – Lebanese University**
  Active volunteer and Webmaster, managing website content, maintaining digital resources, and supporting events and workshops.

- **Languages**
  Arabic (Native), French (Intermediate), English (Fluent)