Gheffari Youcef Soufiane

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Summary

Postgraduate student specializing in Artificial Intelligence, with practical experience in deep learning, computer vision, and natural language processing.
Proficient in designing, developing, and deploying machine learning systems using Python, PyTorch, and TensorFlow.
Demonstrates strong analytical and problem-solving abilities, a research-oriented mindset, and a proven capacity for collaboration in multidisciplinary environments.
Currently seeking challenging opportunities to contribute to innovative research and the development of impactful AI-driven solutions.

Technical Skills

Programming Languages: Python , SQL , JavaScript , C

Deep Learning Frameworks: PyTorch , TensorFlow

Machine Learning & Data Science: Scikit-learn , NumPy , Pandas , OpenCV , NLTK

Development Tools & Platforms: Jupyter , Google Colab , VS Code , PyCharm , Git , Linux

Education

University Center of Naama — Naama, Algeria
Bachelor of Science in Computer Science — *Oct 2020 – May 2023*
Focused on algorithms, software engineering, and mathematical foundations of computing.

University of Science and Technology of Oran (USTOMB) — Oran, Algeria
Master of Science in Artificial Intelligence and Its Applications — *Oct 2023 – May 2025*
Specialized in deep learning, natural language processing, and computer vision.

Thesis: Arabic Speech Emotion Recognition using Artificial Intelligence

Master's Thesis Project

Arabic Speech Emotion Recognition System
Master's Thesis — MSc in Artificial Intelligence and its Applications — *Oct 2023 – May 2025*

Developed a deep learning system to classify emotions in Arabic speech using a combination of acoustic and contextual features.

Utilized the **Egyptian Arabic Speech Emotion (EYASE) database**, comprising labeled emotional utterances in Modern Standard Arabic.

Preprocessed raw audio and extracted features using the pre-trained **Wav2Vec2** model.

Implemented and evaluated multiple architectures:

* CNN-based classifier: **Accuracy: 75.2%**
* CNN- Bidirectional-LSTM with attention model: **Accuracy: 84.6%**
* CNN-Transformer : **Accuracy: 93.4%**

Conducted comparative analysis and tuning to optimize F1-score and inference speed across models.

Results indicated the Transformer-based model outperformed CNN and LSTM in both accuracy and generalization.

Projects

Brain Tumor Classification System
Deep Learning Project — *Python, PyTorch, Scikit-learn, CNN, Autoencoder*

Designed and implemented a pipeline for classifying brain tumors using MRI scans.

Applied CNNs and autoencoders for feature extraction and tumor classification.

Combined traditional descriptors (HOG, LBP, SIFT, ORB) with deep learning features.

Used PCA to reduce dimensionality and improve classification performance.

Achieved high accuracy in distinguishing glioma, meningioma, pituitary tumors, and healthy images.

Semi-Supervised Semantic Segmentation with Self-Correction (CVPR 2020 Reproduction)
Computer Vision Project *Python, PyTorch, Scikit-learn, CNN*

Re-implemented and trained dual-network segmentation system using PyTorch.

Integrated ancillary and primary segmentation networks with self-correction (linear & CNN-based).

Achieved segmentation performance competitive with supervised baselines.

Applied on Pascal VOC 2012 dataset using weak and full annotations.

Group Activity Recognition
Deep Learning Project *Python, PyTorch, Scikit-learn, CNN, LSTM*

Designed and implemented a hierarchical deep learning pipeline for recognizing group activities in videos.

Applied CNNs for person-level feature extraction and LSTMs for modeling group-level temporal dynamics.

Based on research principles from **A Hierarchical Deep Temporal Model for Group Activity Recognition**.

Trained and evaluated on the Collective Activity Dataset (Crossing, Waiting, Queueing, Walking, Talking).

Achieved accurate group activity classification through a two-stage CNN+LSTM architecture.

DrivingRecon 4D Scene Reconstruction
4D Reconstruction and Neural Rendering *Python, PyTorch, OpenCV, Panda3D*

Implemented a simplified version of the DrivingRecon paper using multi-view driving video.

Built a 4D Gaussian rendering pipeline with depth estimation, 3D encoding, and temporal attention.

Achieved real-time scene reconstruction and novel view synthesis from synthetic or real data.

Certifications

Machine Learning Process A-Z, 365 Data Science

Machine Learning Algorithms A-Z, 365 Data Science

Machine Learning Specialization, Coursera — Andrew Ng (DeepLearning.AI)

Data Science & Machine Learning Foundations, Maven Analytics

Languages

Arabic — Native

French — Fluent

English — Professional Working Proficiency

Research Interests

Computer Vision: Representation learning for visual data, medical image analysis, 3D computer vision, and hybrid vision-language models. Areas of interest include object detection, segmentation, and geometric deep learning.

Multimodal Learning: Combining visual, textual, and audio modalities to enhance model robustness, generalization, and interpretability in complex environments.

Explainable AI (XAI) for Vision: Developing interpretable and transparent AI models for vision-based systems, with an emphasis on sensitive applications such as healthcare and safety-critical domains.

Natural Language Processing (NLP): Leveraging vision-language models (VLMs) for tasks requiring joint understanding of text and images, with additional focus on Arabic NLP and semantic reasoning.

Speech Processing (Supporting Modality): Exploring complementary modalities such as speech emotion recognition and speech-to-text systems to enrich multimodal AI research.