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ABOUT MYSELF

I specialize in machine learning, deep learning, computer vision, NLP, and optimization. The more complex and difficult a problem is, the more I'm willing to take it on. I dream of becoming the best.

WORK EXPERIENCE

II Moodme – United States

Country: United States

Machine Learning Engineer

[10/2023 - 01/2024]

- Designed and deployed real-time facial emotion recognition systems using deep learning-based computer vision techniques.

- Implemented a Graph Auto-Encoder (GAE) to learn latent representations of facial landmarks for integration into a Unity 3D Face SDK, enabling efficient identity-preserving expression synthesis and emotion classification.

🗒 Cemex – Monterrey, Mexico

City: Monterrey | Country: Mexico

Data analyst

[04/2023 - 08/2023]

- Conducted advanced data analysis using SQL and generated interactive dashboards in PowerBI to support strategic decisions in the Product Management department.

- Built predictive models and statistical forecasting tools to assess user behavior trends and adoption metrics of CEMEXGO, the company's digital customer platform.

EDUCATION AND TRAINING

Erasmus Mundus Master in Advanced Machine Learning and Optimisation Systems (EMSSE)

Université de technologie de Compiègne [05/2025 - Current]

City: Compiègne | Country: France

Erasmus Mundus Master in Advanced Machine Learning and Optimisation Systems (EMSSE)

Universiteti Politeknik i Tiranës [03/2025 - 06/2025]

City: Tirana | Country: Albania

Erasmus Mundus Master in Advanced Machine Learning and Optimisation Systems (EMSSE) Universitat Politècnica de Catalunya [09/2024 – 01/2025]

City: Barcelona | Country: Spain

Specialization in Advanced Artificial Intelligence Applied to Data Science Monterrey Institute of Technology and Higher Education [08/2023 – 12/2024] City: Guadalajara | Country: Mexico

B.S. in Computer Science and Technology Monterrey Institute of Technology and Higher Education [01/08/2021 – 01/06/2024]

City: Monterrey | Country: Mexico

LANGUAGE SKILLS

Mother tongue(s): Spanish

Other language(s):

English	French
LISTENING C2 READING C2 WRITING C1	LISTENING B2 READING B2 WRITING B1
SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1	SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1
German	Albanian
German LISTENING A2 READING A2 WRITING A1	Albanian LISTENING A2 READING A2 WRITING A1
German LISTENING A2 READING A2 WRITING A1 SPOKEN PRODUCTION A1 SPOKEN INTERACTION A1	Albanian LISTENING A2 READING A2 WRITING A1 SPOKEN PRODUCTION A1 SPOKEN INTERACTION A1

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user

PROJECTS

Medical Automatic Image Left Ventricle Segmentation

Designed a U-Net model to segment the left ventricle from Stanford's EchoNet-Dynamic dataset. Compared pixelwise segmentation with landmark detection. Used Dice score and morphological filters for evaluation. Applied OpenCV, PyTorch, albumentations, and Scikit-Image for processing. Two model based approach comparison. Landmark vs Mask.

Link: https://github.com/Tec-AI-23/EchoNetDynamic

Human Activity Recognition (HAR) using Advanced Machine Learning

Machine Learning for Activity Recognition Implemented machine learning models to classify physical activity levels in older adults using accelerometer sensor data. Evaluated 18 classification algorithms (including SVM, Random Forest, and XGBoost) with grid search-based hyperparameter tuning to identify optimal predictive performance. Achieved robust classification results validated via cross-validation and statistical significance testing.

Link: https://github.com/Tec-AI-23/HAR70

Advanced Statistical Learning

Built from-scratch implementations of Monte Carlo simulation, Bootstrap, PCA, multiple regression techniques (Ridge, Lasso), and classifiers (Bayes, k-NN, SVM). Accompanied by annotated theoretical notes and applied to real datasets.

Link: https://github.com/musel25/Advanced_Machine_Learning

Deep Learning-Based Hydrological Forecasting

Deep Learning Applied in Hydrology Developed a deep learning pipeline to predict river stage levels from static imagery using convolutional neural networks. Leveraged EfficientNet through transfer learning and integrated multi-

modal inputs (visual and hydrological data) in a custom architecture to enhance predictive accuracy. Achieved improved performance through data augmentation and domain-specific preprocessing.

Link: https://github.com/musel25/research_deep_learning

Framework for Metaheuristics Optimization with Retrieval-Augmented Generation (RAG) and LLMs

Developed an automated framework that leverages Retrieval-Augmented Generation (RAG) and Large Language Models (LLMs) to generate, refine, and optimize metaheuristic algorithms for black-box optimization problems. Integrated qwen2.5-coder LLM with ChromaDB and Optuna. Applied to IOHexperimenter benchmark functions and achieved performance gains through data-driven self-refinement.

Link: https://github.com/musel25/llm-metaheuristics

Validation of Nusselt-Reynolds Correlations via CFD Simulation

CFD Simulation in ANSYS. Simulated forced convective heat transfer over a uniformly heated sphere using CFD to validate classical Nusselt-Reynolds empirical correlations. Performed mesh convergence testing and validated results against empirical models across varying Reynolds numbers.

Multi-Objective Flow Shop Scheduling

Developed a Mixed-Integer Linear Programming model in Python using PULP to minimize makespan and CO2equivalent emissions in a flow shop. Modeled sequencing with big-M constraints and explored trade-offs using a weighted lambda objective.

Link: https://github.com/musel25/industrial_automation

Ramp Metering Control Strategy Simulation

Developed a freeway traffic simulation in Python to evaluate ALINEA ramp metering control under 10 traffic demand scenarios. Compared open-loop and closed-loop strategies using KPIs like downstream density, outflow, and average freeway density.

Link: https://github.com/musel25/actm_control

Obesity Level Estimation via ML & DL Models

Built a classification pipeline for UCI obesity dataset. Applied dimensionality reduction (PCA, t-SNE), mutual information, and trained 31 models from classic ML to ANN architectures. Best performance achieved with XGBoost (96%).

Link: https://github.com/musel25/obesity_ml

Computer Vision Paper Review Repository

Annotated and reviewed 30+ core computer vision papers. Covered topics including ImageNet, CNN architectures, transfer learning, and object detection.

Link: https://github.com/musel25/cv_papers_review

NLP Project Collection Curated a set of NLP models

- Sentiment analysis using the HuggingFace DistilBERT transformer model in PyTorch
- A spell checker from scratch using Levenshtein distance for fuzzy matching

- A Recurrent Neural Network (RNN) text generator in Keras trained on a custom corpus, with temperature tuning for output control

Link: https://github.com/musel25/nlp_projects

CNN for Leukocyte Classification and AI Explainability using LIME

Built a CNN to classify leukocyte images into cancerous/non-cancerous using the dataset_leukocytes. Integrated LIME for interpretability to highlight regions influencing model decisions. Ensured transparency and robustness in medical diagnostics.

Fine-Tuning GPT-2 for Personalized Chatbot Response Generation

Fine-Tuning GPT-2 on WhatsApp Chats Built a custom conversational AI model by fine-tuning GPT-2 on WhatsApp chats. Parsed and cleaned chat data using regex, converted to Hugging Face Dataset format, fine-tuned and deployed an interactive chatbot pipeline.

Link: https://github.com/musel25/her_if_it_was_2025

Natural Language Processing-Based Web Application

Natural Language Processing Web Application Designed and deployed a full-stack NLP web application capable of real-time emotion classification from user-submitted text. Integrated a text classification model with database logging and user activity tracking for analytical purposes. Built using streamlit, and standard NLP preprocessing techniques.

Link: https://github.com/musel25/nlp_project

VOLUNTEERING

[01/08/2018 - 01/07/2020] Mexico

Leader of ProV

Led a social aid organization dedicated to supporting vulnerable communities across Tijuana, Baja California, Mexico. Coordinated and managed a wide range of humanitarian initiatives, including food preparation and distribution, fundraising campaigns, donation logistics, orphanage support, and elderly care assistance. Oversaw volunteer teams, organized events, and ensured efficient resource allocation to maximize social impact.

Link: https://www.facebook.com/groups/782118565323194