

JEAN-MARIE CHAHOUD

Computer Engineering Student | Machine Learning & AI

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PROFILE

Computer Engineering undergraduate at the Lebanese American University specializing in machine learning, deep learning, and applied AI. Built end-to-end ML systems including a CNN-BiLSTM-Attention model for medical signal analysis (98.32% recall) and a multi-modal RAG agent for legal reasoning. First-place winner of an in-class Kaggle competition on a 297K-row imbalanced classification problem (Private LB AUC 0.97301). Seeking a Summer 2026 Machine Learning Engineering internship to apply production-oriented skills in Python, PyTorch, TensorFlow, FastAPI, and vector databases.

TECHNICAL SKILLS

Programming Languages: Python, C++, Java, SQL, HTML, CSS

Machine Learning & AI: TensorFlow, Keras, PyTorch, Scikit-Learn, LightGBM, XGBoost, CatBoost, Optuna, CNNs, BiLSTM, Attention, NLP, LLMs, RAG, Agentic AI, Reinforcement Learning, Computer Vision, Feature Engineering, Hyperparameter Tuning, Cross-Validation

Data & Backend: FastAPI, NumPy, Pandas, Apache Spark, Data Pipelines, ETL/ELT, SQL & NoSQL, Vector Databases (Chroma), LangChain

MLOps & Cloud: AWS, Docker, Git, Version Control, CI/CD, Model Deployment

Languages: English (fluent), French (fluent), Arabic (native)

ACHIEVEMENTS

- Kaggle Competition Winner — Machine Learning (COE 546/746), LAU (Spring 2026):** Ranked 1st place predicting user order placement on a 297,236-session food-delivery dataset with severe 33:1 class imbalance. Achieved Out-of-Fold AUC 0.97363 and Private Leaderboard AUC 0.97301, improving the baseline by +0.0088 through 85-feature engineering and a 3-model gradient-boosted ensemble (LightGBM + XGBoost + CatBoost) with 5-seed averaging.

PROJECTS

Food Delivery Order Prediction — Kaggle Winner

Group Lead | Spring 2026

LightGBM, XGBoost, CatBoost, Optuna, Python, Pandas, NumPy

- Engineered 85 features across five families (time/session, cart × promo interactions, promo engagement, customer interactions, target/quantile encodings) on a 297K-row binary classification problem with 2.91% positive rate.
- Tuned three complementary GBDT models with Optuna TPE sampler under 10-fold StratifiedKFold validation; combined predictions in an equal-weight probability blend averaged across 5 random seeds.
- Implemented leakage-safe K-fold target encoding (smoothing $s=10$) on 7 categorical features, structural missing-value handling for a 30.5% co-NaN promo block, and quantile normalization for heavy-tailed numerics.
- Reached Private Leaderboard AUC 0.97301 (vs. 0.9648 baseline). Demonstrated that 10-fold OOF AUC was a more reliable selection signal than the public leaderboard at the noise floor.

Non-Invasive Hypoglycemia Detection via ECG Analysis

Personal Project

Python, TensorFlow/Keras, NumPy, Pandas

- Architected a CNN-BiLSTM-Attention hybrid deep learning model to capture temporal dependencies in 10-second raw ECG signals for non-invasive detection of hypoglycemic episodes (<70 mg/dL).
- Implemented patient-wise cross-validation to ensure model robustness on unseen subjects, eliminating data leakage from patient-specific signal patterns.
- Achieved 98.32% recall rate on hypoglycemic episode detection, prioritizing sensitivity for medical safety-critical use.

Municipality Digital System & Multi-Modal AI Agent

Full-Stack Project

FastAPI, LangChain, Vector Databases (Chroma), VLM, RAG

- Developed a full-stack digitized public service platform with an integrated Agentic RAG pipeline serving legal queries over indexed municipal laws.

- Built a high-performance FastAPI backend serving a Vision Language Model (VLM) for automated complaint categorization from images and text.
- Orchestrated vector databases and LangChain to enable autonomous reasoning across legal documents, delivering retrieval-augmented responses with source citations.

Multi-Variate European Football Predictive Model

Personal Project

TensorFlow, Scikit-Learn, Python, Pandas

- Engineered an analytics engine forecasting match outcomes across the Top 5 European leagues and secondary divisions, designed to identify parlay-betting opportunities.
- Performed feature engineering on tactical variables and squad-rotation patterns; benchmarked multiple model architectures to optimize predictive accuracy.

Global Country Benchmarking & Semantic Comparison Engine

Personal Project

Python, Tree Edit Distance, PCA/SVD

- Built an automated data engineering pipeline transforming JSON/XML UN datasets into Rooted Ordered Labeled Trees for structural comparison.
- Implemented Tree Edit Distance (TED) with backtracking edit-scripts to quantify structural resemblances between countries.
- Applied PCA/SVD for dimensionality reduction to identify Lebanon's "Structural Digital Twins" — countries with comparable institutional and economic structures.

Programmable Matter & Swarm Intelligence

Research & Development

Reinforcement Learning, Genetic Algorithms, Stochastic Search

- Designed a 2D grid-surface multi-agent system using the PEAS conceptual model for autonomous collective shape-formation.
- Optimized agent decision-making via Stochastic Search (Expectimax) and Reinforcement Learning.
- Applied Genetic Algorithms (mutation/crossover operators) to evolve decentralized local motion rules across the swarm.

EDUCATION

Lebanese American University

2024 – 2027 (expected)

Bachelor of Engineering in Computer Engineering

Beirut, Lebanon

- Relevant Coursework: Machine Learning (COE 546/746), Deep Learning, Intelligent Engineering Algorithms, Intelligent Data Processing Algorithms.

Lebanese University, Faculty of Engineering

2020 – 2023

Preparatory Engineering Program (Common Trunk)

Roumieh, Lebanon

Sainte Famille Française, Jounieh

2005 – 2020

French Baccalaureate (Spécialité Mathématiques) & Lebanese Baccalaureate (Sciences de la Vie) Jounieh, Lebanon

CERTIFICATIONS

- **Machine Learning Specialization** — DeepLearning.AI & Stanford Online. Neural networks, supervised and unsupervised learning.
- **Deep Learning Fundamentals** — NVIDIA Deep Learning Institute (DLI). CNNs, transfer learning, architectural optimization for industrial image classification.
- **Data Engineering Professional Specialization** — DeepLearning.AI. ETL/ELT pipelines, Apache Spark, NoSQL integration with AWS.
- **Machine Learning Engineering for Production (MLOps)** — DeepLearning.AI. CI/CD pipelines for production model deployment.
- **RAG and Agentic AI Professional Certificate** — IBM. Autonomous agents and multi-modal systems with vector databases and LangChain.

EXPERIENCE

Private Tutor

January 2023 – Present

Independent

Lebanon

- Mentor university peers in algorithmic logic and programming (Python, C++, Java) while delivering Mathematics and Physics instruction to high-school students preparing for Lebanese and French Baccalaureate examinations.