Mohamed **Youssef**

Machine Learning Engineer

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Education

Nile University *Giza, Egypt*

B.S. in Computer Science *Oct. 2022 - Present*

- GPA: 3.8

Skills

Programming Languages	Python, C/C++
Core CS Knowledge	Computer Architecture, Operating Systems, Data Structures & Algorithms
Software Engineering	OOP, RESTful API Design, Design Patterns, Algorithm Design, Ensemble Learning
Machine Learning	Transfer Learning, Deep Learning, Data Augmentation, Multimodal Learning, Unsupervised Clustering
Natural Language Processing	Text Classification, Tokenization, GloVe, BERT
Computer Vision	OpenCV, Image Captioning, Image Preprocessing, Feature Extraction
Big Data & ETL	Apache Spark, PySpark, HDFS, SQL Server, Data Pipelines
Frameworks & Technologies	TensorFlow, PyTorch, Keras, Numpy, Pandas, Django, Power BI, MS Office
Containerization	Docker
Databases	MySQL
Version Control	Git, GitHub
CI/CD	GitHub Actions
Languages	English (B2), Arabic (Native), Deutsch (A1)

Honors & Awards

Domestic

2025 **13th Place**, AI Finance Hackathon – GDG Cairo & Nsave *Giza, Egypt*

2024 **6th Place**, GEM Hackathon – Grand Egyptian Museum *Giza, Egypt*

Projects

Multimodal Fake News Detection *May 2025 - June 2025*

Detecting Fake News from Text and Images using Deep Learning

- Designed a deep learning model combining NLP and computer vision using both text and images.
- Built a data pipeline that cleaned and preprocessed a balanced dataset of 6,000 records (3,000 per class) extracted from a larger pool of 12,000 news articles and images.
- Applied BLIP for image captioning and GloVe embeddings to strengthen visual and textual alignment, enhancing model recall by 6%.
- Trained a multimodal classifier using early fusion techniques with BERT embeddings, improving prediction accuracy by over 10%.

Big Data COVID-19 X-ray Classification *Apr 2025 - May 2025*

CLASSIFYING X-RAY IMAGES USING PYSPARK AND DEEP LEARNING

- Designed and engineered a big data processing pipeline leveraging PySpark and Petastorm to efficiently handle and classify large-scale X-ray image datasets into COVID, Normal, and Pneumonia categories using TensorFlow deep learning models.
- Automated data ingestion from HDFS, performed preprocessing with Spark DataFrames, and converted data to Parquet format for optimized machine learning workflows.
- Developed and trained ResNet50 and InceptionV3 deep learning models integrated with Petastorm for distributed GPU training, improving training efficiency and achieving high classification accuracy.

Multi-Model Osteoporosis Detection *Oct 2024 - Jan 2025*

CLASSIFYING X-RAY IMAGES AND TABULAR DATA USING DEEP LEARNING

- Designed a deep learning classification system to detect Normal, Osteopenia, and Osteoporosis cases from X-ray images and tabular data.
- Enhanced X-ray clarity by adjusting contrast per image, identifying 5 extra early-stage Osteopenia cases.
- Performed data augmentation (resizing, flipping, rotation, etc.) to enrich training data and reduce overfitting.
- Utilized transfer learning on several deep learning models, reaching a 73% accuracy with the InceptionV3 model, over baseline models by 10%.
- Enhanced diagnostic reliability by 20% through ensemble learning, combining image and tabular data predictions.

Real-Time Shipment Tracking App *Nov 2024 – Jan 2025*

TRACKING SHIPMENTS IN REAL-TIME USING A FLUTTER FRONTEND AND DJANGO BACKEND

- Engineered RESTful APIs using Django REST Framework and MySQL, supporting real-time tracking of over 500 shipments per day, improving delivery times by 10%.
- Configured secure JWT authentication for 1000+ users with custom roles (delivery personnel, shipment tracker).
- Connected Flutter frontend with Django backend for real-time data exchange, handling 10 requests/sec with <200ms latency on average.