Fathy **H**esham **F**athy | Machine Learning Engineer

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Military Service: Final Exemption

Summary

I am a dedicated computer science professional with over 1 year of experience in Machine Learning, Deep Learning, Natural Language Processing (NLP), and MLOps. My academic journey includes earning a Bachelor's degree in Computer Science and Information Technology with a specialization in Artificial Intelligence from Ahram Canadian University.

Work Experience

- **Machine Learning Engineer – CodSoft – Internship** *December 1, 2024 – December 31, 2024*
  During my internship at CodSoft, I contributed to machine learning projects addressing real-world challenges such as customer retention and fraud detection, with a particular focus on managing imbalanced datasets. This experience enhanced my skills in data preprocessing and practical problem-solving using advanced machine learning techniques.
- **Machine Learning Engineer – DEPI – Training** *April 2024 – November 2024*
  The training, part of the Digital Egypt Pioneers Initiative under the supervision of the Egyptian Ministry of Communications, focused on comprehensive learning and hands-on training in statistics, probability, machine learning, deep learning, natural language processing (NLP), and generative adversarial networks (GANs). Additionally, it included the use of various Microsoft tools to enhance technical expertise and practical application.

Skills

- **Technical Skills:**
  - **Programming Language:** Python, C++, SQL.
  - **Object Oriented Programming.**
  - **Libraries/Frameworks**: Pandas, NumPy, scikit-learn, NLTK, Spacy, TensorFlow, Keras, LangChain.
  - **Scraping:** BeautifulSoup.
  - **Visualization Libraries:** Matplotlib, Seaborn.
  - **Data Analysis Tools:** Excel.
  - **APISs and Tools:** Git, GitHub, Hugging Face, Ollama.
  - **Data Science:** Machine Learning, Deep Learning, Data Analysis, Neural Network, Natural Language Processing (NLP), Fine Tuning, Transformer.
  - **MLOps and Deployment**: MLOps, Flask.
  - **Image Processing and Computer Vision.**
  - **Clean Code and Problem-solving0**
- **Soft Skills:** Communication | Teamwork | Learning | Time management | Leadership | Research | Creativity.
- **Languages:** Arabic, English.

Education

- **Ahram Canadian University – ACU | Cairo, 6th October** *October 2019 - June 2023*
  - Bachelor of Computer Science & Information Technology
  - **Major:** Artificial Intelligence.
  - **Grade (GPA):** 3.76 (Ranked **5th** in the class)
  - **Degree Graduation Project:** Excellent (A)

Leadership / Extracurricular

Graduation Team Leader *October 2022 – June 2023*

- Led a 6-member team at Ahram Canadian University, coordinating knowledge distribution, engaging with teaching staff and advisors, facilitating project decisions, and ensuring the project was complete and delivered on time.

Skills: coordinating, Focused, Strategic Planner, Adaptable, Communicative, Problem Solver, Time Management

Projects

- **Graduation Project In University: Nail Diseases Detection Using Image Processing & Deep Learning**
  - Contributed to the development of the *Nail Diseases Detection* application as a graduation project. The system leverages artificial intelligence to accurately diagnose nail diseases. The application enables users, whether patients or doctors, to capture an image of the affected nail and analyze the condition in seconds. It also assists in identifying the disease type and recommending the appropriate medical specialist based on the diagnosis.
  - The application targets the detection of *9 serious nail-related diseases* and provides a practical solution to enhance diagnostic accuracy, reduce errors, and save time and effort for both doctors and patients. The project is designed for use by individuals and medical institutions to improve healthcare efficiency.
  - Using 12700 images
  - Using CNN (Acc = 74%) | Using VGG-19 (Acc = 82%) | Using ResNet-50 (Acc = 89%)
- **Graduation Project In DEPI: RAG System – DEPI Chatbot**
  The project aims to build a *Retrieval-Augmented Generation (RAG)* system to answer questions related to the *"Digital Egypt Pioneers Initiative"* using Natural Language Processing techniques. Data is collected from the initiative's website and transformed into digital representations stored in a database. When a user asks a question, the system searches for the most relevant information and uses a model to generate an appropriate response based on context. The project is deployed on Azure to ensure high performance and provide an excellent user experience.
- **Virtual Question Answering - Generate Caption of Image**
  The Generate Caption of Image project leverages cutting-edge Computer Vision and Natural Language Processing techniques to automatically generate descriptive captions for images. By utilizing a pre-trained transformer model *(`nlpconnect/vit-gpt2-image-captioning`)*, the project provides an efficient solution for image understanding and annotation. The modular design, streamlined GUI, and deployment-ready architecture make it suitable for diverse use cases, from accessibility applications to content generation.
- **Text Summarization Using NLP (Natural Language Processing)**
  Developed a text summarization application using NLP techniques and the *BART-SAMSum* model to create accurate, human-like summaries of dialogues. Built with Python and OOP principles, the project utilizes Transformers, PyTorch for GPU acceleration, and Streamlit for a user-friendly interface. Designed for cross-platform compatibility with Docker, it emphasizes code maintainability and comprehensive logging. Future enhancements will focus on model fine-tuning and multi-lingual support.
- **Twitter Sentiment Analysis Using NLP (Natural Language Processing)**
  The project applies sentiment analysis to tweets from companies like FIFA, Facebook, and Google to determine whether the sentiments expressed are positive or negative, using Natural Language Processing (NLP).
- **Superstore Exploratory Data Analysis (EDA)**
  The *"Superstore Exploratory Data Analysis (EDA)"* project analyzes retail sales data to address challenges in preprocessing and feature integration. *It aims to answer 26 analytical questions* using visualizations to provide insights and enhance business performance.
- **Bitcoin Historical Data Bitcoin Historical Data**
  The project analyzes Bitcoin data, including the opening price, highest and lowest prices, trading volume, and other factors, to predict whether an investor should buy shares. The dataset contains 1,048,574 rows and 16 columns.
- **Hand Clock Using Computer Vision**
  The project creates a "Hand Clock" function using OpenCV, NumPy, and other libraries to display a clock on a 1000x1000 image, with points for hours and minutes, and the current date and time in the top-left corner.

Courses & Certifications

- Introduction To LLMs | 365 Data Science
- Introduction To NLP For AI | 365 Data Science
- ALX AiCE - AI Career Essentials | alx_africa
- Supervised Machine Learning (Regression and Classification) | Stanford University ONLINE
- Database Fundamentals | Mahara Tech
- Python for Data Science and Machine Learning | Udemy
- The Python and Django Learning Guide | Udemy
- Introduction To Computer Vision | Information Technology Institute (ITI)