YOUSSEF HUSSAIN

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PROFESSIONAL SUMMARY

Computer Science graduate specializing in AI Engineering and Machine Learning with hands-on experience in end-to-end model development, LLM fine-tuning, and deployment. Proficient in **Python**, **SQL**, and **cloud technologies** with demonstrated ability to build production-ready AI systems. Strong foundation in software engineering principles and data analysis.

PROFESSIONAL EXPERIENCE

AI Engineer Intern

Cyber Talents | 3-Month Internship | 2025

- Engineered end-to-end LLM pipeline for automated CTF writeup generation, reducing manual report creation time by 70%
- Preprocessed and structured 100+ raw CTF writeups through data cleaning, formatting, and augmentation techniques
- Fine-tuned open-source 7B parameter model and OpenAI GPT-4o-mini using PEFT techniques, achieving 85% quality score
- Implemented prompt engineering solution with Gemini 2.5 Flash to achieve comparable results without fine-tuning
- Deployed production-ready LLM system improving efficiency in cybersecurity documentation and reporting

Embedded Linux Engineer Intern

El Sewedy Electric | 2-Month Internship | 2025

- Automated electric meter calibration process using Python scripts, reducing testing time by 60% and improving data accuracy
- Developed Bash scripts for system administration and process management in embedded Linux environment
- Implemented hardware communication interfaces using UART, I2C, and SPI protocols
- Built foundational REST APIs in Python for device interaction and data collection

Network Security Intern

Optima Professional Services | 1-Month Internship | 2025

- Operated as SOC Analyst in CTF simulation, monitoring firewall logs and identifying 15+ intrusion attempts in real-time
- Configured and deployed firewall policies on Palo Alto Networks to isolate threats and secure network zones
- Conducted Red Team operations including vulnerability scanning and exploitation of identified attack vectors

EDUCATION

Bachelor of Computer Science – AI Specialization
Ahram Canadian University, Giza, Egypt
Graduation: June 2025

American Diploma – High School
Smart Vision International School, Giza, Egypt
Graduated: June 2021

TECHNICAL SKILLS

Programming Languages: Python, SQL, JavaScript, Bash, C++
Machine Learning: Supervised Learning, Unsupervised Learning, Feature Engineering, Model Selection, Hyperparameter Tuning, Cross-Validation, Ensemble Methods
Deep Learning & AI: Neural Networks, CNN, RNN, Transformers, Large Language Models (LLM), Fine-Tuning, Transfer Learning, PyTorch, TensorFlow, RAG, LangChain, Langgraph, Langflow, Pydantic, PEFT
Data Science: Pandas, NumPy, Scikit-learn, Data Cleaning, EDA, Statistical Analysis, Data Visualization, Matplotlib, Seaborn, Power BI
Databases: PostgreSQL, MySQL, MongoDB, Prisma, SQLite, Database Design, Data Warehousing
Backend & APIs: FastAPI, REST API, Express.js, Node.js
DevOps & Tools: Docker, Git, Linux, AWS, Automation (n8n)
Soft Skills: Communication, Collaboration, Problem-Solving, Analytical Thinking, Adaptability

KEY PROJECTS

AI-Powered Auction Backend

- Developed scalable Node.js backend for e-commerce auction platform with integrated LLM-powered RAG chatbot
- Built NLP model for semantic comparison between OpenAI CLIP-generated image captions and user descriptions

- Designed REST APIs for user interaction, Stripe payment integration, and ML-based item recommendations
- **Impact:** Delivered production-ready AI pipeline enhancing content validation and building trust in listings

Hotel WhatsApp AI Agent

- Engineered conversational AI concierge accessible via WhatsApp using LangChain, Langgraph, and Pydantic
- Implemented RAG and CAG architecture for FAQ responses from hotel knowledge base
- Integrated Supabase backend with database queries for room availability, bookings, and guest management
- Built ReAct architecture with structured tools for secure booking workflows directly through WhatsApp
- **Impact:** Enabled 24/7 automated customer service, reducing support workload by 50%

AI Fitness & Nutrition Planner

- Developed personalized fitness application using LangChain, Pydantic, and Google Gemini
- Generated structured JSON outputs for custom workout schedules and macro-nutrient targets
- Implemented conversational agent for follow-up questions and ongoing user support

Production ELT Data Pipeline with Medallion Architecture

- Engineered end-to-end ELT pipeline extracting from normalized OLTP PostgreSQL database to data warehouse using Python and SQL
- Implemented incremental loading strategy with high-water mark tracking for efficient data synchronization and change data capture
- Architected Medallion data warehouse (Bronze/Silver/Gold layers) with dbt transformations creating star schema for business analytics
- Orchestrated automated pipeline using Apache Airflow with custom Docker images, managing dependencies and container networking
- Impact: Enabled real-time business intelligence with 100% data integrity through staging tables and rollback capabilities

CERTIFICATIONS

- IBM Data Analyst Professional Certificate
- IBM Data Science Professional Certificate
- CCNA (Knowledge-Based)
- Google Cybersecurity Certificate