Mostafa Hassan Mohamed

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Education

2021 – Present
Dual Degree Engineering Student at Ain Shams University (iCHEP) & University of East London, under Computer Engineering and Software Systems Program, **Cumulative GPA: 3.08**.

2018 – 2021
Graduated from Elshahed Ibrahim Mostafa Ibrahim Military School for Boys with a score of 94.15%, ranked 1st in the school, 3rd in the administration, 130th in Cairo, and 558th in Egypt. This outstanding performance earned me a full scholarship to study at the Faculty of Engineering at Ain Shams University in the international department. Additionally, ranked first in Cairo in the preparatory stage with a perfect score of 100%.

Experience

Linux Administration Trainee July 14, 2025 – Present
Edges For Training Academy *Cairo, Egypt*

- Participated in a 4-week intensive training program focused on Linux Administration
- Mastered practical Linux skills, including system internals, file management, and Bash scripting
- Completed hands-on projects simulating real-world challenges to enhance technical proficiency
- Engaged in an offline learning environment for direct instructor interaction
- Earned a certification recognized by industry leaders upon completion

Cyber Ops Associate Trainee July 2024 – Sep. 2024
National Telecommunication Institute (NTI) *Cairo, Egypt*

- Enrolled in a 90-hour intensive training focused on cybersecurity operations and practices
- Covered core concepts in network security, incident response, intrusion detection, and cyber threat analysis
- Training offered by Ministry of Communications and Information Technology, Egypt

Software Testing Trainee (ISTQB Track) July 2023 – Aug. 2023
NEXT Career Development Academy *Cairo, Egypt*

- Completed a professional-level training program in Software Testing based on ISTQB standards
- Gained hands-on experience in writing test cases, test planning, and executing manual test strategies
- Studied software development lifecycle (SDLC), black-box testing, and defect management workflows

Projects

Sports Image Classification Model *Spring 2025*
Developed a convolutional neural network (CNN) model to classify sports images from Kaggle datasets, deployed locally using Flask. Performed data preprocessing, including cleaning, normalization, and label encoding, and visualized data patterns. Optimized model performance through hyperparameter tuning and monitored training using TensorBoard.

Footwear E-Commerce Platform *Spring 2025*
Built a responsive full-stack e-commerce website featuring user authentication, product management, shopping cart functionality, and secure checkout. Integrated JWT-based login, developed CRUD APIs, and enabled real-time inventory tracking, profile editing, search filters, customer reviews, and promotional discounts.

Automotive Window Control System *Spring 2025*
Engineered a real-time embedded system on the Tiva C TM4C123GH6PM microcontroller to simulate a car power window with manual and automatic modes. Incorporated obstacle detection, position tracking via encoder, and window lock functionality, utilizing FreeRTOS for efficient task scheduling and inter-task communication.

Advanced Spell Correction System *Spring 2025*
Designed and developed a spell checker application leveraging finite state machines and regular expressions to accurately identify and correct misspelled words. Created an intuitive GUI to enhance user interaction and applied automata theory to validate input strings effectively.

Genetic Variant Classification *Spring 2025*
Developed a machine learning framework to identify conflicting genetic variant classifications in ClinVar using Random Forest. Engineered features like allele frequency and CADD scores, addressing class imbalance with SMOTE. Optimized hyperparameters via Optuna, achieving 70% F1-score. Aligned with ACMG/AMP guidelines to enhance clinical interpretation.

Network Domain Resolution Service *Fall 2024*
Created a DNS server from scratch using Python and UDP sockets to handle A and CNAME queries. Designed a custom zone file parser, implemented response caching with TTL support, and developed a logging system to track query resolutions, deepening understanding of DNS protocols and network programming.

Smart Home Automation System *Fall 2024*
Designed an embedded system on the Tiva C TM4C123GH6PM microcontroller to monitor and control home appliances, including room temperature and door status with alarm features. Built a desktop interface for real-time data visualization and appliance management via UART communication.

Barcode Processing Pipeline *Fall 2024*
Developed a robust system to detect, extract, and decode Code11 barcodes from noisy images. Applied advanced image preprocessing, frequency analysis, and pattern recognition techniques to ensure accurate barcode digit interpretation under challenging conditions.

Heart Failure Prediction Tool *Fall 2024*
Constructed machine learning models to predict heart disease risk using patient data. Utilized PCA for data visualization, trained classifiers (SVM, Naïve Bayes, KNN, Decision Tree), and evaluated performance with F1-score and confusion matrices. Analyzed patient clusters using dendrograms.

Network Security Analysis Lab *Summer 2024*
Analyzed network traffic with Wireshark to identify anomalies and threats. Configured Security Onion for real-time intrusion detection and used Sguil for alert analysis. Conducted SIEM log correlation, forensic investigations, and simulated cyberattacks to test incident response strategies. Deployed Cisco Web Security Appliances for URL filtering and malware protection, and visualized threat intelligence with Kibana.

Library Database Solution *Spring 2024*
Architected an SQL-based library management system to automate book cataloging, borrowing/returning, user/staff management, and fine calculations. Designed ER diagrams and relational schemas with constraints, and optimized stored procedures for efficient transactions and scalable multi-library support.

C Compiler (Lexer and Parser) *Spring 2024*
Developed a lexer and parser for a C compiler using Java to tokenize and parse C source code. Designed lexical analysis to handle keywords, operators, and identifiers with regular expressions. Constructed a context-free grammar for syntax analysis, ensuring accurate abstract syntax tree generation. Tested against standard C programs to validate parsing correctness.

Emotional Recognition AI App *Spring 2024*
Developed a convolutional neural network (CNN) model to recognize emotions from facial images using Python. Preprocessed image datasets with normalization and augmentation for robust training. Deployed the model locally for real-time emotion detection. Evaluated performance using accuracy and F1-score metrics.

Quality Assurance Testing Suite *Summer 2023*
Formulated and executed test plans for applications like Vezeeta and Chic Homz, adhering to ISTQB standards. Tracked defects using Jira and delivered a comprehensive testing report with a requirement coverage matrix to ensure thorough validation.

View All Projects on GitHub

Technical Skills

Languages: Java, C/C++, Python, Bash, SQL, JavaScript, HTML/CSS
Frameworks: Django, Node.js, Hadoop
Developer Tools: Git, GitHub, Selenium,VS Code, Visual Studio, Eclipse, Docker, Linux
Libraries: Pandas, NumPy, Seaborn, Matplotlib
ML & DL: Scikit-learn, TensorFlow, Keras, CNN, SVM, Feature Engineering, Model Tuning, RNN
Other Skills: OOP, Algorithms, Excel (For Data Analysis), PowerBI

Languages

Arabic: Native **English:** Fluent **German:** A2