

Shady Wafik Heshmat Helmy

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Address: Fayoum, Egypt | Open to relocate (Cairo & Giza)

Date of Birth: 10 June 2004

Nationality: Egyptian

Military status: Postponed

Education:

Information Technology Bachelor's Degree

(September 2022 - June 2026)

- University: Misr University for Science and Technology (MUST)
- Major: Artificial Intelligence & Embedded Systems
- Current Status: Graduated (2026)
- GPA: 2.84 (Very Good)

High School Degree; Saint Michael's Convent School, Fayoum

(2019-2022)

- Thanaweya Amma (Scientific Mathematics Track – 2nd Tablet Generation) – Final Score: 78.54%

Professional Summary:

- I'm a curious and ambitious technology enthusiast with a strong passion for **Artificial Intelligence, Machine learning, Data analysis**, and solving complex real-world problems through technology. I enjoy continuously exploring new technologies and exploring different technical fields to expand my knowledge and build versatile problem-solving skills. Since childhood, I've always been deeply interested in computers and technology, with a strong mindset toward troubleshooting, experimentation, and finding solutions independently.
- With hands-on experience in Artificial Intelligence, **Data Science, Computer Vision, Embedded Systems**, and enterprise infrastructure, I enjoy building **intelligent systems** that combine software, hardware, **automation**, and real-world engineering. I have worked on multiple AI and Deep Learning projects involving **Artificial Neural Networks (ANN), Convolutional Neural Networks (CNN)**, Computer Vision, predictive analytics, and **AI-driven automation systems**.
- Beyond my passion for AI and intelligent systems, I also have a strong personal interest in **automotive technologies** and smart mobility solutions. Influenced by my father's background in automotive maintenance, I developed a solid understanding of vehicle systems, automotive electronics, and diagnostics from an early age. I'm especially interested in **Automotive Embedded Systems, CAN Bus communication, ECU interaction**, and exploring how AI and embedded technologies can shape the future of **connected and intelligent vehicles**.

Graduation Project: Smart Hospital Management and Decision Support System

(Grade: A*)

Technologies: ASP.NET Core, SQL Server, Python, Machine Learning, **XGBoost, LightGBM, CatBoost**, Random Forest, REST APIs, Git/GitHub

- Built a full-stack AI-powered Smart Hospital Management and Decision Support System integrating hospital administration, predictive analytics, and intelligent healthcare services.
- Built role-based dashboards for doctors, HR managers, and patients with appointment management, medical records, staff scheduling, and analytics visualization.
- **Created multiple Machine Learning modules for:**
 - Patient Readmission Risk Prediction
 - Bed Occupancy Forecasting
 - Staffing / CHPPD Prediction
 - AI-Based Treatment Recommendation
- Implemented and evaluated advanced ML models including **LightGBM, XGBoost, CatBoost**, and Random Forest using real and generated healthcare datasets.
- **Built and integrated REST APIs using ASP.NET Core, SQL Server, and FastAPI to connect the frontend, backend, and AI prediction modules seamlessly.**
- Applied Agile methodology, UML modeling, ERD design, and system architecture planning throughout the project lifecycle.
- Built interactive dashboards and predictive analytics interfaces for intelligent hospital decision-making and operational efficiency.

Experience:

- **Orascom Construction PLC — IT Internship | 80 Training Hours** (August 2025)
 - Completed an IT infrastructure internship under the **System Administration** Department at **Nile City Towers**.
 - Built and configured an **SCCM** lab environment on Microsoft Azure with Active Directory, SQL Server, WSUS, IIS, and domain-joined clients.
 - Deployed enterprise applications using **Microsoft SCCM** and gained hands-on experience with Active Directory, Group Policies, and enterprise system administration.
 - Participated in **Microsoft Exchange Server 2019 deployment sessions** with **Microsoft technical experts**.
 - Strengthened practical skills in enterprise infrastructure, troubleshooting, virtualization, and system administration.

- **Heshmat Auto Parts (Family Business) — Digital Presence & Web | Fayoum** (July 2026)
 - Built and deployed the business website (heshmatautoparts.com) on Cloudflare Workers with a custom domain, DNS, and email routing.
 - Implemented local SEO: Google Business Profile, Bing Places, OpenStreetMap listing, and JSON-LD LocalBusiness structured data (validated with Google Rich Results Test).
 - Set up Google Search Console indexing, Open Graph previews, and the business Facebook page.

Technical Experience (Freelance): (2019 - 2025)

- **cPanel Administration:**
 - Setup, configuration, and management of cPanel for web hosting environments.
 - Capable of troubleshooting and resolving common performance and functionality issues.
- **Server Administration:**
 - Experienced with Windows Server, CentOS, Ubuntu, and other Linux distributions.
 - Configuring and troubleshooting mail servers and SMTP settings for reliable email delivery.
- **Virtualization:**
 - Hands-on experience with VMware, Hyper-V, and VirtualBox.
- **Cloud Computing:**
 - Familiar with cloud platforms such as AWS, Microsoft Azure, and Google Cloud Platform.
- **Scripting, Automation & Tooling:**
 - Proficient in Bash, PowerShell, and Python scripting for administrative tasks, automation, and custom workflows.
 - Experienced in using **automation tools** and environments such as Cron jobs, Task Scheduler, and basic CI/CD pipelines to streamline operations and improve efficiency.
- **Troubleshooting & Diagnostics:**
 - Strong problem-solving skills with experience in system diagnostics and root cause analysis.
- **Remote Administration:**
 - Efficient in managing systems remotely using SSH and RDP.

Independent Engineering Projects:

- **Smart Automotive CAN Bus Control & Reverse Engineering Platform** (December 2025 - Present)
Technologies: ESP32-S3, CAN Bus, OBD-II, SN65 CAN Transceiver, ISO-TP, Embedded C/C++, WiFi, Bluetooth, ECU Reverse Engineering
 - Designed and enhanced an advanced Automotive Embedded platform for **CAN Bus communication**, ECU interaction, and vehicle reverse engineering using ESP32-S3 and OBD-II integration.
 - Built a multi-layer low-level CAN architecture for real-time frame processing, message parsing, ID filtering, diagnostic communication, and intelligent feature integration using ISO-TP protocols.
 - Built reverse engineering workflows for CAN ID discovery, ECU behavior analysis, signal mapping, and real-time vehicle data monitoring through a custom dashboard interface.
 - Optimized high-speed CAN communication performance and built custom automotive features including intelligent **gauge sweep animations** and smart vehicle automation.
 - Integrated WiFi and Bluetooth capabilities for future expansion toward remote vehicle control and intelligent automotive systems.
- **Property & Rental Management System — Client Project (wady-elmelok.com)** (August 2026)
Technologies: PHP, MySQL, JavaScript, Hostinger, Cron
Live Demo (sample data): <http://www.test-shady-property.freepage.cc/> — (User: admin | Password: admin) **Free Hosting (No SSL)**
 - Built and deployed a full Arabic (RTL) web system for a real-estate office: contracts, installments, variable-rent periods, deposits, treasury accounts, expenses, salaries & advances.
 - Implemented granular role-based permissions, audit logging, contract printing from templates, Excel export, and automated database backups.
 - Gathered requirements directly with the client and delivered iterative change rounds based on their feedback.
- **Offensive Authentication Automation & Flow Analysis Framework** (July 2025)
Technologies: Python, Playwright, Browser Automation, Authentication Flow Reverse Engineering, Multi-threading, Web Debugging
 - Built an advanced browser automation framework for **Microsoft Outlook authentication** workflows, including multi-stage login handling, session management, and authentication flow analysis.
 - Built dynamic automation logic for handling security prompts, fallback authentication methods, session transitions, and intelligent UI interaction.
 - Implemented real-time retry management, authentication flow reverse engineering, and modular browser automation components using Python and Playwright.
- **Self-Hosted Smart Home & AC Control System** (July 2025)
Technologies: ESP32, Home Assistant, MQTT, Linux, Docker, Cloudflare Tunnel, IR Protocols
 - Reverse-engineered the AC's IR protocol (Kelvinator, 128-bit) and built an ESP32 IR bridge exposed to Home Assistant via MQTT auto-discovery.
 - Runs on a self-hosted Linux home server with secure remote access, controlled by voice through Google Home and Apple HomeKit.
 - Automated lights and PC control (Wake-on-LAN), with state persistence across power failures.

Academic Background & Technical Focus:

Machine Learning & Deep Learning:

Hands-on experience with supervised and unsupervised learning, model evaluation, and Python ML frameworks including Scikit-learn, Pandas, and TensorFlow. Worked on Machine Learning and Deep Learning projects involving regression, classification, clustering, ANN, and CNN models for intelligent prediction and data analysis.

Data Science & Analytics:

Proficient in data preprocessing, visualization (Matplotlib, Seaborn), and analysis techniques. Worked on datasets to extract insights and build predictive models.

Embedded Systems:

Practical knowledge in microcontrollers (Arduino, ESP32), sensor integration, and C/C++ programming. Designed small-scale embedded applications and real-time systems.

Robotics & IoT:

Experienced in building robotics projects integrating microcontrollers, actuators, and IoT communication protocols like MQTT and HTTP.

Embedded Systems & Hardware Prototyping:

Proficient in working with Arduino, Raspberry Pi, and various sensors. Able to design, build, and program real-time embedded systems using C/C++ and Python.

Academic Projects:

Hardware Projects:

Industrial Robotics:

Bionic Arm:

Engineered an EMG-controlled bionic arm using Raspberry Pi, machine learning (MLP), and 3D printing, capable of real-time gesture-based movement for industrial and prosthetic applications.

Sumo Robot:

Created and built an autonomous Sumo Robot using ultrasonic and IR sensors with Arduino-based control logic for real-time obstacle detection, strategic movement, and competitive autonomous navigation.

Embedded Systems :

Arduino-Powered Chess Clock:

Made a digital chess clock with dual countdown timers to manage players' time during matches.

Arduino Racing Car using Joystick:

Built a joystick-controlled RC car capable of forward, reverse, left, and right movements.

Snake Game using LCD and 4 Buttons:

Recreated the classic Snake game on an LCD, controlled by four directional buttons.

Internet of Things (IoT) :

Automated Road Safety & Condition Monitoring System:

The system is designed to enhance road safety and provide critical real-time information using integrated sensing and communication technologies.

Electronics :

7-Segment Breadboard Counter (0–9):

Designed a digital counter circuit using a 7-segment display, logic ICs, and a 555 timer for binary-to-decimal counting and display interfacing.

Power Supply PCB:

Created a regulated PCB-based power supply with AC-to-DC conversion and LM7805 voltage regulation for stable embedded system power delivery.

Car Line Detector (Line-Following Robot):

Built an autonomous Arduino-based line-following robot using IR sensors and L298N motor drivers with real-time path correction and sensor-based control logic.

Software Projects :

Expert Systems:

Student-Mental-Health-Prediction-Using-Ensemble-Learning-Technique:

Built a student mental health prediction tool using ensemble learning (Random Forest, Naïve Bayes) with a web interface for real-time risk assessment.

Information Systems:

Gym Management System – ERD Design & Microsoft Access Implementation:

Designed a gym management system with an Entity-Relationship Diagram (ERD) and executed it using Microsoft Access to handle member data, subscriptions, payments, and trainer schedules efficiently.

Introduction to Artificial Intelligence:

Solving the 3x3 Puzzle Using AI Search Algorithms (DFS, BFS, Greedy, A*):

Implemented a 3x3 puzzle solver in Python using DFS, BFS, Greedy, and A* algorithms to compare AI search strategies based on efficiency and optimality.

Data Science:

Apple Stock Price Prediction Using Machine Learning Techniques:

5-year analysis of Apple Inc.'s stock data, incorporating advanced machine learning techniques to predict trends and provide actionable insights.

Machine learning:

Breast-Cancer-Classification:

Built a machine learning model for breast cancer detection, focusing on feature engineering and model interpretability for clinical use.

Natural Language Processing (NLP):

Trigram-Predictive-Model:

A Python-based trigram model utilizing collections and math for word prediction and perplexity calculations, featuring autocomplete functionality and a user-friendly Streamlit interface.

Computers Interface and Multimedia Systems:

BRAZILIO Coffee Ordering Application:

Designed a multimedia-based coffee ordering application with user research, stakeholder analysis, wireframing, UI prototyping, information architecture, and interactive user flow design to improve usability.

AI Strategies & Algorithms:

Dental Radiography Classification Using Convolutional Neural Networks (CNN):

Designed a deep learning-based dental radiography classification system using CNN architectures with image preprocessing, augmentation, model training, and performance evaluation to improve automated diagnostic accuracy.

Artificial Neural Networks:

EEG Emotion Recognition Using Artificial Neural Networks (ANN):

Designed an ANN-based emotion recognition system for classifying human emotional states from EEG brainwave signals using signal preprocessing, feature extraction, neural network training, and performance evaluation techniques.

- **Pattern Recognition:**
 - **Fashion Style Classification Using CNN & MobileNetV2:** Built a deep learning-based fashion classification system using CNNs and MobileNetV2 transfer learning with image preprocessing, data augmentation, and fine-tuning techniques to improve classification accuracy.
- **Computer Vision:**
 - **Real vs Fake Image Classification Using Computer Vision & Deep Learning:** Architected a CNN-based image classification system for detecting real and AI-generated images using preprocessing, augmentation, feature extraction, and model evaluation techniques to improve accuracy and generalization.
 - **OpenCV & Tkinter Image Editor:** Engineered a GUI-based image editing application using OpenCV, Tkinter, NumPy, and Pillow with real-time image processing features including filtering, edge detection, thresholding, resizing, cropping, and brightness adjustment.
 - **Universal Panoptic Pose-Tracking in High-Density Environments:** Engineered an end-to-end computer vision pipeline using Detectron2, Mask R-CNN, Keypoint R-CNN, and DeepSORT for panoptic segmentation, human pose estimation, and multi-object tracking in crowded environments.
- **Algorithms & Optimization:**
 - **Wireless Network Base Station Placement Using Genetic Algorithm:** Created an optimization-based wireless network planning system using Genetic Algorithms for efficient base station placement, coverage optimization, and deployment cost reduction.
- **Computer Security:**
 - **Image Encryption & Decryption Using Classical Cryptographic Algorithms:** Created a secure image encryption system using Caesar, Affine, Playfair, and S-Box cryptographic techniques with pixel-level transformations, key-based image shuffling, and reversible decryption workflows.

Technical Skills:

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| ● Data visualization using (Matplotlib, Seaborn, Streamlit) | ● Python for Machine Learning and Data Analysis (Pandas, Scikit-learn, TensorFlow) |
| ● Version control using Git/GitHub | ● Microsoft Office (Word, Excel, PowerPoint, Outlook) |
| ● Experience with ML models (Regression, Classification, Ensembles) | ● ERD design and Access-based database applications |
| ● Basic knowledge of cloud platforms (AWS, Azure) and virtualization (VMware, Hyper-V) | ● Video editing (Adobe Premiere) and basic Photoshop skills |
| ● Practical experience with Arduino, Raspberry Pi, ESP32, and embedded systems | ● Solid understanding of circuits, sensors, and basic hardware projects |
| ● Skilled in C/C++ for microcontroller programming | |

Communication & Professional Skills:

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|---|--|
| ● Strong communication and presentation skills | ● Fast learner with strong adaptability |
| ● Technical troubleshooting and analytical thinking | ● Interested in automotive technologies and intelligent mobility systems |
| ● Team collaboration and problem-solving | ● Automotive mechanics and vehicle diagnostics knowledge |

Certifications & Training:

- Orascom Construction PLC — IT Infrastructure Internship (80 Hours)
- Huawei HCIA-Cloud Service V3.5 Certification
- Huawei HCIA-Security V4.0 Certification
- Huawei HCIA-AI V3.5 Certification

Languages:

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|--------------------------------|----------|
| ● Arabic | (Native) |
| ● English – Upper-Intermediate | (B2+) |
| ● French | (Basic) |