SHAHD GAMAL

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EDUCATION

Cairo University Faculty of Engineering (CUFE) *2021 - 2026*

- Bachelor of Electronics and Communications (EECE) With Cumulative Grade: (Very Good).

SKILLS

Software: C/C++ - OOP - MATLAB - Assembly - Data Structures - Algorithms - Qt - Git & GitHub - AI tools.

OS: Linux - Windows.

PROJECTS

Student Management System | Link *Summer 2024*

- Built a CLI-based student DB with CRUD operations, GPA calc, and memory safety.
- Used linked lists and structs to efficiently manage dynamic data.
- Technologies: C - Linked Lists - Structs - Pointers - File I/O.

Advanced Tic Tac Toe Game | Link *Spring 2024*

- Developed a C++ Tic Tac Toe game with AI using minimax, user authentication, and GUI.
- Integrated secure hashing and tested with Qt Test for reliability.
- Technologies: C++ - Minimax Algorithm - Secure Hashing - Qt - Qt Test - SQLite - Git - GitHub Actions.

Reverse Tic-Tac-Toe AI Development | Link *Fall 2023*

- Designed an AI for Reverse Tic-Tac-Toe using Minimax with Alpha-Beta Pruning.
- Built a web-based simulation with advanced heuristics and multi-tape Turing strategies.
- Technologies: C++ - Minimax - Alpha-Beta Pruning - Linear Algebra - Decision Trees - Web Development.

Self-Driving Robots - Path Planning & Obstacle Avoidance *Spring 2023*

- Developed an autonomous robot navigation system using Fast-Marching Method 2 (FMM2).
- Compared FMM2 with A* algorithm, achieving smoother paths in MATLAB simulations.
- Technologies: MATLAB - FMM2 - A* Algorithm - Path Planning.

Dual Microcontroller Door Locker System | Link *Summer 2024*

- Designed a dual-microcontroller door lock system with password auth and EEPROM data logging.
- Included PIR-based motion sensing and H-Bridge controlled door actuation.
- Technologies: ATMega32 - I2C - USART - EEPROM - PIR - H-Bridge.

CMOS Analog Circuit Design *Fall 2023*

- Designed CMOS circuits using UMC 0.13um technology, including current mirrors and amplifiers.
- Conducted simulations for DC, transient, and noise analysis in Cadence.
- Technologies: UMC 0.13um - Cadence Simulator - NMOS Transistors - Current Sources.

Maze-Solving Line-Follower Robot Car *Summer 2022*

- Built an autonomous robot car for maze navigation with path memory and Bluetooth control.
- Used IR sensors for line following and DC motors for movement.
- Technologies: Arduino - DC Motors - H-Bridge - Bluetooth Module - IR Sensors.

OTHER PROJECTS

- MATLAB Signal Processing and Simulink Control System Projects.
- Analog IC Design Projects on Cadence.
- Smart Home Automation | Link
- Advanced Digital Multimeter on PCB | Link
- Real-Time Operating System (RTOS) Project
- SPI Slave with Single-Port RAM | Link
- DSP48A1 Implementation on Spartan-6 FPGA | Link
- Stopwatch with Dual Mode | Link
- Car Parking Sensor | Link

COURSES

Robotics Workshop | Beta Academy *Jul 2022 - Sep 2022*

- Arduino board - Basic Concepts of Embedded Systems - Basics of C Programming.
- HW components: LED, Resistor, Breadboard, potentiometer, sensors, 7-segment display, Motors, H-bridge.

Digital Verification Workshop | IEEE CUSB *Apr 2025 - Current*

- Verification Flow - SystemVerilog (SV) Basics - OOP & Constrained Randomization.
- Functional & Code Coverage - Assertions - SV Interfaces - UVM Fundamentals.
- Testbench Development - Stimulus Generation - Checkers & Subscribers.
