Mohamed Abdelrazek

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GitHub Profile • LinkedIn Profile

Motivated **biomedical engineering student** at Cairo University, with a strong foundation in software development, and a growing focus on frontend, full-stack, and software applications. Experienced in building user-friendly GUIs, developing computer vision models, and creating interactive web/game applications. Skilled at working in teams, and delivering practical software solutions to real-world problems.

Technical Skills

Skills: Web technologies • Game development • Problem-solving • Excellent time management skills

Programming Languages: Python • Java • C++ • C# • HTML • CSS • JavaScript • Reactjs • Nodejs • Typescript

Education

SEP 2023 - PRESENT
Faculty of Engineering student | Biomedical Engineering | Cairo University

3.37 CGPA

Projects

- **Medical Multi-Image Viewer** *(Python, PyQt5)* - Built a GUI for medical imaging visualization with zoom, contrast adjustment, and multi-slice navigation.
- **Advanced Image Viewer** *(Python, PyQt5, OpenCV)* - Developed an interactive image enhancement tool with noise simulation, denoising, and SNR/CNR analysis.
- **3D Organ Puzzle Game** *(Unity, C#)* - Created an educational 3D puzzle game for assembling a human vertebral column, improving anatomy learning.
- **Castle Defense Game** *(Python, Pygame)* - Designed a tower-defense game with enemy waves, collision detection, sprite animations, and sound effects.
- **Soccer Player Tracker** *(Python, YOLOv8, OpenCV)* - Implemented a player-tracking system with real-time dynamic heatmaps for position analysis.
- **Diabetes Glucose Tolerance Solver** *(Python, TensorFlow)* - Built a Physics-Informed Neural Network (PINN) model to solve glucose tolerance test ODEs.
- **Organ Classifier Model** *(Python, ResNet16)* - Developed a deep learning classifier for organ identification (liver, brain, lungs, heart).
- **Lung Tumor Detector** *(Python, PyTorch, ResNet50)* - Trained a ResNet50-based model to detect lung tumors from bronchoscope images with dataset augmentation.
- **DICOM Viewer** *(Python, PyQt5, pydicom)* – Built a DICOM viewer supporting single/multi-images, metadata search, anonymization, and video playback.
- **ECG Signal Visualization** *(Arduino)* – Created an ECG acquisition system with real-time plotting and notch filtering for noise removal.
- **Volumetric Infusion Pump** *(Arduino)* – Designed a volumetric infusion system with alarms for abnormal flow rate detection.

- **Temperature-Controlled Infant Incubator** *(Arduino)* – Developed a neonatal incubator with automated control, monitoring, and emergency alarms.
- **Hemodialysis System** *(Arduino + Bluetooth)* – Implemented a device to detect blood leakages and abnormal temperatures, with Bluetooth connectivity for remote alerts.
- **National ID Generator** *(Java)* – Created a GUI-based application that simulates generating citizen IDs based on multiple personal parameters.

Courses

DEPI (Digital Egyptian Pioneers Initiative), React Frontend Development — Jun 2025 - Present

- HTML5 Essentials
- CSS Essentials
- Principles of UX/UI Design
- Bootstrap
- Code style, patterns and best practices
- JavaScript
- TypeScript
- ReactJS
- NodeJS + Express
- Containerization using Docker