

Hamza Elghonemy

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Education

Bachelor's degree: Biomedical Data Engineering, Cairo University 10/2021 – 06/2026

Junior Year | GPA 3.2/4

Relative Courses: Data Structures and Algorithms, Database, Computer Architecture, Logic Design, Signal Processing, Clinical Engineering, Biomedical Transducers, Distributed App Development.

Projects

Digital Filter Designer 12/2023 – 01/2024

- Designed interactive Python tool for digital filter design using z-plane and real-time signal interaction.
- Enables phase correction and visualizes filter response. (PyQt, SciPy, Matplotlib, Logging, Threading, PyMouse).

Bank Churn Detection 07/2023 – 08/2023

- Built a Python model using machine learning (linear regression) and deep learning (ANN) to predict customer churn for a bank.
- Provides proactive customer retention efforts (Scikit-learn, TensorFlow, Keras).

ECG/EMG Monitor UI 04/2024 – 04/2024

- Developed and designed a UI for an ECG and EMG signal monitoring using ReactJS and Tailwind CSS
- Implemented two graphs to visualize ECG and EMG signals provided by the user via a CSV file. Created four boxes to display vital signs related to the patient's health. Designed a button that enables users to browse and select the signal file. Incorporated two boxes to showcase flexions and peaks of the signal.

Nyquist Sampling Theory Studio 12/2023 – 01/2024

- Developed an interactive Python application to visualize signal sampling concepts.
- Customizing signals, manipulating sampling rates, and observing the impact on reconstruction fidelity according to the Nyquist-Shannon sampling theorem. (PyQt5, pyqtgraph, pandas, numpy, scipy, matplotlib).

Ulcer Paralysis Monitoring 03/2024 – 04/2024

- Developed a ReactJS website that monitors patient's condition and notify nurses through a dashboard if the patient undergoes any alerting conditions.
- Integrating Arduino UNO to provide real-time data through multiple sensors (Accelerometer, humidity, temperature, tilt and capacitive touch sensor).

Professional Experience

Data Analysis Intern | ELGHONEIMI ARCHITECTURE 07/2023 – 09/2023

Leveraged Python's data visualization libraries (Matplotlib, Seaborn) to analyze the environmental impact of various building materials. Presented insights to Architects for informed decision-making. New Cairo, Egypt

Certificates

Artificial Intelligence Diploma • Data Science for Construction, Architecture and Engineering

Skills

Front-End Web Development: (HTML, CSS, JavaScript, ReactJS, Tailwind CSS, Bootstrap) | **Back-End:** (PostgreSQL, MongoDB, Django, Redis) | **Cloud Computing:** (Microsoft AZURE) | **Languages:** (C++, C, Python) | **Mobile Development:** (Flutter)

Extracurricular Activities

IEEE Cairo University Student Club, HR Member 11/2022 – 03/2023

Led and mentored undergraduate students in extracurricular activities. Conducted interviews and selected qualified candidates for tutor positions. Giza, Egypt