Mohamed AboMandour

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About Me

Biomedical Engineering student with strong expertise in deep learning, especially in computer vision and natural language processing. Skilled in machine learning, digital signal processing, and data visualization, with hands-on experience applying AI to solve diverse challenges.

Education

Cairo University GPA: 3.5
Bachelor of Systems and Biomedical Engineering *Sep. 2020 – Present*

Technical Skills

Languages: Python, C/C++, SQL, Java
Data Analysis: Polars, NumPy, Pandas, Matplotlib, Seaborn
Machine Learning: Scikit-learn, Keras, PyTorch, OpenCV, SciPy
Version Control: Git, GitHub
Desktop App Development: Qt5, PyQt6
Containerization: Docker, Kubernetes

Projects

Classifying Blood Clot Origin using DeepLearning | *CV, Transfer Learning, Medical Imaging* | Paper |
- Developed an advanced AI system achieving 87.52% accuracy in classifying stroke blood clot origins using PoolFormer and CCT models, processing 200GB+ of histopathological images from the Mayo Clinic dataset.
- Engineered a robust preprocessing pipeline using MobileNetV3 and Otsu's thresholding, reducing 124,800 patches to 118,600 high-quality samples, enabling faster and more accurate stroke diagnosis.

AI-Driven Appointment Scheduler | *Machine Learning, Data Preprocessing, Gen-AI*
- Created a scheduler system for Fanous Clinic, USA, using AI to optimize appointments based on disease reports.
- Utilized patient data to provide real-time, data-driven recommendations, reducing decision-making time by 90%.

VisionaryID | *Image Processing, OpenCV, Python, EigenFaces*
- Utilized OpenCV for offline and real-time face detection and recognition using Eigenfaces, with 98% accuracy.
- Developed online camera integration and good visual representation of detection and recognition results.

ImageAlchemy | *Computer Vision, OpenCV, Python, PyQt6*
- Developed a comprehensive toolkit for various image processing and Computer Vision tasks with an intuitive GUI.
- Included algorithms: Active Contours, SIFT detector, segmentation, clustering techniques, and filters.

Security Voice-code Access | *Speech recognition, Shazam Algorithm, pyAudioAnalysis*
- Utilized speech-to-text conversion, spectrogram, and voice fingerprinting technology to authenticate users.
- Added real-time spectrogram display, matching score tables for passcodes and individuals, and access indicators.

DICOM Viewer with Volume Rendering | *VTK, Computer Graphics, PyQt6*
- Utilized vtk and DICOMImageReader for loading DICOM series data by selecting a folder through a file dialog.
- Implemented both Surface and RayCast rendering with controls to adjust surface appearance.

Extracurricular Activities

Top 10 Presentations, ITCS Track Finalist Jul. 2023
Nile University 16th UGRF 2023 Competition
- Developed a Mobile app to input personal information and lifestyle habits to get the type of obesity.
- Added Suggestions for meals and exercises tailored to recommended calorie intake Using deployed ML model.

Data Analysis Instructor Sep. 2023 – Aug. 2024
IEEE EMBS
- Developed guides on advanced data analysis methodologies, statistical techniques, and industry-standard tools.
- Designed and implemented effective data visualization strategies, translating intricate data patterns.

Languages

- **English:** Advanced (IELTS Band 7)

Training

Clincal Engineer Aug. 2024 – Sep. 2024

Cleopatra Hospitals Group CHG

- Gained experience in the management of medical devices, performing routine maintenance tasks, and understanding hardware suppliers and agents.
- Observed the layout of hospital departments, gained knowledge of accreditation certificates, ensured compliance with standards, and monitored device calibration processes.

Field Service Engineer Aug. 2024

Siemens Healthineers

- Gained hands-on training and practical experience with MRI, CT, X-ray systems, and laboratory equipment.
- Acquired deeper knowledge of MRI device principles, sequences, and its various components and models.

Field Service Engineer Jul. 2023

EGMED

- Troubleshooted hardware errors and problems with medical devices and applied clinical engineering principles.
- Developed valuable soft skills through interaction with hospital staff and engineers.

Certifications

Neural Networks and Deep Learning Jun. 2024

Coursera, offered by Andrew Ng and Deeplearning.ai

Clean Code and Code Refactoring Oct. 2023

Ezz Medical Industry

Supervised Machine Learning Sep. 2023

Coursera, offered by Andrew Ng and Deeplearning.ai