YASIEN GHALWASH

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EDUCATION

Bachelors in Biomedical Engineering

Cairo University · Faculty of Engineering

2018 – 2023(**3.4 GPA**)

- **Undergraduate Courses**: Machine Learning, Computer Vision, Computer Graphics, Probability, Statistics, Calculus, Linear-Algebra, Digital Signal Processing, Data Structures, Algorithms, Databases, Embedded Systems.

Summer Academy Student

Neuromatch

Jul 2022 · 1 mo

- 3-week intensive tutorial-based training program about Basics DL (Linear Deep Learning, Multi-Layer Perceptron, Optimization, Regularization), CNN and NLP

PROJECT

Physician support for malignancy score decision in breast ultrasound imaging web app based deep learning Graduation Project

[PACS, DICOM viewer, CAD system, FastApi, Docker, PyTorch, TensorFlow, Azure]

- Developed an end-to-end PACS-integrated system for the automatic segmentation and classification of breast cancer ultrasound images using state-of-the-art deep-learning techniques
- Integrating the system with a DICOM medical viewer that includes various image processing tools to assist physicians in analyzing malignancy scores

GI-Tract-Image-Segmentation [Tensorflow, Unet]

- Used UNet to segment the stomach and intestines in MRI scans effectively in order to improve the cancer treatment to avoid high doses of radiation to healthy tissues.

Face Recognition[Tensorflow, VAE]

- Facial detection model that learns the latent variables underlying face image datasets and uses this to adaptively re-sample the training data.

Autonomous Driving Car Detectionn[Tensorflow, YOLO Algorithm]

- Extracting boundary boxes of cars and identifying their positions .

LSTM Music Generator [Tensorflow, RNN, LSTM]

- Training a model based on LSTM to predict the next character of songs and generate new songs

Computer Vision studio [PyQt5, Opencv]

- Computer vision studio that illustrate varies computer vision algorithms such as contours detection hough transform, segmentation algorithms

Bounding-box for Brain Cancer MRI [Opencv, Scikit-Image]

- Versatile image processing methodology to auto-detect coverage bounding boxes on brain MRI images based on stated anatomic landmarks.

Medical volume rendering web-app based [vtk-js, volume, rendering]

- Developed a 3D medical viewer using vtk.js, enabling volume rendering with multiple presets marching cubes

Music-Equalizer and virtual instruments [pyqtgraph, PyQt5, fft, scipy]

- Applying DSP concepts for spectrum analysis and instrument manipulations within songs with dynamic visualization

Embedded-Systems-Principles [STM32F401,GPIO Peripheral, SPI, I2C, UART, Keypad, C]

- Implementation of ARM architecture, C programming, functions, interrupts, arrays, and serial protocol interfacing.

PUBLICATIONS

- **Computer-Aided System for Breast Cancer Lesion Segmentation and Classification Using Ultrasound Images** Presented at the IEEE International Conference on e-Health and Bioengineering EHB 2023 - 11th Edition, Bucharest, Romania, 9-10 November 2023. **[Accepted].**

EXPERIENCE

AI Engineer @Inspire for Solutions Development

November 2023 - Present

- Utilized IBM Watson and other AI technologies, integrated them into IBM Cloud PAK, and monitored their performance.

R&D Engineer @Astute imaging

July 2022 – August 2023

- Working on CAD system's architecture and workflow, integrating it with PACs to automate AI decision-making for new instances from the modality using Orthanc and Fastapi.
- Implemented Docker containers to encapsulate the various components of the system,
- Utilized Azure Virtual Machines (VM) to host and run the containerized system.
- Used powerful Deep Neural Networks like Unet, attention Unet, and Efficient Net.
- Optimized AI models for both CPU and GPU platforms to enhance performance and maximize computational resources. **Tools**: Fast API, Open-cv, PyTorch, TensorFlow, Orthanc, Docker, Azure

Biomedical Engineer Intern @Siemens Healthineers

Aug 2022 · 1 mo

- Know the main components and system operation of MRI, CT, PET/CT, and medical laboratory equipment.

Internet of Things Instructor @STP

Sep 2020 - Jul 2021

- Designed and prepared the academic material in coordination with the rest of the team.
- Designed and prepared more than 10 small projects.
- Design and lead competition for the final project which was a smart parking system.

SKILLS

languages : C/C++ Python Javascript

Software development : OOP design patterns Fastapi SQL Vtk.js Orthanc Docker Git PyQt

Machine learning: Scikit-learn Pandas Pytorch Tensorflow OpenCV MONAI WandB

ACCOMPLISHMENTS

- **IELTS Score : 7.0**
- **Deep Learning Specialization Stanford University**