Mahmoud Gamal

MECHATRONICS ENGINEER

Hadayek El-Maadi, Cairo

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Education

Fayoum University

BSc in Mechatronics Engineering. *2018- 2023*

- Grade:3.0 (Very good)

skills

Knowledge: Machine learning | Deep Learning | Image processing | Data visualization | Object oriented programming| Mechatronics systems | control systems

Technologies and tools: Python | Bash | MySQL | CSS (fundamentals) | Scikit-learn | Seaborn | LaTeX| Git | TensorFlow | Pandas | openCV | MATLAB/SIMULINK |

Languages: Arabic (Native) and English (Fluent)

Projects

OGallery :

- Developed an open-source gallery app for Linux with advanced search capabilities, image viewing, and editing functionalities.
- Trained a MobileNet classifier that categorizes and indexes images, improving image organization and search.
- Implemented robust searching features using Levenshtein distance for misspelling correction .
- Optimized image loading by implementing a cache mechanism, resulting in faster image loading times and improved overall performance, with specifications aligned with freedesktop.org standards.

ADAS perception module(Graduation project) :

- Implemented an image processing pipeline for lane detection using OpenCV.
- Collected road data for instance segmentation, developed code to convert it to the appropriate YOLO label format, and fine-tuned YOLOv5 on the custom dataset. Additionally, performed object detection by collecting cars and traffic signs data,fine-tuning YOLOv5 on the custom dataset, and successfully deployed it on Raspberry Pi.

Heart disease classifier :

- Conducted data exploratory analysis and data visualization using pandas and Seaborn.
- Trained models such as logistic regression, decision tree, and random forest with scikit-learn and hyperparameter tuning using grid search.

Pyctrl : Developed an open-source Python library for modern control, offering functions such as conversion between State Space and Transfer Function, solutions of state space systems, step response, pole placement, checking for stability, controllability, observability.

Manipulator : Developed a 5 DOF manipulator, modeled the kinematic chain, and calculated the inverse kinematics using Denavit-Hartenberg parameters. Coded the GUI using Tkinter and experimented with controlling methods.

Work Experience

Samsung Electronics Egypt

INTERNSHIP *Aug 2023 - Oct 2023*

- optimization and maintenance of assembly line AGVs

Siemens energy-EGTA

TRAINING *Aug 2020 - Sept 2020*

- Summer training on Electrical Engineering (Renewable Energy, Automation, Power Plants)

Extracurricular Activity

IEEE FSB

ROBOTICS TEAM HEAD *Nov 2020- June 2021*

- Founded the team, developed the curriculum and Tutored Robotics fundamentals and Arduino MCU

Fab lab Fayoum

MACHINE OPERATION VOLUNTEER *Nov 2019-May 2021*

- Provided technical support for the visitors

Datasets

- created a 100% synthetic **dataset** of Egyptian ID cards where names, birthdays, ID numbers, and other details are randomized. Generated headshots using thispersondoesnotexist that utilizes styleGAN2.

Articles

- **Understanding colors in visual storytelling: how to extract color palettes:** Explores how colors shape visual storytelling with a hands-on guide to extracting image palettes using clustering in Python.
- **Hiding in plain sight: An introduction into Steganography:** Explores how steganography hides messages in images using bit manipulation in Python.

Related courses

ML Data Lifecycle in Production | **Intro to ML in production** | **Neural Networks and Deep Learning** | **Improving Deep Neural Networks** | **Convolutional Neural Networks(audit)** | **ST121:probability and statistics (audit)** | **Stanford CS229: Machine Learning (audit)**