

Mohamed Elahl

Software Engineer

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Education

Master of Engineering - Electrical and Computer Engineering, University of Ottawa - Jan 2023

Fields of study: Artificial Intelligence, Machine Learning, Computer Vision, Internet of Things, Cyber Security, and Mobile Robotics.

Internet of things Diploma - Information Technology Institute (ITI), Ministry of Communications and Information Technology [MCIT] / Egypt - Jan 2021 to April 2021

Bachelor of Science - Mechatronics Engineering, Mansoura University - Sep 2014 to July 2019

Projects

Master's Graduation Project:

Exterior Car Damage Detection System - Mentored by Reda Elhakim (Chief R&I Engineer), Valeo Egypt

- Assembled large datasets for classification and object detection purposes.
- Deployed image processing and computer vision for car damage detection pipeline.
- Used validation data for models tuning and test data for models evaluation.
- Trained and optimized state-of-the-art convolutional neural network algorithms using TensorFlow, Keras, and PyTorch frameworks.

Master's Projects:

Compiler Provenance with Machine Learning

- Pre-processed three datasets of executable files using Linux command line tools.
- Trained and tuned different state-of-the-art machine learning models using Scikit-learn library.
- Deployed gradient boosting and ensemble algorithms.
- Built and tuned deep neural networks using the Keras framework.

Detect Data Exfiltration via DNS (Using Kafka)

- Used feature engineering and selection techniques (Chi-squared, Mutual information, and ANOVA).
- Tuned machine learning models (LogisticRegression, XGBoost, and DecisionTree) using GridSearchCV.
- Plotted, discussed, and analyzed the models' results using (Precision, Recall, and F1-Score metrics).

Birds Classification using Deep Learning

- Built and trained CNNs using TensorFlow and Keras frameworks.
- Deployed transfer learning using ResNet101 state-of-the-art model.

Cifar10 Machine Learning-based Image Classification

- Extracted features using Scikit-image and OpenCV libraries.
- Built and tuned KNN, Logistic Regression, and SVM classifiers.

Deep Learning-based Leaves Counting

- Built and trained CNNs of VGG backbone for image classification.
- Used data augmentation to enhance performance.

Pick and Place ROS-based Mobile Robot

- Deployed ROS navigation and manipulation packages to operate map navigation and pick and place objects on TurtleBot3 and SLAM to draw a map, using Python.

ITI Projects:

Smart Parking System Using Master of Things (MOT) Platform - Graduation Project

Tracking Luggage using the MOT platform

Al Hendawy Restaurant Web Page (Front-End Project)

Bachelor's Graduation Project:

Built a Production line using PLC (liquid filling and capping machine)

Experience

Artificial Intelligence and Robotics Intern - Digital Egypt Builders (DEBI), Ministry of Communications and Information Technology (MCIT) - Feb. 2022 to Jan. 2023

- Built advanced machine and deep learning projects using Python with Keras, and Pytorch.
- Developed ROS-based TurtleBot3 projects.

Technical Support - Etihad Airways Team, Teleperformance - Nov. 2021 to Jan. 2022

Odoo Developer and Implementer - Dr.Baker - May 2021 to Oct. 2021

Certificates

- Azure IoT Developer Specialty, Microsoft - May 2022
- Azure AI Engineer Associate, Microsoft - April 2022
- Developing and Deploying Internet of Things using the AWS Platform, Coursera - April 2021
- Introduction to the Internet of things and Embedded systems, Coursera - March 2021
- IoT Applications Development using the Master Of Things platform, Coursera - January 2021

Training and Courses

Data analysis courses, DataCamp

Data Science for Business / Introduction to SQL

Python programming courses, DataCamp

Introduction to Python / Intermediate Python

Machine learning courses, DataCamp

Supervised Learning with scikit-learn / Introduction to Deep Learning with Keras

Soft skills, Dale Carnegie - February 2022 to April 2022

Three months of training on different soft skills.

English skills, Berlitz - February 2022 to April 2022

Communication and writing skills (documentation).

Skills and Knowledge

- Programming Languages: Python, C/C++, JavaScript, Bash Script
- Frameworks: TensorFlow, Keras, and PyTorch
- Pythonic tool stack: NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn, Scikit-image, PIL, OpenCV
- Cloud: Microsoft Azure, Master of things, THINGWORX, and KAA IoT platforms
- Database: SQL
- Tools: Jupyter Notebook, Visual Studio Code, and Google Colab
- Soft Skills: Technical documentation (writing research papers in IEEE format), and using Trello to assign and track tasks.

Languages

- Arabic - Native
- English - Fluent
- French - Primary
- Germany - Primary

References

AbdElMoneim Bayoumi, Assistant Professor, Computer Engineering, Cairo University & Head of Robotics Track, Digital Egypt Builders Initiative (DEBI).

Contact: abayoumi@debi.gov.eg

Reda Elhakim, Chief Engineer, Research and Innovation Department, Valeo Egypt.

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