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EDUCATION

Bachelor of Engineering in Communications and Information

Zewail City University of Science and Technology • Egypt

Sep 2016 - Feb 2023

WORK EXPERIENCE

Backend Engineer • Full-time

Oct 2023 - Present

PractiQ Consulting • The 5th Settlement

IT consulting services and software development company working in the fields of Full stack development, ML/AI, IoT, Business development, and etc.

Self Driving Cars Engineer • Internship

Jun 2023 - Jul 2023

Ontario University • Canada

A remote training program regarding self-driving cars framework Autoware.Auto using Robot operating system (ROS) and different simulation platforms.

Robotics Engineer • Internship

Jun 2021 - Aug 2021

Zewail City University • Egypt

A training program in the Robotics lab for developing a social robot to work as a guide for humans in public environment with autonomous navigation, cameras, and human conversations capabilities using Robot Operating System (ROS).

SKILLS

Artificial Intelligence: TensorFlow, Keras, PyTorch, Scikit-learn, OpenCV, Google Speech, Pandas, Matplotlib, Seaborn

Big Data: Apache Hadoop, Apache Spark, OpenMP, MPI, OpenCL

Robotics: ROS, ROS Navigation Stack, Autoware, RViz, Gazebo, rqt, Linux, Solidworks

Web: Git, React, Database management , Microsoft Azure Services

Programming Languages: Python, C++, Javascript, Matlab, SQL, C, C#, Arduino

Embedded Systems: Eagle PCB, ARM, PIC, AVR

PROJECTS

Social Robot as a guide

Sep 2021 - Oct 2022

Zewail City University

A social robot to work as a guide for humans in public environment with autonomous navigation, cameras, and human conversations capabilities using Robot Operating System (ROS).

Hidden Markov Model (HMM) for the robot localization

This project involves implementation of a Hidden Markov Model (HMM) for the robot localization problem. It includes a definition for the problem, an HMM for localization, and an implementation for the forward and backward algorithms.

Big Data Analytics for League of Legends game.

This project simulates the lifecycle of real-life analytics for League of Legends game. Given the online API of Riot Games, the project delivers useful information to players or developers that will help make profitable business decisions.

Big Data Analytics for a Multi-category Online Book Store

This project involved analyzing data from Goodreads using big data and machine learning techniques. It included 12 functions for data analysis and map-reduce jobs on the Spark library. The output files were visualized using Tableau software. The results included identifying the most popular genres, languages, authors, and books on Goodreads, as well as developing a book recommendation procedure using machine learning techniques.

Arabic Dialect Identification Using MFCC and NN Model

In this project, a model for identifying Arabic dialects was developed using Bidirectional Encoder Representations from Transformers (BERT) and a GAN model for classification. The main focus was on the use of Mel Frequency Cepstral Coefficients (MFCC) for acoustic feature extraction. The project involved the creation of a Spoken Arabic Regional Archive (SARA) dataset, sourced from YouTube media shows and films.

Twitter Sentiment Analysis

This project involves the implementation of a Neural Network and Zero Shot Learning Models on Twitter Sentiment Analysis dataset from Kaggle. Natural Language Processing (NLP) techniques were used including preprocessing for text data, the removal of stop words, repeating words, and the lemmatization of tweet words. Furthermore, the use of word embedding for representing words using vectors

Generative Adversarial Networks (GANs) for Handwritten Digit Image Generation

The project involved the implementation of CNN-based Generative Adversarial Network (GAN) consisting of a standalone discriminator model, which is responsible for distinguishing between real and fake images, and a standalone generator model, which generates new, plausible handwritten digit images.

Handwritten digit image classification using Neural Network model

This project involves implementing a classification model using neural networks in Keras and PyTorch, primarily focusing on the MNIST hand-written digit classification dataset. The project provides fine-tuning the model to enhance the efficiency, also Keras image generator was used for loading large data.

Cat and Dog image classification using CNN models

This project involves implementing a CNN model using the Keras Sequential API for classification on a Cat and Dog dataset. Also, Keras applications interface was used for loading and using pre-trained model.

Time Series Forecasting using RNN model and LSTM cells

This project involves the implementation of RNN (Recurrent Neural Network) models and LSTM (Long Short-Term Memory) cells for time series forecasting dataset.

Fitting a neural network to Heart Attack dataset

A Neural network model using keras sequential was performed on a heart attack dataset. Regularization techniques were added to prevent overfitting including adding L2 penalty and adding a dropout layer. Experimentation with different network architectures and hyperparameters were done to improve the performance.

Fuel efficiency prediction of automobiles using Neural Network Regression model

This project involves the implementation of custom regression models using both TensorFlow and Keras for predicting the fuel efficiency of late-1970s and early 1980s automobiles using the Auto MPG dataset. The project explores fine-tuning hyperparameters to enhance the model, also L1, L2, Dropout, and Early stopping Regularization techniques were applied to prevent overfitting.

Passport analysis web application

This project involved the development of a web application that utilizes Microsoft Azure Cognitive Services to analyze passport documents. The application can analyze various types of identity documents, including passport book and passport card. The project aimed to extract key information from passport documents, such as name, birth date, and expiration date, and present it in a database.

Treasure Hunt Game with Probabilistic Reasoning

This project involves the implementation of a treasure hunt game using probabilistic reasoning using the Expectimax algorithm.

Self-played Paceman game

In this project, a multi-agent search algorithm was developed to solve a predefined problem involving a paceman and ghosts. It includes an implementation of five different search algorithms: Reflex Agent, Minimax, Alpha-beta pruning, Expectimax, and Evaluation function. Each algorithm was designed to improve the paceman's decision-making process, taking into account the positions of the paceman, food, and ghosts, as well as the time remaining for the power pellet.

Managing program for the election process to choose a new president

The project involves a program that manages the election process to choose a new president by implementing the parallel scenario using MPI, OpenMP, and OpenCL libraries. The objective is to quickly announce which candidate will win and the round in which they win by writing a parallel program based on the voters' preferences lists following specific election rules.

Image Encryption and Decryption

In this project, an image encryption and decryption system was developed using the JPEG algorithm in Python. The system was designed to encrypt an image using a key and then decrypt it using the same key. The JPEG algorithm was used to compress the image and then encrypt it using some mathematical logic.

Man's hand gestures prediction model

In this project, KNN, Adaboost, and Random Forest models were performed to predict a man's two hand gestures (scissors and rock) on a collection of muscle activity sensor reading dataset.

Micromouse game

In this project, a Micromouse game was developed using the MATLAB programming language. A small robot was designed to navigate a maze and find its way from a predetermined starting position to the center of the maze in the shortest possible time.

Busses route Desktop application

This project involved the development of a desktop application using C# and SQL to manage bus routes. The application aimed to provide functionalities such as route planning, scheduling, and management of bus-related data.

Restaurant Management Simulation Program

The application involved the implementation of data structure containers such as stack, queue, heap, etc.. in C++. These data structures were utilized to enhance the functionality of tasks such as order management, customer service, or resource allocation within the restaurant setting.

Snake Game

In this project, a classic snake game was developed using the C++ programming language. The game involved creating a snake that moved around the screen, ate food to grow longer, and avoided colliding with its own tail. The game was designed to be challenging and engaging, with increasing difficulty levels as the player progressed.

Operating System Scheduler

In this project, an operating system scheduler was developed using the C programming language. The scheduler was responsible for

managing the execution of processes in the operating system, ensuring that each process received adequate CPU time and that the system remained responsive

VOLUNTEERING & LEADERSHIP

Robotics Club at Zewail City Chairman • Giza	Oct 2017 - Feb 2023
<ul style="list-style-type: none">• Providing conceptual and practical training sessions.• Organizing events and competitions.• Building robots for robotics student competitions.	
IEEE at Zewail City Engineering committee member and Coaching • Giza	Dec 2016 - Sep 2018
<ul style="list-style-type: none">• Coaching 200 students from 8 to 18 years old at 5 Robotics camps.• Involving in technical training in a teamwork environment.	
EMEC at Menofia University Instructors committee member • Menofia, Shebeen El-Kom	Dec 2014 - Aug 2016
<ul style="list-style-type: none">• Providing technical training to new comers in engineering basics and softwares.	
Robotics Club at Menofia University Technical committee member and Graphic designer • Menofia, Shebeen El-Kom	Apr 2015 - Aug 2016
<ul style="list-style-type: none">• Creating graphic designs and media for the organization.• Training on different aspects in Robotics.• Participating in Robotics competitions as organizers and competitors.	

AWARDS & SCHOLARSHIPS

Line Follower Robot Competition - Coach - 1st place Robot Challenge Egypt	May 2018
Referee at VEX Egypt	May 2017
Organizing Team Leader at VEX Egypt	May 2018
Minesweepers Robotics Competition Participant	Aug 2015
Team Leader at Minesweepers Robotics Competition	Aug 2018
Team Leader at Minesweepers Robotics Competition	Aug 2019
Line Follower Robot Competition Participant Kitchen co-working space	Jun 2017
Line Follower Robot Competition - 2nd place Mecato	May 2016
Line Follower Robot Competition Participant ShoubraX	Jun 2016

Wall Follower Robot Competition Participant

Ensala

Jun 2015

Transporter Robot Competition Participant

Minuf Electronics Engineering Faculty

May 2015

Line Follower Robot Competition Participant

Minuf Electronics Engineering Faculty

May 2015

Micro Mouse Robot Competition Participant

Minuf Electronics Engineering Faculty

May 2015

Robot Misr Competition Participant

Aug 2016