IBRAHIM ESSAM ABDELMONEM

Algorithms Engineer.

@ ibrahim.essam1995@gmail.com +201027410918 Cairo, Egypt
in https://www.linkedin.com/in/ibrahimessam github.com/HemaZ ibrahimessam.com

EXPERIENCE

Planning and Control Engineer (Contractor)

AeroVect

11/2020 - Ongoing Remotely

- Developing The motion planning and control software stack.
- Integrating low level control on the vehicle.
- Developing simulations for testing and verification.
- Integrating ROS with the other software components.
- >_ Key Technologies Path Tracking, ROS, Control, Autonomous Driving .

R&D Algorithms Engineer

Avelabs

01/2021 - Ongoing Cairo, Egypt

- Applying and testing algorithms for a new sensor product.
- Developing new algorithms for obstacles detection using Digital signal processing.
- Porting existing algorithms from Python to C++.
- Optimizing and enhancing current algorithms performance.
- Creating benchmark for the current algorithms.
- collecting ground truth data to validate our algorithms against it.
- Creating ROS packages for the product.
- >_ Key Technologies: DSP, ROS, C++, Python, Sensors fusion, Embedded Boards .

Yonohub Developer Advocate

Avelabs

09/2018 - 12/2020 Cairo, Egypt

- Developer Advocate For Yonohub (A cloud-based system for Autonomous Vehicles, ADAS, and Robotics yonohub.com).
- Creating tech content for publication as articles, tutorials and showcase apps to effectively demonstrate use cases of Yonohub.
- Developing new Blocks from the state of the art ML/DL and ADAS Algorithms.
- Preparing Hardware for Local Deployment (Nvidia Jetson AGX Xavier, Raspberry Pi).
- Preparing AVS Datasets for Yonohub, e.g. KITTI, DeepDrive, ApolloScape and Comma.ai
- >_ Key Technologies: Autonomous Vehicles, ROS, Autoware, ML/DL, Cloud .

Bachelor Thesis and Internship

Daimler AG - Mercedes-Benz R&D

02/2017 - 08/2017 Sindelfingen, Germany

- Devleoping a Test Robot for Touch Devices Testing.
- Hardware (Robot Construction,Kinematics and Touch Devices)
- Software (CANoe,CAN-bus,Databases and The Test System)
- Making Tests on The Touch Devices with the Robot to analyze the state and develop improvements.
- Implementing new Algorithms and Data structures for the Robot in MATLAB.
- Programming a Graphical User Interface for the System
- >_ Key Technologies: Delta Robots, MATLAB, CAN bus .

EDUCATION

BSc. Mechatronics Engineering

The German University in Cairo

2018 Cairo

Excellent with Honors

ONLINE DEGREES

Robotics Software Engineer Nanodegree
Certificate — Description

- ROS Essentials.
- Localization.
- Mapping and SLAM.
- Path Planning and Navigation.

Sensors Fusion Nanodegree - Udacity
Certificate — Description

- Lidar Obstacles Detection, Plane Segmentation and PointsCloud Clustering.
- Camera and Lidar Fusion.
- Radar Obstacle Detection.
- Kalman Filters.

C++ Nanodegree - Udacity
Certificate — Description

- C++ Foundations.
- Object-Oriented Programming (OOP).
- Memory Management.
- Concurrency.

PROGRAMMING LANGUAGES

C++ | Python | Java | MATLAB | Bash

FRAMEWORKS AND LIBRARIES

pcl ROS OpenCV K TensorFlow Eigen C++

PROJECTS

- **Pure pursuit C++ ROS package for path tracking.** GitHub
- **ROS package for ngrok to expose local ports to the Internet.** GitHub
- **Author of "Intro. to ROS2" Guided project.** Coursera
- **ROSbag2Videos, Extract videos from ROS bags.** Github
- **Teaching an online ROS2 course on Youtube.** Playlist
- **pclutils a C++ library for working with PointClouds.** Github
- **BaristaBot a robotics simulation package based on ROS and Gazebo.** Github
- **CarSim SFML and ROS based Car Simulator.** Github
- **Concurrent Traffic Simulation.** Github
- **Linux System Monitor C++.** Github
- **Route Planning Project using A* C++.** Github
- **Unscented Kalman Filter to estimate the state of multiple cars.** Github
- **Particles Filter C++ Implementation.** Github
- **Time To Collision System (TTC) based on Lidar and Camera.** Github
- **PointClouds Obstacles Detection, Segmentation and Clustering** Github
- **PyCarMaker (Contributor) Python interface for IPG CarMaker.** Github
- **Jupyter-ROS (Contributor) ROS Support for jupyter notebooks** Github
- **Longitudinal and Lateral Control in CARLA Simulator** Github — Video
- **Deep Reinforcement Learning DQN Agent Playing Space Invaders** Github — Video
- **Road Semantic Segmentation Using Fully Convolutional Network (FCN)** Github
- **Building and Simulating TurtleBot using ROS and Raspberry Pi** Github — Video
- **Optimal LQG Control of Wind Turbine using Kalman Filter**
- **Non-Linear Controller (Feedback Linearization) for 2D Plotter Robot Arm**
- **PID Control of Two-Wheeled Self balancing Robot .** Video
- **Yu-Gi-Oh Video Game in Java** Github — Video

HONORS & AWARDS

Academic Achievement Full Scholarship

The German University in Cairo

2013-2018 Cairo, Egypt

Ranked 7th in Thanwya Amma (High School)

The Egyptian Ministry of Education

2013 Cairo, Egypt

TECHNOLOGIES

ONLINE COURSES

- State Estimation and Localization for SDC
- Introduction to Self-Driving Cars
- ROS1x: Hello (Real) World with ROS
- Electric and Conventional Vehicles
- Machine Learning with TensorFlow on GCP
- Python Parallel Programming Solutions
- Intro to FPGA Design for Embedded Systems
- Agile Software Development
- Control of Mobile Robots

LANGUAGES

- Arabic ★★★★★
- English ★★★★☆
- German ★★☆☆☆