IBRAHIM ESSAM ABDELMONEM

Mechatronics & Robotics Engineer.

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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 ROS, Control, Autonomous Driving .

Robotics Software Engineer

Freelancing

10/2020 - Ongoing Cairo, Egypt

- Developing several Robotics applications for the clients.
- Implementing the state of the art autonomous robotics algorithms.
- Creating Software/Hardware architecture for new projects.
- Scrum master for several projects.
- >_ Key Technologies ROS, AWS, Embedded Boards .

R&D Software Engineer

Avelabs

09/2018 - Ongoing 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
- AV's Sensor Product Algorithms Development Engineer.
- Creating ROS packages for the product.
- >_ Key Technologies: Autonomous Vehicles, ROS, Autoware, ML/DL, Cloud, Embedded Boards .

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, CANoe .

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 ROS package for path tracking. 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
- 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 ★★☆☆☆