Mark Naeem

Robotics and Machine learning Engineer

A mechatronics engineer with hands-on experience in industry and research in machine learning and robotics. Very passionate about cognition and making machines smarter and better.

marknaeem@yahoo.com

+447554566842

Glasgow, United Kingdom

marknaeem.github.io/

linkedin.com/in/mark-naeem

github.com/MarkNaeem

WORK EXPERIENCE

Robotics Software Engineer - Perception
Kingdom Technologies

01/2022 - Present *Glasgow, UK*
Robotic lawn mowers

Achievements/Tasks

- Building a custom navigation stack for efficient large-scale outdoor terrains mapping and navigation
- Enhancing current software architecture
- Planning future development for the next interation of the product
- Developed a robotics-specific CI/CD solution
- Deploying perception modules on the running fleet
- Implemented real-time 3D instance segmentation algorithms (on the edge)
- Enhanced internal communication between sensors, on-board computers, and actuation modules with CAN networking

Machine Learning Research Engineer
Uniparticle

09/2020 - 12/2021 *Cairo, Egypt*

Achievements/Tasks

- published a novel result analysis technique in "Bayesian Knowledge Tracing For Assessment Results Analysis" Paper for the national coding competition NCC and improve the competition quality.
- Built a complete system for computerized adaptive testing CAT
- Improved the quality of adaptive quizzes by introducing various probabilistic student modeling and simulation.
- Optimized the running time of the existing adaptive testing simulations algorithms (from 100-120 to 3-5 secs).
- Used Knowledge Space Theory and deep learning-based recommendation systems to build an adaptive learning engine.

Undergraduate Visiting Researcher
Erasmus+ mobility project

06/2019 - 09/2019 *Preston, Lancashire, UK*
University of Central Lancashire

Achievements/Tasks

- Fully funded undergraduate research scholarship from Erasmus.
- Led a team of undergraduate researchers to fully design, simulate, and manufacture RHex robotic platform .
- Main targets: cultural exchange, soft skills, and research skills.

ASU Racing Team Member
ASU Racing Team, Sussex Ainshams Racing Team

09/2017 - 09/2019 *Cairo, Egypt*

Positions

- **Senior Powertrain Team member - EV FSUK19:** Responsible for battery sizing, cells selection and configuration, Precharge Circuit Design, BMS Selection, Charger sizing, and Wire sizing.
- **Electric Team Member - ICE FSUK18:** Working as an embedded C developer for the engine control unit (*STM32F103C8 microcontroller*), I implemented *ignition, injection timing* algorithms, and *CAN* bus protocol.

TOP SKILLS

C/C++ | Python | Version Control | ROS, ROS2 | Linux, RTOS | Machine Vision | State Estimation | SLAM | Visual Odometry | Tensorflow, Keras, PyTorch | Sensor Fusion | Deep Learning | Motion Planning

PROJECTS

Depth Yolact ROS - ROS package
- A ROS wrapper for yolact instance segmentation with depth image extension for 3D bounding boxes and pointcloud segmentation.

"Bayesian Knowledge Tracing For Assessment Results Analysis" Paper (02/2022)
- Publisher: IEEE, Main Author

IDeepify - Robust face verification and ID data extraction
- IDeepify is a deep learning-based web service that allows for ID validation for Egyptian documents and fraud detection with liveness detection

Swerve Steering Controller in ROS Control- ROS package
- A ROS package to control steering angles and velocities of any given set of wheels with any configurations in a wheeled platform.

Move Base Sequence - ROS package
- (Published on ROS Kinetic/Melodic/Noetic) A ROS action server that handles sending multiple goals execution with the move base (navigation stack)action server.

Autonomous mobile manipulator for agricultural tasks (fruit picking module) - Graduation project. (09/2019 - 07/2020)
- agricultural mobile manipulator controlled by ROS (Navigation, Visual Localization, and arm manipulation), and deep learning for real-time fruit detection and picking tasks.

Linear time-invariant state-space system identification using adam optimization Paper. (02/2020)
- Publisher: IEEE , Main Author

D435i stable outdoor VSLAM - ROS package
- A ROS package that modifies the D435i camera configuration and utilises RTABMap for accurate and stable outdoor localization and mapping

EDUCATION

Mechatronics Engineering (Class of 2020)
Bachelor of Engineering, Ain Shams University

09/2015 - 06/2020 *Cumulative GPA 3.86/4.00*

Scholarships

- Al-Alfi Foundation Scholarship (fall18-spring20)