AHMED SAMI DEIRI

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EDUCATION

Queen Mary University of London - Masters of Engineering in Robotics Engineering
August 2016 - Present (MEng)

Relevant Modules include:

Modelling And Control of Robotic Systems - A more mathematical approach to robotic system analysis covering Forward/Inverse kinematics, Singularity analysis and avoidance, Trajectory planning, dynamics and Lagrangian Mechanics, Linear Control, and Wheeled Mobile Robots. Developed a Matlab program for forward, inverse and dynamic/velocity control of a UR5 Robot arm. Setup and development of algorithms for use with the Turtlebot 3 mobile robot with ROS involving Gazebo simulation, LIDAR SLAM modelling and visual Odometry.

Machine Learning - Covers an in-depth understanding of Machine Learning algorithms and their implementations for use in various applications, with practical development of various methods such as use of Mixture of Gaussians for density estimation. Implementations of these systems was done in Python, however key focus on flexibility in implementation and thorough understanding of these functions and methodologies.

Advanced Robotic Systems - Covers advanced robotic system concepts and calculations involving techniques such as Path planning, Trajectory planning, Function approximation, Dynamic movement primitives, Robot vision and vision based control, and Cognitive Robotics. ROS implementation of systems using nodes, topics, messages such as Publish and Subscribe and Services/Actions using Python. as well as use of MoveIt and Gazebo.

Other Relevant Modules - Machine Learning for Visual Analysis, Artificial Intelligence, Cognitive Robotics, Embedded Systems, Real Time and Critical Systems, Digital Signal Processing, Interactive Systems Design, Design for Manufacture, Control Systems Analysis

University College of London (UCL) Academy - A levels *July 2014 - June 2016*
Mathematics, Physics, Engineering, Economics

PROJECTS

Design and Control of a Robot Hand With Soft Tactile Skin - QMUL 2019-2020
Currently working on the design and control implementation of a 3D printed robot hand alongside a team of engineers. In this project my main roles include, rapid design and prototyping of the robot hand, implementation of control using a closed loop position control system, with extrinsic feedbcak from experimental hall-effect based 3d tactile sensors. To do this I will be using ROS (Robotics Operating System), with simulation and modelling being used to provide awareness, and in hand manipulation.

Mammal Inspired Legged Soft Robot: Design and Control - QMUL 2018-2019
Designed, built and evaluated a legged mobile robot that is capable of walking using a pneumatic input. Explored the field of soft robotic and robotic actuators. Utilised fabrics as compared to traditional soft robots. This project has been presented at the British Conference for Undergrad Research 2019.

Other relevant projects
Won the QMUL Enterprise Try it Award for a Low Cost Robot Arm project that I did independently

Pipe Climbing robot for IMechE challenge - QMUL (Completed)

Pantograph Robot arm design and control with custom PID control using DC motors & encoders

Desktop Rotocasting machine for easy duplication of 3d objects - Independent (completed)

TECHNICAL STRENGTHS

Modeling and Analysis	Autodesk(Inventor, Fusion, Meshmixer), Solidworks, Creo
Software & Tools	ROS, Autodesk Eagle, MATLAB, Simulink, NI Labview, VxWorks
Programming Languages	C, C++, MATLAB, Java, Python, Assembly, HTML
Hardware - Advanced/Trained	FDM 3D Printing, Laser Cutting, Sewing, Silicone Molding
Hardware - Experienced	MIG Welding, CNC Mill, Rotational Molding, Vacuum forming

WORK EXPERIENCE

Ultima Forma Ltd July 2019 - October 2019
Robotics Developer

Worked as a robotics developer to create a robotic system that can replace a manufacturing process traditionally preformed by a human. Full end-to-end design and implemetation was done, ultimately utilising a UR5 robot arm and relays to automate the multi-step process and designing custom jigs and safety routines, with a focus on user interface and human interaction of the system while allowing for optimisation easily by a technician. Tasks preformed at this job include designing programming,CAD/CAM of custom parts, system design, application and testing.

AtkinsGlobal August 2016
Engineer Assistant

Worked as part of a team to survey locations and plot rainwater drainage paths for the Crossrail project. I learnt how to operate as a team within an engineering project, got certified for various activities within the work space and field visits. It was my first insight into the operations of an engineering company and how they operate within the real world.

IDScan Ltd. August 2015
IT Technician

IDScan is an organisation focused on utilising Artificial Intelligence to provide verification of personal identification documentation such as passports, driving licenses and national identity cards. During my time there I worked alongside the technical team to set up the computers and systems used in the ID scanner and preforming any necessary changes to the system. I also visited installation sites to set up the ID scanning systems at venues and provide technical support.

EXTRA-CIRRUCULAR

Queen Mary University AI and Robotics Society 2018-2020
President

Organised a workshop on robot hands that involved teaching new students how to use Arduino, servos and had them make our design of a robot hand.
Robot wars - Organised the first QMUL Robot Wars tournament for which I designed the arena, posters/advertising, gave an introductory talk/ workshops, and hosted the tournament. During my time at the society I have managed to secure strong connections with the university departments, increase memberships from 30 to ¿100 members, enter competitions such as Pi-Wars 2019, and have received praise from the head of departments for my contributions.

Queen Mary University Vipers American Football Team 2017-2018
Equipment Officer

Alongside my position within the team, I organised the hand out of equipment to team members and ensured all equipment that was needed was at a usable level. I looked into new methods and equipment for training to fit within the team's goals. I also managed and designed the team store/merchandise. During that time, the team moved up to being in the top division within the region.