MAURICE RAHME

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PROJECT HIGHLIGHTS

TD3 Reinforcement Learning for Bipedal Robot

Northwestern University Jan 2020 – Mar 2020

- Implemented TD3 algorithm with biologically-inspired reward function.
- Simulated PLEN robot in Gazebo and Pybullet using OpenAI Gym interface
- Designed manual foot trajectory and deployed to real robot.

EKF SLAM on Turtlebot3

Northwestern University Jan 2020 – Mar 2020

- Developed 2D Kinematics library in C++ for Differential Drive robots.
- Wrote feature detection algorithm for LiDAR scanner.
- Performed EKF SLAM with Unknown Data Association.

Baxter Plays Checkers

Northwestern University Nov 2019 – Dec 2019

- Won 1^{st} Place out of 6 teams.
- Together with 3 teammates, programmed a Baxter robot to play checkers.
- Utilized ROS, MoveIt, OpenCV, and a custom AI move generator based on the minimax algorithm with alpha-beta pruning.

BEng Thesis: PATBLC

The University of Edinburgh Jan 2019 – May 2019

- Awarded prize: IMechE Best BEng Project for 2019.
- Developed 2-DOF laser transceivers to command an underwater rover.
- Implemented Kalman Filter and template matching for tracking in LABVIEW.

EXPERIENCE

Building Automation Intern

ASEA BROWN BOVERI (ABB) Dubai, UAE May 2018 – Aug 2018

- Co-designed GRMS layout for the Zabeel One project worth 500,000$.
- Developed automation design tool in VBA that saved 5 hours per client order.

Electrical Engineering Intern - Body Control Module (BCM)

Jaguar Land Rover Gaydon, UK Jun 2017 – Sep 2017

- Received 'Outstanding' grade on performance review (highest possible).
- Implemented task allocation and follow-up system to boost work output, while leading 10-person open issue list meetings.
- Produced BCM code for the 2017 Frankfurt Autoshow in StateFlow.
- Developed a line and wall following RC-car module coupled with a digital strain gauge to supplement JLR's "4x4 in Schools" competition.

Aerodynamics '17 & Suspension '18 Team Manager

Edinburgh Univ. Formula Student Edinburgh, UK Jul 2016 – Jul 2018

- Designed and manufactured Aerodynamic and Suspension components.
- Managed teams of 8-10 people and led training workshops.
- Taught and assisted team members with CAD in SolidWorks.
- Used Simulink to calculate wheel braking and cornering forces.
- Built a MATLAB design tool for Parallel/Ackermann steering design.
- Reviewed design reports and successfully raised £9,000 in sponsorship.

EDUCATION

MSc in Robotics

Northwestern University 2019 – 2020

- GPA: 3.925/4.0

B.Eng (Honors) in Electrical & Mechanical Engineering

The University of Edinburgh 2015 –2019

- First Class (GPA: 4.0)

</> LANGUAGES

C++
Python
C
LabVIEW
MATLAB/SimuLink
VBA

SKILLS

ROS/Gazebo/MoveIt!
Robot Manipulation
PyBullet
Machine Learning
Pytorch
Path Planning
Bayesian Filters
Search Algorithms
Linux
Version Control (Git)
Analogue Electronics
SolidWORKS

AWARDS

IMechE - Best BEng Project
The University of Edinburgh
The Institution of Mechanical Engineers

The Edinburgh Award
The University of Edinburgh

The Spirit of Formula Student
Formula Student UK

LANGUAGES

English
French
Arabic
Spanish