

# MAURICE RAHME

 moribots.github.io

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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<sup>st</sup> 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: 3.85/4.0

### 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	
OpenAI Gym/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	