


# MAURICE RAHME

 moribots.github.io

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## EXPERIENCE

### Robotics Engineer - Stretch

**Boston Dynamics**     Waltham, MA     Nov 2020 – Present

- Wrote on-board arm joint and vacuum pump calibration routine.
- Implemented Navigation and Trajectory Generation library for Atlas.
- Co-authored CAN-interfacing high-rate motor controller code.
- Built bringup software to increase robot assembly rate by 4x.
- Developed actuator characterisation suite for BLDC motors.

### Electrical Engineering Intern - Body Control Module (BCM)

**Jaguar Land Rover**     Gaydon, UK     Jun 2017 – Sep 2017

- Produced BCM code for the 2017 Frankfurt Autoshow in StateFlow.
- Built 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.
- Calculated wheel braking and cornering forces using SIMULINK.
- Built a MATLAB design tool for Parallel/Ackermann steering design.
- Taught CAD in SolidWorks and raised £9,000 in sponsorship.

## PROJECTS

### Quadruped Locomotion from Scratch

**Northwestern University**     Apr 2020 - Aug 2020

- Crafted 12-point Bezier Curve Gait and Leg/Body Inverse Kinematics.
- Simulated custom quadruped in Pybullet with sim2real ROS framework.
- Architected novel Reinforcement Learning method for Terrain Adaptation.
- Designed custom quadruped that can be built for under \$600.

### Motion Planning Library in C++ and ROS

**Northwestern University**     Apr 2020 - Jun 2020


- Implemented scalable Probabilistic Roadmap and Grid Map.
- Developed Library containing A\*, Theta\*, D\* Lite, Potential Fields, MPPI.
- Co-created and taught course for 1 credit at Northwestern.

### 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

- Led 3 teammates to program 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.
- Won 1<sup>st</sup> Place out of 6 teams 🏆.

## EDUCATION

### Northwestern University

**Master of Science in Robotics**     Aug 2020


- GPA: 3.95/4.0

### The University of Edinburgh















**B.Eng (Honors) in Electrical & Mechanical Engineering**     Jun 2019

- GPA: 4.0/4.0; equivalent of First Class


## </> LANGUAGES


C++	
Python	
C	
Bash	
MATLAB	


## SKILLS

Robot Manipulation	
Motion Planning	
Bayesian Filters	
ROS	
Gazebo, Pybullet	
URDF/Xacro	
Optimal Control	
Linux (Ubuntu)	
Version Control (Git)	
Unit Testing	
Altium	
Analogue Electronics	
3D Printing	
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	