# MAURICE RAHME

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## PROJECT HIGHLIGHTS

### Baxter Plays Checkers

**Northwestern University** Nov 2019 – Dec 2019 Evanston, IL

- Programmed a Baxter robot to play a full game of checkers.
- Project completed using ROS, MoveIt, OpenCV, and a custom AI move generator based on the minimax algorithm with alpha-beta pruning.
- Won $1^{st}$ Place out of 6 teams.

### Navigation & Localization Algorithms

**Northwestern University** Sep 2019 – Nov 2019 Evanston, IL

- Implemented an RRT algorithm to navigate geometric and pixel-based maps.
- Wrote a Particle Filter for landmark-based localization of a mobile robot.
- Modelled an obstacle map and programmed offline and online A* algorithms supplemented by a PID controller to navigate it.

### BEng Thesis: PATBLC

**The University of Edinburgh** Jan 2019 – May 2019 Edinburgh, UK

- Designed and built two laser transceivers to command an underwater rover. Inverse Kinematics based motor actuation maintains system uplink.
- Programmed pointing and tracking algorithm using elliptical template matching via occlusion-resistant camera input using Kalman-filtering in LABVIEW.
- Awarded prize: IMechE Best BEng Project for 2019.

## EXPERIENCE

### Building Automation Intern

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

- Co-designed the GRMS layout for the Zabeel One project worth 500,000$.
- **Extension to August:** developed a building automation design tool using VBA. It generates a bill of quotation in PDF format. Saved 5 hours per client order.

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

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

- Received 'Outstanding' grade on performance review.
- Led and took minutes for 10-person open issue list meetings and implemented a task allocation and follow-up system to boost work output.
- Produced BCM code for the 2017 Frankfurt Autoshow in StateFlow.
- Developed a digital strain gauge and line and wall following RC-car module to supplement JLR's '4x4 in Schools' competition.

### Aerodynamics '17 & Suspension '18 Team Manager

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

- Designed and manufactured Aerodynamic and Suspension components.
- Managed teams of 8-10 people in each post 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 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

**Python**
**C++**
**C**
**LabVIEW**
**MATLAB/SimuLink**
**VBA**

## SKILLS

**ROS**
**Robot Manipulation**
**Machine Learning**
**Artificial Intelligence**
**Path Planning**
**Bayesian Filters**
**Linux**
**Version Control (Git)**
**OpenCV**
**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**