

AMRO AL-BAALI

M. Eng Mechanical Engineering

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EDUCATION

M. Eng Mechanical **McGill University**

Graduated May 2021

- CGPA: 3.77/4.00.
- Thesis title: *Augmenting Sensor Measurements with INS Estimates in a Graph Based SLAM Problem.*
- Supervisor: [Prof. J. R. Forbes.](#)

B. Eng Honours Mechanical, Minor in Computer Science **McGill University**

Graduated May 2019

- CGPA: 3.83/4.00. Dean's Honour List 2015, 2018.
- Supervisor: [Prof. J. R. Forbes.](#)

EXPERIENCE

Intermediate Software Developer - Localization and Mapping **Avidbots**

09/2021 – Present

Kitchener, Canada

Develop and maintain the calibration, localization, and mapping algorithms for a robot equipped with a 2D LIDAR and a camera such that it is well localized within a pre-defined map. The primary tools used in this job are **ROS**, **C++**, **Python**, and nonlinear least squares (mainly using [Ceres](#)).

Graduate Student - SLAM **DECAR group**

05/2019 – 08/2021

Montreal, Canada

Developed a SLAM algorithm for an AUV equipped with a third-party INS treated as a black box and a high-precision laser scanner. The primary tools used in the project are: Lie groups, state estimation, optimization (convex, on-manifold), **MATLAB**, and **C++**.

Mechanical Engineering Intern **MY01**

05/2018 – 04/2019

Montreal, Canada

Designed and executed mechanical tests on the MY01 device. This included programming the testing platform using **Python** and customizing Autodesk Vault using **C#**.

Undergraduate Researcher Assistant **DECAR group**

09/2017 – 05/2018

Montreal, Canada

Developed a systematic method of controlling a non-minimum phase system with minimal effect on the performance of the system. **MATLAB** was used in this project (control toolbox, LMIs, optimization).

Teaching Assistant **McGill University**

09/2017 – 04/2021

Montreal, Canada

- **MECH 513 (Control Systems)** (Winter 2021)
- **MECH 309 (Numerical Methods)** (Fall 2019)
- **MECH 412 (System Dynamics and Control)** (Fall 2017)

AWARDS

- Best Seminar Award 2021
- MEUSMA Award, 2019
- NSERC-USRA Award, 2019
- McGill SURE award, 2017
- Habib Abou-Fayssal Prize, 2018
- Dean's Honour List, 2015, 2018
- Rio Tinto-Evans Exchange Award, 2018

SKILLS

Theory

Linear Algebra
Numerical Optimization
Probability
State Estimation
SLAM
Factor graphs
Multiview Geometry
Lie Groups
Computer Vision
Control Systems



Programming

C++
Python
Julia
Bash
MATLAB
LaTeX



Software

Linux
ROS
Docker
Ceres
OpenCV



LANGUAGES

English
Arabic

