AMRO AL-BAALI

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♥ Canada♥ github.com/aalbaali

EDUCATION

M. Eng Mechanical McGill University

05/2019 - 08/2021

- CGPA: 3.77/4.00. Supervisor: Prof. J. R. Forbes.
- Thesis title: Augmenting Sensor Measurements with INS Estimates in a Graph Based SLAM Problem.
- Publication: A. Al-Baali, T. Hitchcox and J. R. Forbes, "Combining DVL-INS and Laser-Based Loop Closures in a Batch Estimation Framework for Underwater Positioning," in *IEEE Journal of Oceanic Engineering*, doi: 10.1109/J0E.2023.3286854.

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

1 09/2014 - 04/2019

- CGPA: 3.83/4.00. Supervisor: Prof. J. R. Forbes.
- Thesis title: Parallel Feedforward Control Using Linear Matrix Inequalities.

EXPERIENCE

Software Developer - Robotics Team Vention

₩ 05/2023 - Present

Montreal, Canada

Mainly responsible for developing and supporting the robot API that allows clients to write custom software that controls the robot operation, both in simulation and on the real robot. The primary tools used in this job are ROS, C++, Python, JavaScript, and Docker.

Software Developer - Localization and Mapping Avidbots

1 09/2021 - 03/2023

♥ Kitchener, Canada

Developed and maintained 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, OpenCV, and nonlinear least squares (mainly using Ceres).

Graduate Student - SLAM DECAR group (McGill University)

1 05/2019 - 08/2021

♥ Montreal, Canada

Collaborated with Voyis and Sonardyne to develop a SLAM back-end algorithm for an AUV equipped with a third-party INS treated as a black box and the Voyis Insight Pro 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

(1) 05/2018 - 04/2019

Montreal, Canada

Designed and executed mechanical tests on the MY01 device to pass the medical certification. This included programming the testing platform using **Python**, which involved designing a GUI for the user. Furthermore, I also customized the CAD storage tool Autodesk Vault using **C**# to generate reports in MY01's standards.

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)

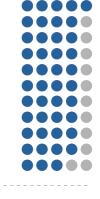
AWARDS

- 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
SLAM
State Estimation
Kalman filtering
Particle filtering
Factor graphs
Computer Vision
Multiview Geometry
Matrix Lie Groups



Programming

Control Systems

C++ Python Julia Bash MATLAB LATEX



Software

Linux ROS ROS 2 Eigen Ceres GTSAM OpenCV Docker



LANGUAGES

English Arabic

