# Beshari Jamal

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#### **Technical Skills**

*Programming:* C, C++, Python, web technologies, Bash, MATLAB.

Software: Solidworks, OnShape, Fusion360, Ansys, Simulink, ROS, Gazebo, Eigen, OpenCV.

Theory: Linear Algebra, Probability, Multiview Geometry, Control Systems.

## **Professional Experience**

# **Avidbots Corp**

Kitchener, ON | Oct 2021 - May 2023

Autonomy software developer (sensors team)

- Developed and prototyped a new AMR navigation sensor layout, integrating 3D design, driver development, and various sensors (RGB cameras, lidars, 3D cameras) into Autonomy, calibration and monitoring systems.
- Robotic experiment design, 2d and 3D vision data analysis for sensor testing and qualification.
- Led the transition from simulation to hardware for a new autonomous robot prototype, resolving incompatibilities through data analysis, cross-team coordination, and code updates.
- Initiated and managed a rapid prototyping space, accelerating innovation within the team.
- Tools used: **OpenCV**, **Linux**, **ROS**, **C++**, **Python**, **Bash**, **Onshape** (3D printing, sheet metal).

#### Allied Scientific Pro: R&D

Gatineau, QC | June 2021 - Oct 2021

Robotics project lead

- Creation of Requirements Documents and Statements of Work, project schedules and estimates.
- Coordination of prototype project activities across software, electrical and mechanical teams.
- Presentation of the project to Canada's IRAP, securing funding for continued development and innovation.
- Skills used: System Engineering, Project Management.

#### Allied Scientific Pro: R&D

Gatineau, QC | Sept 2018 - June 2021

Mechatronics Specialist

- Drove the automation of the laser cleaning and decontamination process forward using robotics through research and needs analysis, conceptual design and prototyping proof of concept subsystems.
- Designed the layout and prototyped a new robotic arm in Gazebo with a perception system that was able to 3D restructure and segment a tabletop object and generate a corresponding constrained tool path.
- Led hardware prototyping activities, through sensors and robotic arm testing, EOAT design, integration of hardware to ROS and software development through the FlexBe behaviour engine.
- Prepare 3D CAD models, detailed drawings, mechanical BOMs, safety documentation and maintenance documentation for 100-watt optical-mechanical systems.
- Commissioned custom optical systems such as LCSs and SEE testing stations for customers.
- Tools used: Linux, ROS, C++, PCL, Moveit!, Fusion360, OnShape, Gazebo

## The University of Ottawa Machine Shop

Ottawa, ON | January 2015 - April 2015

**Production Associate** 

- Consulted the university shop clients on improving mechanical designs for manufacturing.
- Used drills, welding, mills, lathes and CNC machines to manufacture and fabricate engineered products.

#### Education

#### **University of Ottawa**

September 2009 - October 2015

Bachelor of Applied Science: Mechanical Engineering

## **Projects:**

#### **Open Source AMR Vacuum**

Software Developer

- Kitchener, ON | June 2023 Current
- Conceptual Design, Drive train development, control and integration to ROS, Integration of the navigation stack.
- Tools being used: ROS, Arduino, Electronics, C++.

## YesCoach, Personal Web Application

Ottawa, ON | June 2016 - June 2017

Software Developer

• Designed, and developed the user graphics and experience design made in Adobe XD, then into the one-page application using **HTML**, **CSS**, **Angular**, and **Ionic**.

#### Certificates:

- Engineer In Training Program (Pending P.Eng application)
- Laser Safety Certificate
- Workplace Hazardous Materials Information System (WHMIS)
- G-class Ontario Driver's Licence
- Open Water Diver

## **Professional Development Certificates:**

- Coursera: Accelerated Computer Science Fundamentals
- Udacity:
  - Intro to Machine Learning with Pytorch nanodegree, and
  - Robotics Software Engineer Nanodegree
    - Learned about ROS essentials, perception, control, localization, mapping, navigation and use of deep learning in robotics perception and control.
- Yaskawa Motoman Robot Basic Programming Certificate

**Interests:** Systems, robotics, mentoring, designing and prototyping mechatronic systems.