

# Swaleh Owais

ROBOTICIST · CANADIAN CITIZEN · MECHANICAL ENGINEER · PYTHON SOFTWARE DEVELOPER

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## Experience

### Formlabs

Somerville, MA

DESIGN RESIDENT

February 2023 - July 2023

- Effectively used **SLA / SLS 3D printers** to design and build custom **UAV** components.
- Routinely facilitated clients with **3D printing** novel **UAV** prototypes.
- Independently designed complex **3D printed devices** such as **soft robotic grippers** and a **lightweight computer mouse**.

### Polyformer (Open-Source Project - 2022 James Dyson Award Winner)

Kigali, Rwanda

DEPLOYMENT LEAD

May 2022 - February 2023

- Travelled to Rwanda to deploy several filament recycling machines at community makerspaces. Co-recipient of the 2022 **James Dyson Award Sustainability Prize**. Designed a **minimalist filament recycler** that is optimized for low-resource settings.

### Deutsche Gesellschaft für Internationale Zusammenarbeit

Kigali, Rwanda

JUNIOR TECHNICAL CONSULTANT

November 2021 - April 2022

- Ran workshops on **Python programming, robotics, and 3D printing** to help Rwandese entrepreneurs improve business practices.

### RightHand Robotics

Somerville, MA

ROBOTICS SOFTWARE ENGINEER

May 2021 - August 2021

- Used **Bitbucket, Jira**, and an **Agile** methodology to successfully complete tasks within sprint deadlines.
- Effectively worked in a **Linux Env.** and used **Python** scripting to configure new robot cells for customers.

### Autodesk

San Francisco, CA

ADAPTIVE ROBOTICS RESEARCH INTERN

May 2020 - August 2020

- Successfully co-authored and deployed a cross platform **Python** toolkit for simulating industrial robots (**Windows, Linux, OSX**).
- Wrote **C++** wrapper classes to expose runtime of **C++** engine to **Python**. Made detailed documentation for these APIs.
- Routinely used **Git, CMake, Docker**, and other tools to effectively work in a team environment.

### Innovative Automation Inc.

Barrie, ON

CONTROLS ENGINEERING INTERN

May 2019 - August 2019

- Built an interactive **tic-tac-toe playing robot exhibit** with **Python, OpenCV**, and **Universal Robots**.
- Effectively travelled to customer locations to deploy robotics hardware from **FANUC, KUKA, Robotiq**, and **Universal Robots**.

### McMaster University

Hamilton, ON

EDUCATIONAL FULL STACK SOFTWARE DEVELOPER CO-OP

May 2017 - August 2017

- Independently designed a **Python** based **web application** for analyzing CAD files with **NumPy**. Presented at **PyCon Canada**.

ROBOTICS RESEARCH ENGINEER ASSISTANT (PART-TIME)

Sept. 2018 - April 2021

- Facilitated several **robotics** research projects. Routinely, used **Arduinos** and **Raspberry Pis** to build **robotics prototypes**.

## Skills

**Mechanical** Autodesk Inventor, Fusion360, Precision Machining (Lathe+Mill), 3D Printing (SLA+SLS+FDM)  
**Software** Python, ROS, JavaScript, PHP, C/C++, Linux Dev., CMake, Electron, Git, MySQL, Selenium  
**Hardware** Arduino, Raspberry Pi, Universal Robots, AGVs, Inverse Kinematics

## Technical Projects

### Autonomous ROS-based Mobile Robot for Automating 3D Printers

ROS, LINUX, ARDUINO, PYTHON, C/C++, OPENCV, CAD, AUTODESK INVENTOR, GENERAL MACHINE SHOP TOOLS

- Built and programmed a **ROS** based mobile robot for automating 3D printers ( [Demo Video](#), [Documentation](#) ).
- Wrote custom **ROS** nodes with **Python, C++**, and **OpenCV** while working in a **Linux** environment.

## Education

### McMaster University

Hamilton, ON

B.ENG. IN MECHANICAL ENGINEERING AND CO-OP

September 2016 - April 2021

**Part-Time Jobs:** Teaching Asst. for Introduction to CAD, Teaching Asst. for Introduction to Python, Technician for 3D Printing Lab