Swaleh Owais

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Experience

Formlabs *Somerville, MA*

Design Resident *February 2023 - July 2023*

- Lead design of the "Pop-Up Factory" product for Digital Factory 2023, a leading **additive manufacturing** conference. Utilized strong **Fusion360** and **3D printing** skills to take project from concept to mass production within a short timeline. Collaborated directly with the **Fusion360 team at Autodesk**. Communicated with **PCB** manufacturers in Shenzen to manufacture 1000+ units.
- Demonstrated high competency of **Fusion360** and **SLA/SLS 3D printing** to design multiple complex mechanisms that highlight the capabilities of Formlabs 3D printers. Projects include a generative design **UAV** chassis and **soft robotic end effectors**.

Polyformer (Open-Source Project - 2022 James Dyson Award Co-Winner) *Kigali, Rwanda*

Deployment Lead *May 2022 - February 2023*

- Co-winner of the 2022 **James Dyson Award Sustainability Prize**. Travelled to Rwanda to deploy Polyformer extruders at 3D printing makerspaces. Designed **Polyformer-Lite**, a minimalist filament extruder that is easier to build in low-resource settings.

Deutsche Gesellschaft für Internationale Zusammenarbeit *Kigali, Rwanda*

Junior Technical Consultant *November 2021 - April 2022*

- Exercised strong **CAD** and **3D printing** skills to assist Rwandese entrepreneurs in developing locally made products.

RightHand Robotics *Somerville, MA*

Robotics Software Engineer *May 2021 - August 2021*

- 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*

- Co-authored and deployed a cross-platform **Python**/**C++** toolkit for simulating industrial robots with **PyBind11**.
- Used **Autodesk Inventor** to 3D model fixtures and mounting brackets for multiple industrial robots (**Universal Robots**, **KUKA**).

Innovative Automation Inc. *Barrie, ON*

Controls Engineering Intern *May 2019 - August 2019*

- Built an interactive **tic-tac-toe playing robot exhibit** with **Python**, **OpenCV**, **Universal Robots**, and **Autodesk Inventor**.

McMaster University *Hamilton, ON*

Educational Full Stack Software Developer *May 2017 - August 2017*

- Independently designed, built, and launched a **Python** web app. with a **MySQL** database for analyzing 3D CAD files
- The web application has over 500 active users per semester and significantly reduces the workload of teaching assistants. Demo Video: **https://youtu.be/CFAUK3HcKwg**. Presented application at **PyCon Canada 2018**.

Robotics Research Engineer Assistant (PART-TIME) *Sept. 2018 - April 2021*

- Quickly built custom **robotic prototypes** for lab research projects. Effectively used hardware like **Arduinos** and **Raspberry Pis**.

Skills

Robotics/UAV	ROS, Arduino, Raspberry Pi, ESP32, Universal Robots, PX4, RViz, Inverse Kinematics, OpenCV, Linux
Prototyping	3D Printing (SLA+SLS+FDM), Lathe, Mill, Laser Cutters, Soldering+PCB Assembly, General Shop Tools
Mech. Design	Autodesk Inventor, Fusion360, ANSYS, AirShaper
Software	Python, C++, JavaScript, PHP, Matlab, CMake, Docker, Git

Technical Projects

ROS-based Mobile Robot for Automating 3D Printers

ROS, Linux, Arduino, Python, C/C++, OpenCV, CAD, Autodesk Inventor, General Machine Shop Tools

- Designed, built and programmed a ***ROS*** based mobile robot for automating 3D printers (**Demo Video**, **Documentation**).

Education

McMaster University *Hamilton, ON*

B.Eng. in Mechanical Engineering and CO-OP *September 2016 - April 2021*

Part-Time Jobs: Teaching Asst. for Intro. to CAD, Teaching Asst. for Intro. to Python, Research Asst. for Industry 4.0 Robotics Lab