

Swaleh Owais

✉ swaleh.owais@gmail.com | 🏠 www.swal.me | 📞 mso797 | 🌐 SwalehOwais | 📞 Call Me Swal

Experience

Autodesk

San Francisco, CA

ADAPTIVE ROBOTICS RESEARCH INTERN

May 2020 - August 2020

- Interned at the Autodesk AI Lab, in the Office of the CTO.
- Successfully co-authored and deployed a cross platform **Python** toolkit for simulating industrial robots (**Windows, Linux, OSX**).
- Wrote **C++** wrapper classes to expose the runtime of a **C++** engine to **Python**. Made detailed documentation for these APIs.
- Used **Autodesk Inventor** to **3D Model** fixtures and mounting brackets for multiple industrial robots (**Universal Robots, KUKA**).
- 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 - Aug. 2019

- Wrote PLC ladder logic for a robotic trim cell that manufactures components for the 2019 Toyota Highlander
- Developed visually appealing and easy to use HMI, with Indusoft Web Studio 7.1.
- Built an interactive **tic-tac-toe playing robot exhibit** with **Python, OpenCV**, and **Universal Robots**.
- Gained extensive experience working with robotics hardware from **FANUC, KUKA, OMRON, Robotiq**, and **Universal Robots**.

McMaster University

Hamilton, ON

EDUCATIONAL SOFTWARE DEVELOPER CO-OP

May 2017 - Aug. 2017

- Independently designed, built, and launched a web application for automatically grading school assignments.
- Features: Used **NumPy** and basic **linear algebra** to automatically mark course assignments. Created a **PHP / MySQL** backend to store course grades. Integrated an **SMTP** server so that teaching assistants can easily email feedback to students. Designed a modern UI with **Electron, Three.js**, and **JQuery**. Used **Ajax** in **JSON** format to make asynchronous calls to the project server.
- Achieved: 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**.

RESEARCH ENGINEER ASSISTANT (PART-TIME)

Sept. 2018 - Present

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

Skills

Languages Python, JavaScript, PHP, C/C++

Technologies ROS, Linux, CMake, NumPy, OpenCV, Selenium, Node.js, Electron, MySQL, AJAX, JSON

Other CAD, Rapid Prototyping, Prec. Machining, 3D Printing, Robot Kinematics, Arduino, Universal Robots, AGVs

Technical Projects

Autonomous Mobile Robot for Machine Tending (ONGOING)

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 a 3D Printing Lab.
- Effectively used **librealSense** and **AprilTag** fiduciary markers for localization. Demo: https://youtu.be/a8_sCKVJG2w.
- Created **ROS** nodes in **Python** and **C++** for managing tasks like keyboard teleop, image processing, and odometry. Interfaced with robot entirely through **Linux** zsh environment.

Autonomous 3D Printer + Software App. (2018 Hackaday Prize Semi Finalist, Over 500,000+ Views on YouTube)

PYTHON, JAVASCRIPT, ELECTRON, CAD, AUTODESK INVENTOR, LATHE+MILL, GENERAL MACHINE SHOP TOOLS, ARDUINO

- Independently designed, built, and programmed a **custom fully autonomous 3D printer (500,000+ Views)**.
- Made detailed **CAD** models in **Autodesk Inventor**. Wrote a **print queue management app.** with **JavaScript** and **Electron**.

BlinkToText: Text with Eye Blinks - Computer Vision Project

PYTHON, OPENCV, PYQT, NLP

- Used **Python** and **OpenCV** to build a desktop application that allows users to **write/send text messages via eye blinks**.

Education

McMaster University

Hamilton, ON

B.ENG. IN MECHANICAL ENGINEERING AND CO-OP

September 2016 - (Exp.) April 2021

Part-Time Jobs: Teaching Asst. for COMPSCI 1MD3 (Introduction to Python), Teaching Asst. for ENG 1C03 (Introduction to CAD)