

# DANYAL SAQIB

[Github](#) - [Linkedin](#) - [Email](#)

(+1) 587 583 2260 ♦ danyal.saqib@ucalgary.ca

## EDUCATION

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**University of Calgary, Canada** *Sep 2022 - Present*  
MSc Mechanical Engineering *CGPA: 3.90*  
Thesis: “Compliant Control Algorithms for Human-Robot Interaction”  
Major Courses: Mathematical Techniques, Nonlinear Control, Advanced Control Systems, Estimation Theory, Sensor Data and Signal Analysis

**National University of Sciences & Technology (NUST), Pakistan** *Sep 2017 - Jul 2021*  
BE Electrical Engineering *CGPA: 3.59*  
Thesis: “Scalable Self-Supervised Learning for Robotic Grasping”  
Major Courses: Advanced Control Systems, Machine Learning, Embedded Systems Design, Quantum Mechanics, Solid State Electronics

## ACADEMIC EXPERIENCES

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**Research Assistant**, HRC Lab, UCalgary *Sep 2022 - Present*  
Research Assistant at the Human-Robot Collaboration Lab at the University of Calgary. Researching compliant control algorithms for human-robot interaction.

**Teaching Assistant**, Schulich School of Engineering, UCalgary *Jan 2023 - Present*  
Teaching Assistant for the course ENME 505 - Robotics. Responsibilities include designing the assignments, grading, and conducting labs.

**Research Assistant**, ROMI Lab, SEECS, NUST *Aug 2020 - Jun 2021*  
Research Assistant at the Robotics and Machine Intelligence Lab at SEECS, NUST. Did my Final Year Project in the domain of Self-Supervised Robotics using ROS and Neural Network Interfacing.

**Teaching Assistant**, Machine Learning, SEECS, NUST *Aug 2020 - Jun 2021*  
Teaching Assistant for the courses SE807 - Machine Learning and CS470 Machine Learning. Responsibilities include designing the programming tutorials, assignments, and evaluating the students.

## PROFESSIONAL EXPERIENCES

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**Algorithms Engineer**, Adept Tech Solutions *Mar 2022 - Sep 2022*  
Working on various aspects relating to Big Data Processing, Statistical Analysis, Machine Learning, and QA Testing.

**Machine Learning Engineer**, DCube Tech. *Nov 2021 - Mar 2022*  
Deployment of Computer Vision models for real-time media analytics. Major problems include recognition and transcription of text, and facial recognition and classification.

**Computer Vision Intern**, Freelance *Mar 2021 - Aug 2021*  
Work related to Computer Vision research, specifically in the domain of unbiased scene graph generation.

**Deep Learning Intern**, ASP Lab, SEECS, NUST

*Jul 2020 - Oct 2020*

Research Intern at Advanced Signal Processing Lab at SEECS, NUST.  
Projects done in Deep Learning and Computer Vision.

**Scientific Content Writing Intern**, Spectra Science Magazine

*Jun 2018 - Aug 2018*

Focus on key aspects of Scientific Writing such as maintaining scientific accuracy, effective storytelling, appropriate use of figures and facts, and interview skills.

## SELECT PROJECTS

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**Scalable Self-Supervised Learning for Robotic Grasping**, NUST

*Jul 2020 - Jun 2021*

This is my Bachelor's thesis. We created a scalable robotic setup that automates both the collection of data, dataset labelling, and the training of the Neural Network for grasping. Based on papers published by Alex Krizhevsky and Abhinav Gupta.

GitHub Repository: <https://github.com/danyalsaqib/self-supervised-robotic-grasping>

**Unbiased Scene Graph Generation**, Insight SFI Research Centre

*Mar 2021 - Aug 2021*

An implementation of an unbiased scene graph generator using Kaihua Tang's published papers and github repository as references. Some of the work includes addition of windows compatibility, block diagrammatic explanations, and implementation of the SGG as a function on image inputs.

GitHub Repository: [https://github.com/danyalsaqib/SGG\\_Custom](https://github.com/danyalsaqib/SGG_Custom)

**Machine Learning Basics**, SEECS, NUST

*Jun 2020 - Feb 2021*

Creation of tutorials for Machine Learning Basics, as part of the teaching assistantship at SEECS, NUST. Tutorials include coding lessons for the most commonly used libraries in Machine Learning.

GitHub Repository: <https://github.com/danyalsaqib/Machine-Learning-Basics>

**Systematic Comparison of Neural Network Architectures**, NUST

*Jul 2020 - Sep 2020*

Comparing different CNN Architectures using Transfer Learning. Also compared various data augmentation techniques such as geometric transformations, DCT, and DWT.

GitHub Repository: <https://github.com/danyalsaqib/Transfer-Learning-with-Data-Augmentation>

**ARM Microcontroller based DMM**, NUST

*Mar 2019 - May 2019*

Implemented a Digital Multimeter using the ADC on an ARM Cortex M4 based STM32F407 Discovery Board. DMM capabilities included measuring Voltage, Current, and Resistances.

GitHub Repository: <https://github.com/danyalsaqib/ARM-Cortex-Multimeter>

**Resistor Value Reading using OpenCV**, NUST

*Apr 2018 - Jun 2018*

Using OpenCV to determine the Resistance by reading Resistor Colour Coding via Images. Implemented in C++.

GitHub Repository: <https://github.com/danyalsaqib/Colour-Code-Detection>

## SKILLS

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### Programming Languages and Frameworks

- Assembly, C/C++, and RTOS for Microcontrollers - ARM and AVR Platforms
- Python - Scikit-Learn, NumPy, Pandas, and Matplotlib for Machine Learning
- Pytorch, Keras, and Tensorflow for Deep Learning and Computer Vision
- Flask APIs and Dockerfiles
- Engineering Software - Verilog HDL, Matlab, PSpice, Multisim, Proteus, and AutoCAD
- ROS - Robot Operating System for various setups
- Quantum Computing - Qbronze Workshop organized by QPakistan and QWorld

### Languages

- Urdu - Highly Proficient (Mother Tongue)
- English - Highly Proficient (IELTS: 8.5/9.0)
- German - A1

## AWARDS AND SCHOLARSHIPS

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**NUST Merit Scholarship**, NUST *Jul 2019, Jan 2020*  
A Merit Scholarship, provided on a 3.8 and higher semester GPA.

**Roots Merit Scholarship**, Roots School System *Aug 2017*  
100 % Scholarship for A levels studies, based on O level grades.

**LGES High Achievers Scholarship**, Garrison Academy for Boys, LGES *Jun 2012*  
Scholarship for LGES high achievers across all campuses.

## EXTRACURRICULAR ACTIVITIES

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**Baydari - An Awakening**, Non-Profit Organisation *Mar 2021 - Present*  
Founder and Charity Drives Organizer

**NUST Literary Circle**, NUST *Jan 2019 - Sep 2018*  
Graphics Designer

**SEECS Student Government Association**, NUST *Sep 2018 - Jul 2019*  
Graphics Designer

**IEEE SEECS Chapter**, NUST *Sep 2018 - Feb 2019*  
Event Logistics

**Honet-ICT 2018**, NUST *Sep 2018 - Oct 2019*  
Graphics Designer