

DANYAL SAQIB

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EDUCATION

University of Calgary, Canada

Sep 2022 - Present

MSc Mechanical Engineering

CGPA: 3.94

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

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

I have been a Teaching Assistant for the following courses at the University of Calgary:

- ENME 502 - Mechanical Engineering Capstone Project 2
- ENME 501 - Mechanical Engineering Capstone Project 1
- ENME 505 - Robotics

Team Lead - Electrical Engineering, Drillbotics, UCalgary

Sep 2023 - Sep 2024

Team Lead for the Electrical Engineering team of Drillbotics at UCalgary. We secured second place in the international competition for 2024.

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, SEECS, NUST

Aug 2020 - Jun 2021

I have been a Teaching Assistant for the following courses at NUST:

- SE 807 - Machine Learning
- CS 470 - Machine Learning

PUBLICATIONS

Conference Abstracts and Posters

- **Adaptive PD Gains for Energy-Conscious Control in Physical Human-Robot Interaction**, Danyal Saqib, Marie Charbonneau, *Alberta RISE Conference, 2024*

PROFESSIONAL EXPERIENCES

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, and interview skills.

SELECT PROJECTS

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

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>

SKILLS

Programming Languages and Frameworks

- ROS - Robot Operating System for various setups, with a special focus on ros control packages
- RBDL and Pinocchio for Robot Kinematics and Dynamics
- 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
- Quantum Computing - Qbronz 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

Special Trainee Award for Accepted Abstract , Alberta RISE Conference	<i>Sep 2024</i>
Award was given to the first 100 accepted abstracts at the Alberta RISE Conference 2024.	

Competition Winner , Montreal Robotics Summer School	<i>Jun 2023</i>
Winner of the Autonomous Robotic Navigation Challenge at the Montreal Robotics Summer School 2023, held at Mila - Quebec AI Institute.	

NUST Merit Scholarship , NUST	<i>Jul 2019, Jan 2020</i>
A Merit Scholarship, provided on a 3.8 and higher semester GPA.	

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

EXTRACURRICULAR ACTIVITIES

Baydari - An Awakening , Non-Profit Organisation	<i>Mar 2021 - Present</i>
Founder and Charity Drives Organizer	

NUST Literary Circle , NUST	<i>Jan 2019 - Sep 2018</i>
Graphics Designer	

SEECs Student Government Association , NUST	<i>Sep 2018 - Jul 2019</i>
Graphics Designer	

IEEE SEECs Chapter , NUST	<i>Sep 2018 - Feb 2019</i>
Event Logistics	

Honet-ICT 2018 , NUST	<i>Sep 2018 - Oct 2019</i>
Graphics Designer	