

# Ranul Vithanage

Undergraduate, University of Moratuwa, Moratuwa, Sri Lanka

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## RESEARCH INTERESTS

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Human Computer Interaction, Computer Vision, Autonomous Systems, Robotics, Artificial Intelligence

## EDUCATION

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University of Moratuwa, Moratuwa, Sri Lanka

BSc Eng (Hons) in Mechanical Engineering

Dean's List in Semesters 1, 2, 6 and 7

January 2020 — Present

Cumulative GPA: 3.71/4.20

## PUBLICATIONS

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**Robust summoning capabilities for a Patient Assistive Mobile Robot**

(to be published)

- LiDAR based SLAM for Localization and Mapping
- Sound Source Localization for out of line-of-sight navigation
- Gesture Recognition and Depth estimation by Stereo Vision for line-of-sight navigation

**Design and Simulation of a thermally actuated microgripper with active release mechanism for biological micro-manipulation**

(to be published)

- Active Release Plunger works on the principle of Bi-stable Compliant Mechanism
- Novel Design featuring both Pseudo bimorph (U-shaped) and Chevron-shaped (V-shaped) actuators

## PROJECTS

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**Design and Development of a Multi Functional Robotic Walker**

Sep 2023 - Present

- Able to autonomously be summoned to the user's location without relying on Indoor Positioning Systems (IPS).
- Provides active user guidance suiting the user's pace with intuitive control methodology
- Provides sit-to-stand assistance upon estimation of user height through computer vision
- Performs Gait Analysis using a walker-mounted 2D LiDAR device

**Design and Development of a Remote monitoring Robot for Gait Rehabilitation**

- Performs Rhythmic Auditory Stimulation as a rehabilitation aid for users with gait disorders
- Able to monitor real-time gait data remotely by a medical professional using wearable IMUs worn by the user
- Provides feedback for gait improvement to the user even without external monitoring

## PROFESSIONAL EXPERIENCE

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**Dipped Products PLC**

*Industrial Automation Intern*

Kottawa, Sri Lanka

January 2023 — June 2023

- Designed a Glove Washing Station following a Latex Dipping Tank for an automated production line
- Designed an automated glove folding mechanism that integrates with a conveyor belt.
- Designed an automated glove cuff cutting mechanism for Supported gloves improving safety and efficiency
- Designed an automated mechanism for transferring glove formers from drying ovens to latex dipping stations
- Completed 3D designs and detailed drawings for fabrication of components in Glove manufacturing plants

**AIESEC in Nepal***National Head of Talent Management and Organizational Development*

Kathmandu, Nepal

July 2022 — January 2023

- Responsible for Membership Experience Program (MXP) implementation
- Responsible for the National Project Managers
- Responsible for the National Ethics Subcommittee and Membership Subcommittee
- Management of the Talent Management Commission and Network
- Responsible for implementation of the Organizational Development (OD) model
- Responsible for local entity process assessment, improvement and coaching

**COURSES**

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**Bachelor's Courses**

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| <ul style="list-style-type: none"> <li>• Robotics Technology</li> <li>• Object Oriented Programming Using C++</li> <li>• Control Systems &amp; Instrumentation</li> <li>• Industrial Automation</li> <li>• Micro/Nano Electro Mechanical Systems and Nanotechnology</li> </ul> | <ul style="list-style-type: none"> <li>• Biomedical Engineering Applications</li> <li>• Calculus</li> <li>• Linear Algebra</li> <li>• Operational Research</li> <li>• Applied Statistics</li> <li>• Graph Theory</li> </ul> |
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**Additional Courses**

CIMA (Chartered Institute of Management Accountants)

*Certificate Level Completed (Self-learned)***VOLUNTEERING EXPERIENCES**

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**Diriya Arunalu** (Link)*Co-Founder & Educator*

Galle, Sri Lanka

Jan 2019 - Dec 2019

- Co-founded the initiative to support Mathematics education in underprivileged schools in Galle
- Organized numerous teaching sessions in correspondence with school management
- Taught Mathematics to students in Grade 10 and 11 preparing for G.C.E. O/L Examination
- Organized book donations among peers to donate to ill-resourced libraries in the local area

**SKILLS**

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- **Programming:** Python, C++, MATLAB
- **Frameworks:** ROS, Gazebo
- **Libraries:** OpenCV, Numpy, Matplotlib, SciKit-Learn, TensorFlow, PyTorch
- **Software:** SOLIDWORKS, COMSOL, Solid Edge
- **Soft Skills:** Collaboration, Critical thinking, Written/Oral communication.

**REFERENCES**

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**Prof. Y.W.R. Amarasinghe***Mechanical Engineering Department, University of Moratuwa, Sri Lanka*

E-mail: ranama@uom.lk

**Dr. Palitha Dassanayake***Mechanical Engineering Department, University of Moratuwa, Sri Lanka*

E-mail: palitha@uom.lk

**Dr. Dumith Jayathilaka***Mechanical Engineering Department, University of Moratuwa, Sri Lanka*

E-mail: dumithj@uom.lk