

# Chanuka Lihini Tennakoon

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## Education

### M.Sc. in Mechanical Engineering

2019 June - 2023 Nov.

UNIVERSITY OF MORATUWA

Sri Lanka

- Research title: Development of a soft robotic gripper with multiple grasping patterns

### B.Sc. (Hons) in Mechanical Engineering

2014 June - 2018 Dec.

UNIVERSITY OF MORATUWA

Sri Lanka

- Research title: A self-reconfigurable modular robot to help search and rescue missions

## Publications

### PUBLISHED

**C. L. Tennakoon**, A. L. Kulasekera, R. A. R. C. Gopura and D. S. Chathuranga, "PneuNet Based Hybrid Soft Gripper for Multi-Shape Object Handling," in IEEE Access, vol. 12, pp. 190158-190168, 2024, doi: 10.1109/ACCESS.2024.3515265.

**Tennakoon T.M.C.L.**, Kulasekera A.L., Chathuranga D.S., Gopura R.A.R.C., "Effect of geometrical parameters on PneuNet bending performance." 2021 20th International Conference on Advanced Robotics (ICAR), 2021, pp. 738-743, doi: 10.1109/ICAR53236.2021.9659425.

**C.L. Tennakoon**, A. L. Kulasekera, D. S. Chathuranga and R. A. R. C. Gopura, "Variable Stiffness Soft Actuator using Layer Jamming for Food Handling," 2022 Moratuwa Engineering Research Conference (MERCon), 2022, pp. 1-6, doi: 10.1109/MERCon55799.2022.9906262.

S. Himaruwan, **C. L. Tennakoon** and A. L. Kulasekera, "Development and Characterization of an Origami-Based Vacuum-Driven Bending Actuator for Soft Gripping," 2023 IEEE International Conference on Soft Robotics (RoboSoft), Singapore, Singapore, 2023, pp. 1-6, doi: 10.1109/RoboSoft55895.2023.10122080.

**Lihini C.**, Kulasekera A., Chathuranga D. and Gopura R., "Soft robotics to ensure safe food handling," Bolgoda Plains Research Magazine, 2023, pp. 36-38, doi: 10.31705/BPRM.v3(1).2023.9.

### UNDER REVIEW

**C.L. Tennakoon**, S. Himaruwan, A. L. Kulasekera and D. S. Chathuranga, "Self-Reconfigurable Modular Robot - MORABOT," International Journal of Advanced Robotic Systems.

## Research Experience

### Development of a soft robotic gripper with multiple grasping patterns

2019 June - 2023 Nov.

M.Sc. DEGREE BY RESEARCH

University of Moratuwa

- Designed and developed a novel hybrid soft actuator and reconfigurable gripper for adaptive grasping.
- Implemented an ideal grasp detection system using visual feedback.
- Developed a variable stiffness actuator for safe and efficient handling of delicate objects.
- Advisors: Prof. R.A.R.C. Gopura, Dr. K.V.D.S. Chathuranga

### Self-reconfigurable modular robot for search and rescue

2017 Dec. - 2018 Dec.

B.Sc. FINAL YEAR RESEARCH PROJECT

University of Moratuwa

- Developed a self-reconfigurable modular robot for deployment in disaster rescue missions.
- Designed a vision based localization system using fiducial markers.
- Implemented self-assembly and disassembly mechanisms for adaptability in unknown terrains.

## Projects

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### **Design and development of an origami-based soft actuator**

2023 Jan. - Dec.

PROJECT BY COMPUTATIONAL SENSING AND SMART MACHINES LAB

University of Moratuwa

- Developed a soft actuator inspired by origami folding structures.
- Investigated the effectiveness of different origami folding patterns in actuation.

### **Large scale 3D printing platform using a robot arm**

2022 Jan. - Sept.

PROJECT BY DYNAMICSLK (PVT) LTD

Marine Mega Tech, Abu Dhabi

- Developed a large-scale additive manufacturing system for marine vessel components.
- Integrated a KUKA KR 240 R2700 prime robotic arm with a PLA pellet extruder.
- Designed the control system to ensure seamless communication with the KUKA KR C2 controller.

### **Design of a continuum robot arm for pipe inspection**

2023 Dec. - 2024 July

PROJECT BY DYNAMICSLK (PVT) LTD

Dynamicslk (Pvt) Ltd

- Designed a continuum robot arm with tip-following control to navigate tight spaces.
- Designed a control system to improve precision and flexibility.

## Work Experience

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### **Lecturer (On Contract)**

2024 Oct. - Present

FACULTY OF TECHNOLOGY, UNIVERSITY OF SRI JAYAWARDENEPURA

- Conducting lectures in the Mechatronics specialization.
- Teaching topics related to mechatronics design, sensors and automation.
- Supervising final year students research work.

### **Mechanical Engineer - Founding Partner**

2020 March - 2024 July

DYNAMICSLK (PVT) LTD

- Led mechanical design and automation for projects, specializing in robotics, control systems, and product development.
- Designed and implemented custom automation solutions for industrial applications.
- Developed CAD models, structural analyses, and prototype testing for client projects.
- Managed interdisciplinary teams to deliver end-to-end engineering solutions.

### **Visiting Lecturer**

2024 Oct. - Present

ACBT CAMPUS - AUSTRALIAN COLLEGE OF BUSINESS TECHNOLOGY

Sri Lanka

- Teaching Computer-Aided Design (CAD) for Engineering, focusing on manual drawings and Bentley MicroStation.

## Research Interests

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### **Soft Robotics**

### **Modular robots , Swarm robots**

### **Bio-Inspired design**

### **Robotic Manipulators**

## Expertise & Skills

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**Mechanical Design and Analysis :** SolidWorks, AutoCAD, Abaqus CAE

**Programming and Simulation :** MATLAB, Python, Java, PLC Programming

**Graphic Design and 3D Animation :** Blender, Adobe After Effects, Adobe Premiere Pro, Photoshop

**Prototyping and Control :** Robotics, Mechatronics Systems, Automation