




# Siril Teja Dukkupati

sirilteja.dukkupati@ | siril.dukkupati@ | +1-(438)-3456704 |  /Siril-TD |  Website  
4M, 2205 Rue Saint Marc. Montreal, CA. H3H 1E3

## EDUCATION

### McGill University

Montreal, CA

*Ph.D. in Mechanical Engineering; Fast-track*

*Jan. 2022 – Present*

*Master of Science in Mechanical Engineering; **Course CGPA: 4.0/4.0***

*Sep. 2020 – Dec. 2021*

- *Research Interests:* Biomechanics, System Modeling, Mechanical Design
- *Thesis:* Biomechanical design and validation of a benchtop robotic spine with applications in chronic low back pain research

### Manipal University

Manipal, IN

*Bachelor of Technology in Mechanical Engineering; **CGPA: 9.17/10.0***

*Aug. 2016 – May 2020*

- *Specialization:* Mechanical Design
- *Thesis:* 3D-Printing of Self-Healing Soft Robots. *Done at Vrije Universiteit Brussel, Belgium.*

## EXPERIENCE

### Musculoskeletal Biomechanics Research Lab, McGill University

Montreal, CA

*Graduate Research Assistant*

*Sep. 2020 – Present*

- Development of a benchtop robotic spine model with focus on clinical validation of IDP and IMP under different loading scenarios and future applications in new spine prosthetics testing and validation.
- Developed the control system with GUI for the spine in MATLAB and LABVIEW for stabilization and testing. Integrated pressure, position, force sensors through NI-cDAQ system.
- Explored ways to test new spine stability theories with the developed spine model.

*SURE Award Research Assistant*

*May 2019 - Aug 2019*

- Pneumatic Artificial Muscle modeling and integration on the robotic spine with muscle pressure control in MATLAB and LABVIEW for stabilization

### Department of Mechanical Engineering, McGill University

Montreal, CA

*Teaching Assistant - MECH 290*

*Sept 2020 – APR 2021*

- Responsible for conducting regular tutorials for a section of 40 students in the subject of Computer Aided Designing - Design Graphics for Mechanical Engineering.
- Engaged regular classes, developed course material, exercises, assignments.

### R&MM Research Group, Vrije Universiteit Brussel - VUB

Brussels, BE

*Research Assistant*

*DEC 2019 – APR 2020*

- Worked on ways to achieve 3D Printing of Self-healing soft robotic grippers.
- Developed and prototyped a custom print head to facilitate 3D printing with temperature sensitive polymers like DPBM-FGE-FT5000.
- Developed and prototyped a hybrid soft gripper with self healing capability against any cuts due to sharp payloads.

### Design and Analysis Lab, Manipal University

Manipal, IN

*Research Assistant*

*Sep 2019 – Dec 2019*

- Worked on 3D Reconstruction of Human Skull through patient specific CT imagery
- Finite element analysis of the effect of dental implants on skull sutures. Analysed the stress distribution at sutures of interest.

### Mars Society South Asia

IN

*Technical Director*

*May 2019 – Apr 2021*

- Responsible for all the technical and space advocacy activities in all the 8 South Asian countries under MSSA.
- Responsible for the organization of yearly international space technology competitions like Indian Rover Challenge (IRC), International Planetary Areal Systems Challenge (IPAS) etc. under MSSA.

*Advisory committee*

*Apr 2019 - Present*

- Part of the Advisory committee to oversee various activities of the organization.

## PROJECTS

---

### Mars Rover Manipal

Dec 2016 – May 2019

- Worked as a Research lead for the team of 2019 leading a team of 4 undergraduate students in two robotic exploration related research projects - Autonomous bicycle, underactuated robotic gripper.
- Developed a Mars Rover Prototype with autonomous navigation, equipment servicing, astronaut assistance capabilities.
- Secured 1st place worldwide in the inaugural Indian Rover Challenge - IRC 2017, Vellore, India.
- Secured 7th place worldwide and 2nd in Asia at University Rover Challenge - URC 2018, Utah, USA.

### Crawler Bot | *Perma Liner LLC*.

May 2019 – Aug 2019

- Developed a crawler bot to navigate through pipeline systems with map based exploration and repair capabilities.
- Designed a novel drive system inspired by snake movements for the robot to be dexterous to negotiate tight bends.
- Managed a team of 12 undergraduate students throughout the project dealing with company negotiations, technical discussions etc.

## PUBLICATIONS

---

[1] **Dukkipati ST** (2020), "A hybrid soft gripper with self-healing capability", Robotics, Intelligent Automation and Control Technologies - RIACT 2020, Vellore, IN. Selected for *Best Paper Award*.

[2] **Dukkipati ST** (2020), "Self-Healing Soft Robotics: Design Prototyping of a Self- Healing Soft Gripper", Thesis work for Bachelors degree in Mechanical Engineering at Manipal Institute of Technology, IN.

[3] **Dukkipati ST** et al. (2019), "Implementation of the control system on a robotic spine & Validation of the benchtop model", Poster presentation, SURE 2019, McGill University, CA.

[4] **Dukkipati ST** et al. (2018), "Design and analysis of underactuated gripper using Chebyshev lambda mechanism with slip preventive strategy for fragile objects", ICAARS 2018, Coimbatore, IN and Manipal Research Colloquium 2018, Manipal, IN.

## TECHNICAL SKILLS

---

**Languages:** MATLAB, LABVIEW, Python, C/C++, HTML

**Design:** Catia, SOLIDWORKS, AutoCAD, Fusion 360

**Analysis:** Ansys Mechanical APDL & Workbench, Adams

**CAM:** Fusion 360 Machining, MasterCAM; Cura, Prusa & FormLabs printers for 3D Printing

## AWARDS & ACHIEVEMENTS

---

- McGill Engineering Doctoral Award (MEDA), McGill University, Montreal, CA.
- Graduate Excellence Award 2020, McGill University, Montreal, CA.
- Best Paper Award - RIACT 2020 Conference, Vellore, IN.
- Rubin Gruber SURE Award 2019 by McGill University, Montreal, CA.
- Manipal Scholar Award-2016-17 by Manipal University, IN.

## CERTIFICATIONS

---

- WHMIS 2015 Certified.
- English proficiency - IELTS Certified.