

# Chengnan (Jimmy) Shentu

Toronto, Canada

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<https://cshentu.github.io/> • [chengnan-jimmy-shentu](#)

## EDUCATION

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### University of Toronto

*B.A.Sc in Engineering Science*

Robotics Engineering Major, Artificial Intelligence Minor

**Toronto, Canada**

*Sep 2017 - Apr 2022*

## RESEARCH EXPERIENCE

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### Department of Computer Science, University of Toronto | Undergraduate Thesis Student

*Supervised by Prof. Jessica Burgner-Kahrs, Continuum Robotics Lab [website]*

*July 2021 - Present*

- Design and support the development of a modular proprioceptive actuation unit for easier continuum robot prototyping
- Investigate and implement an impedance controller for a planar continuum robot using the actuation units, to achieve dynamic interactions with the environment while ensuring safety

### Department of Computer Science and Technology, Tsinghua University | Research Volunteer (Remote)

*Supervised by Prof. Xin Yi, Pervasive Human-Computer Interaction Group*

*May 2021 - Sep 2021*

- Investigate the risk of side channel attack on head mounted consumer devices, such as VR headsets and smart-glasses, through inertial measurement unit (IMU) by recovering speech or motion information
- Develop custom driver for collecting IMU readings from discrete sensors and consumer devices such as Oculus Quest 2
- Built a training pipeline for speech recognition and speech reconstruction from collected IMU data, and evaluate performance of popular classification and natural language processing models

### University of Toronto Institute of Aerospace Studies | Summer Research Student

*Supervised by Prof. Peter Grant, Vehicle Simulation Group*

*May 2019 - Aug 2019*

- Evaluate existing aircraft stall models and parameter estimation methods through literature review
- Implement mixed parameter estimation to construct a full stall aircraft model from test flight data
- Test and compare model performance using flight and stall simulation in Matlab Simulink

## INDUSTRY EXPERIENCE

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### HiLink Integrated Circuit Lab, Huawei Canada | Application and Test Engineer Intern

*High-speed SerDes development, Application and Test Team*

*May 2020 - Apr 2021*

- Test serializer/deserializer (SerDes) components in high-speed integrated circuits and statistically analyze test data
- Develop and maintain the testing environment software for fully automated tests and data logging
- Collaborate with hardware, firmware and software teams to drive test plans and debugging strategies

## PUBLICATIONS

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- C. Shentu**, R. Grassmann, J. Burgner-Kahrs, "Proprioceptive Impedance Control of a Planar Tendon-Driven Continuum Robot," *Manuscript in preparation*, 2022
- R. Grassmann, **C. Shentu**, J. Burgner-Kahrs, "One Actuation Unit to Create Them All – Toward Torque-Controlled Continuum Robots," *Manuscript in preparation*, 2022

## HONOURS AND AWARDS

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**First Place in the AutoDrive Challenge | Control Team Member** 2021

- AutoDrive is a self-driving car competition initiated by General Motors and SAE International, and eight university teams from across North America participated. [[competition website](#)] [[team website](#)]
- Development of velocity scheduler and model predictive controller with dynamic vehicle model using C++ in ROS
- Test planning and control subsystems for safety and performance in simulation(rviz) and closed track

**ESROP-UofT Fellowship** 2019

- awarded by Engineering Science Research Opportunities Program to pursue a paid summer research internship at University of Toronto

**Deans Honour List** 2017 - 2021