

Chengnan (Jimmy) Shentu

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EDUCATION

University of Toronto

B.A.Sc in Engineering Science

Robotics Engineering Major, Artificial Intelligence Minor

Toronto, Canada

Sep 2017 - Apr 2022

RESEARCH EXPERIENCE

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

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

- 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

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