

# Yunqi Huang

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## EDUCATION

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**Ph.D. in Computer Science, University College London, London, UK** 2023 - Present

Research focus on machine learning techniques for soft robotic interaction modelling and the development of soft sensorized skins for robots. Key responsibilities include the design, fabrication, and characterization of soft robots and sensors, as well as signal and image processing, and dynamic modeling using machine learning techniques. Expertise in dynamic modeling using machine learning techniques and integration of learning algorithms with soft robotic hardware.

**Technical Skills:** MATLAB, Python, Arduino, LaTeX, Solidworks, 3D Printing, Silicone Casting, C++, Linux

**Awards:** UCL Research Scholarship (Fully Funded)

**Master of Engineering in Robotics, National University of Singapore, Singapore** 2021 - 2023

*M.Eng Project: Ocular Surgical Robot with a Novel Vacuum Actuator for Vitreoretinal Surgery*

- Designed an RCM (Remote Center of Motion) mechanism robotic arm and a novel soft vacuum actuator to assist surgeons in holding surgical tools without hand tremors.
- Implemented control algorithms and reinforcement learning to enable cooperative movement between the robotic arm and the surgeon's hand.

**Bachelor of Science in Mechanical Engineering, Harbin Institute of Technology, Harbin, China** 2016 - 2020

*B.Sc Project: Vibration Actuated Spherical Tensegrity Robot Locomotion*

- Designed a spherical tensegrity robot for exploration, including structure design, robot fabrication, dynamic model simulation and control of the robot's vibration-driven gaits.

**Awards:** People's Scholarship in China, National First Prize in 2018 China RoboWork Competition

## WORKING EXPERIENCE

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**Research Assistant, Chinese University of HongKong, HongKong SAR** May 2023 - September 2023

- Developed an adaptive haptic-assisted training framework for surgical robot simulators using reinforcement learning (RL) and shared control methods.
- Integrated RL-predicted trajectories with haptic feedback to enhance hand-eye coordination and surgical skills training in a simulated environment.

## PUBLICATIONS

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- [1] **Huang, Yunqi** and T. G. Thuruthel. "Electrical Impedance Tomography Based Finger-Shaped Soft Artificial Skin". *IEEE Robotics and Automation Letters* (2025), pp. 1–8. DOI: 10.1109/LRA.2025.3557297.
- [2] **Huang, Yunqi**, D. Hardman, C. Bascucci, F. Clemens, and T. G. Thuruthel. "Design and Modelling of Electrical Impedance Tomography-based 3D-Printed Patterned Soft Tactile skins". *2025 IEEE 8th International Conference on Soft Robotics (RoboSoft)*. 2025, pp. 1–6. DOI: 10.1109/RoboSoft63089.2025.11020951.
- [3] **Huang, Yunqi**, A. Y. Alkayas, J. Shi, F. Renda, H. Wurdemann, and T. G. Thuruthel. "Predicting Interaction Shape of Soft Continuum Robots using Deep Visual Models". *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2024, pp. 11381–11387. DOI: 10.1109/IROS58592.2024.10801261.
- [4] **Huang, Yunqi**, P.-P. Aung, C.-B. Chng, J. Wu, and C.-K. Chui. "Robotic Stirring Mechanism with Novel Actuator for an Automated Drug Discovery Workcell". *2023 23rd International Conference on Control, Automation and Systems (ICCAS)*. 2023, pp. 667–672.
- [5] Q. Zhang, **Huang, Yunqi**, C.-B. Chng, C.-K. Chui, and P.-S. Lee. "Investigations on machine learning-based control-oriented modeling using historical thermal data of buildings". *Building and Environment* 243 (2023), p. 110595.

## ACTIVITIES

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### Entrepreneurship

**Co-founder, FINGERDANCE PTE. LTD.**, Singapore 2022 - 2023

- Worked on the development of a smart glove that translates sign language into English and Chinese text, enabling communication for the deaf without interpreters. The glove tracks the hand movement of sign language users with sensors that run along the fingers, before interpreting the words in text via an app paired via Bluetooth.
- The project, incubated in NUS GRIP, secured a **100,000 SGD** investment and won first prize at the Huawei Tech4City Competition in 2022. Interviewed by media: *The Strait Times*, the most-widely circulated newspaper in Singapore.