Zixi Chen（陈子熙）

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Google Scholar link: https://scholar.google.com/citations?user=s78k3cgAAAAJ&hl=en&oi=ao

Research Interest

Continuum robot control; data-driven and learning-based control; soft robotics; vision-based tactile sensing

Education

Scuola Superiore Sant'Anna Oct. 2022 – Oct. 2025
Ph.D. in Biorobotics (with distinction) **Supervisor**: Cesare Stefanini, Arianna Menciassi (IEEE Fellow)
Thesis: Data-driven Control Approaches for Modular Soft Robots

EPFL Aug. 2024 – Oct. 2024
Visiting Ph.D. student **Supervisor**: Prof. Josie Hughes

Imperial College London Oct. 2020 – Oct. 2021
M.Sc. in Control Systems (with distinction) **Supervisor**: Tae-kyun Kim, Binod Bhattarai
Thesis: Data augmentation by adversarial learning

Research and Working Experience

Ultimage Intelligent Technology Co., Ltd. Dec. 2025 – Present
Research Scientist **Cooperation Professor:** Jia Gu
Project: development of a novel continuum surgical robotic system for endoscopic surgery

King's College London and Tsinghua University Nov. 2021 – Sep. 2022
Research Assistant **Cooperation Professors:** Shan Luo, Bin Fang
Project: physics-based optical tactile sensor simulation, RL-based plasticine manipulation

Publications (with five representative publications on top)

Citations: 462 | h-index: 8 (Google Scholar, Feb 2026)

Selected Publications:

- **Z. Chen**, Q. Guan, J. Hughes, et al., "A Versatile Neural Network Configuration Space Planning and Control Strategy for Modular Soft Robot Arms," in ***IEEE Transactions on Robotics***, vol. 41, pp. 4269-4282, 2025.
- **Z. Chen**, X. Ren, Y. Hamamatsu, et al., "AdapJ: An Adaptive Extended Jacobian Controller for Soft Manipulators," in ***IEEE/ASME Transactions on Mechatronics*** (accepted)
- **Z. Chen**, F. Renda, A. Le Gall, et al., "Data-driven Methods Applied to Soft Robot Modeling and Control: A Review," in ***IEEE Transactions on Automation Science and Engineering***, vol. 22, pp. 2241-2256, 2025.

- **Z. Chen**, D. Wu, Q. Guan, D. Hardman, F. Renda, J. Hughes, T. G. Thuruthe, C. Della Santina, B. Mazzolai, H. Zhao, and C. Stefanini, "A Survey on Soft Robot Adaptability: Implementations, Applications, and Prospects," in *IEEE Robotics & Automation Magazine* (accepted)
- **Z. Chen**, M. Bernabei, V. Mainardi, et al., "A Novel and Accurate BiLSTM Configuration Controller for Modular Soft Robots with Module Number Adaptability," in ***Soft Robotics*** (accepted)

Other Publications:

- Y. Sun, S. Zhang, **Z. Chen**, et al., "Soft Contact Simulation and Manipulation Learning of Deformable Objects with Vision-based Tactile Sensor," in *IEEE Transactions on Automation Science and Engineering*, vol. 22, pp. 17618-17630, 2025.
- S. Jing, T. Yao, K. Zhang, D. Wu, Q. Wang, **Z. Chen**, et al., "Ultrasound-Guided Robotic Blood Drawing and In Vivo Studies on Submillimetre Vessels of Rats," 2025 IEEE International Conference on Robotics and Automation (ICRA), Atlanta, GA, USA, pp. 10481-10486, 2025
- Z. Shen, Y. Sun, S. Zhang, **Z. Chen**, et al., "Simulation of Optical Tactile Sensors Supporting Slip and Rotation Using Path Tracing and IMPM," in *IEEE Robotics and Automation Letters*, vol. 9, no. 12, pp. 11218-11225, 2024.
- W. Liu, Y. Shao, Y. Zhang, **Z. Chen**, et al., "DESectBot: Design and Validation of a Novel Two-Segment Decoupled Continuum Robotic System for Endoscopic Submucosal Dissection," 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Abu Dhabi, United Arab Emirates, pp. 6983-6989, 2024
- A. Le Gall, T. Dangel, **Z. Chen**, et al,. "An origami-based fluidic actuator for Minimally Invasive Surgery," ACTUATOR 2024; International Conference and Exhibition on New Actuator Systems and Applications, Wiesbaden, Germany, pp.260-262, 2024
- **Z. Chen**, X. Ren, M. Bernabei, et al., "A Hybrid Adaptive Controller for Soft Robot Interchangeability," in *IEEE Robotics and Automation Letters*, vol. 9, no. 1, pp. 875-882, 2024.
- S. Zhang, Y. Sun, J. Shan, **Z. Chen**, et al., "TIRgel: A Visuo-Tactile Sensor with Total Internal Reflection Mechanism for External Observation and Contact Detection," in *IEEE Robotics and Automation Letters*, vol. 8, no. 10, pp. 6307–6314, 2023.
- **Z. Chen**, S. Zhang, S. Luo, et al., "Tacchi: A Pluggable and Low Computational Cost Elastomer Deformation Simulator for Optical Tactile Sensors," in *IEEE Robotics and Automation Letters*, vol. 8, no. 3, pp. 1239–1246, 2023.
- S. Zhang*, **Z. Chen***, Y. Gao, et al., "Hardware Technology of Vision-Based Tactile Sensor: A Review," in *IEEE Sensors Journal*, vol. 22, no. 22, pp. 21410-21427, 2022.

Academic Service

Peer Review Contributions:
npj Robotics, T-RO, TMECH, T-ASE, SoRo, TIE, T-MRB, RAS, RA-L, IROS, ICRA

Workshops:
I am the main organizer of the serial workshops:

- IROS 2025 workshop 'The SOFT frontier 2: practical applications in soft robotics.'

- IROS 2024 workshop 'The SOFT frontier: adaptive technologies in soft robotics.'

Skills

Language: Mandarin (native speaker), English (IELTS 7.0)
Programming & Tools: Python, C++, MATLAB, ROS, MuJoCo, PyTorch, TensorFlow, Taichi, PyElastica
CAD & Simulation: SolidWorks, AutoCAD