

Curriculum Vitae

Sishen Yuan, Ph.D. candidate (Google Scholar Citations:260 Last Update in Nov. 2024)

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EDUCATION



Ph.D.

Aug. 2021 - May. 2025


 **The Chinese University of Hong Kong**

Department of Electronic Engineering

Robotics, Perception and AI Group

 **GPA: 3.7/4.0**  **NA**

Supervisor: Prof. REN, Hongliang & Prof. MENG, Max Qing Hu

 Research topic: Medical Mechatronics; Translational Biomedical Eng.

Master of Engineering

Sep. 2018 - Dec. 2020


 **Harbin Institute of Technology**

School of Mechanical Engineering and Automation

Major: Mechatronic Engineering

 **GPA: 3.633/4.0**  **Rank: 1/94**

Supervisor: Prof. SONG Shuang & Prof. WANG Jiaole

 Thesis: "Kinematic modeling and position-shape control of magnetically driven flexible robot for cardiovascular intervention"

Bachelor of Engineering

Sep. 2014 - Jun. 2018

 **Harbin Institute of Technology**

Department of Mechanical Engineering

Major: Mechanical Engineering

 **GPA: 3.52/4.0**  **Rank: 11/160**

PUBLICATIONS

- [1] **Yuan, S.** et al. Endotracheal Untethered Retractable Drill Mechanism toward Robot-assisted Endoluminal Inside-Out Dilatation Tracheostomy. **IEEE Transactions on Instrumentation and Measurement**. (under review)
- [2] **Yuan, S.**, Xu, C., Cui, B. et al. Motor-free telerobotic endomicroscopy for steerable and programmable imaging in complex curved and localized areas. **Nature Communications** 15, 7680 (2024).
- [3] T Zhang, **S Yuan**, C Xu, P Liu, H Ren, W Yuan. Towards Electricity-free Pneumatic Miniature Rotation Actuator for Optical Coherence Tomography Endoscopy. 2024 **IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)**.
- [4] Zhang, T., **Yuan, S.**, Xu, C., Liu, P., Chang, H. C., Ng, S. H. C., ... & Yuan, W. (2024). PneumaOCT: Pneumatic optical coherence tomography endoscopy for targeted distortion-free imaging in tortuous and narrow internal lumens. **Science Advances**, 10(35), eadp3145.
- [5] Su S, **Yuan S**, Li Z, Ma Y, Ma M, Ren H. A Wearable, Reconfigurable, and Modular Magnetic Tracking System for Wireless Capsule Robots. **IEEE Transactions on Industrial Informatics**. 2024 Aug 21.
- [6] **Yuan, Sishen**, et al. "Chained Flexible Capsule Endoscope: Unraveling the Conundrum of Size Limitations and Functional Integration for Gastrointestinal Transitivty." **2024 IEEE International Conference on Robotics and Automation (ICRA)**. IEEE, 2024.
- [7] Bai, L., Tan, Q., Chen, T., Nah, W.J., Li, Y., He, Z., **Yuan, S.**, Chen, Z., Wu, J., Islam, M. and Li, Z., 2024. EndoUIC: Promptable Diffusion Transformer for Unified Illumination Correction in Capsule En-

doscopy. **International Conference on Medical Image Computing and Computer-Assisted Intervention** 2024.

- [8] **Yuan, Sishen**, et al. "Magnetic-Guided Flexible Origami Robot toward Long-Term Phototherapy of H. pylori in the Stomach." **2024 IEEE International Conference on Robotics and Automation (ICRA)**. IEEE, 2024.
- [9] Yang, Y., **Yuan, S.**, & Ren, H. (2024). Reversible Elastomer–Fluid Transitions for Metamorphosis Robots. **Advanced Functional Materials**, 34(18), 2311981.
- [10] Su S, **Yuan S**, Xu M, Gao H, Yang X, Ren H. AMagPoseNet: Real-Time 6-DoF Magnet Pose Estimation by Dual-Domain Few-Shot Learning From Prior Model. **IEEE Transactions on Industrial Informatics**. 2023 Jan 4.
- [11] **Yuan S**, Cao S, Xue J, Su S, Yan J, Wang M, Yue W, Cheng SS, Liu J, Wang J, Song S. Versatile Motion Generation of Magnetic Origami Spring Robots in the Uniform Magnetic Field. **IEEE Robotics and Automation Letters**. 2022 Jul 27;7(4):10486-93.
- [12] Ye D, Xue J, **Yuan S**, Zhang F, Song S, Wang J, Meng MQ. Design and control of a magnetically-actuated capsule robot with biopsy function. **IEEE Transactions on Biomedical Engineering**. 2022 Mar 8;69(9):2905-15.
- [13] Song S, **Yuan S**, Zhang F, Su J, Ye D, Wang J, Meng MQ. Integrated Design and Decoupled Control of Anchoring and Drug Release for Wireless Capsule Robots. **IEEE/ASME Transactions on Mechatronics**. 2021 Dec 1. (Supervisor as first author).
- [14] Wang J, Xue J, **Yuan S**, Tan J, Song S, Meng MQ. Kinematic modeling of magnetically actuated robotic catheter in nonlinearly-coupled multi-field. **IEEE Robotics and Automation Letters**. 2021 Aug 13;6(4):8189-96.
- [15] Song S, Wang S, **Yuan S**, Wang J, Liu W, Meng MQ. Magnetic tracking of wireless capsule endoscope in mobile setup based on differential signals. **IEEE Transactions on Instrumentation and Measurement**. 2021 Apr 2;70:1-8.
- [16] Swaminathan R, Cai CJ, **Yuan S**, Ren H. Multiphysics Simulation of Magnetically Actuated Robotic Origami Worms. **IEEE Robotics and Automation Letters**. 2021 Mar 24;6(3):4923-30.
- [17] **Yuan S**, Wan Y, Song S. RectMag3D: A magnetic actuation system for steering milli/microrobots based on rectangular electromagnetic coils. **Applied Sciences**. 2020 Apr 13;10(8):2677.
- [18] Wang M, Li Z, Dai W, Liu R, **Yuan S**, Liu J. On-Chip Transportation and Mixing of Microsample Using Electrohydrodynamic Flow. In **2022 International Conference on Manipulation, Automation and Robotics at Small Scales (MARSS)** 2022 Jul 25 (pp. 1-6). IEEE.
- [19] Tan J, Xue J, Yang X, **Yuan S**, Liu W, Ren H, Song S, Wang J. Model-free and Uncalibrated Visual-feedback Control of Magnetically-Actuated Flexible Endoscopes. In **2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)** 2022 Oct 23 (pp. 5930-5936). IEEE.
- [20] Li Z, Shen D, Zhang H, Tian B, **Yuan S**, Zuo XL, Li YQ. Computer-aided quality-control system for real-time supervision of magnetically controlled capsule endoscopy. **Gastrointestinal Endoscopy**. 2022 Jun 1;95(6):AB249.
- [21] Mao Y, **Yuan S**, Wang J, Zhang J, Song S. Modeling and Control of an Untethered Magnetic Gripper. In **2021 IEEE International Conference on Robotics and Automation (ICRA)** 2021 May 30 (pp. 7274-7280). IEEE.
- [22] Mao Y, **Yuan S**, Song S, Meng MQ. Design of a magnetically-driven untethered micro-gripper for drug delivery. In **2019 IEEE International Conference on Robotics and Biomimetics (ROBIO)** 2019 Dec 6 (pp. 1501-1507). IEEE.

- [23] Ye D, Zhang F, **Yuan S**, Song S, Meng MQ. Magnetically driven wireless capsule robot with targeting biopsy function. In **2019 IEEE International Conference on Robotics and Biomimetics (ROBIO)** 2019 Dec 6 (pp. 1222-1227). IEEE.
- [24] **Yuan S**, Wan Y, Mao Y, Song S, Meng MQ. Design of a novel electromagnetic actuation system for actuating magnetic capsule robot. In **2019 IEEE International Conference on Robotics and Biomimetics (ROBIO)** 2019 Dec 6 (pp. 1513-1519). IEEE.

PATENTS

- [1] Shuang Song, **Sishen Yuan**, et al. A Position Calibration Method Based On Numerical Gradients of Electromagnetic Signals, China Patent, Patent Licensing (CN113375549B). **Intellectual property rights belong to Huawei Technologies Co.**

HONORS & AWARDS

 Finalist	2025/26 RGC Junior Research Fellow (One of 120 selected globally)
 Silver Award	The 13th "Challenge Cup" Entrepreneurship Program Competition for Chinese College Students
 Third-place Award	The 8th Hong Kong University Student Innovation and Entrepreneurship Competition, May. 2022
 Technical Challenge Award	Engineering Medical Innovation Global Competition (EMedic Global 2021), Chow Yuk Ho Technology Centre for Innovative Medicine, Nov. 2021 (1 out of 34)
 National Scholarship 2019-2020	Ministry of Education, China, Nov. 2020
 First-Class Scholarship (Master) × 2	Harbin Institute of Technology, Sep. 2018, Sep. 2019
 Outstanding Graduates	Harbin Institute of Technology, Jun. 2018
 First-Class Scholarship × 2	Harbin Institute of Technology, Sep. 2015, Sep. 2016

PROFESSIONAL ACTIVITIES

Reviewer:

- Information Fusion
- IEEE Transactions on Medical Robotics and Bionics
- IEEE Transactions on Automation Science and Engineering
- IEEE Access
- IEEE International Conference on Robotics and Automation (ICRA). 2022, 2024, 2025
- IEEE International Conference on Intelligent Robots and Systems (IROS). 2022
- IEEE International Conference on Advanced Robotics and Mechatronics (ICARM). 2021
- IEEE International Conference on Robotics and Biomimetics (ROBIO). 2019

Session Chair:

- IEEE International Conference on Robotics and Automation (ICRA). 2021
- IEEE International Conference on Robotics and Biomimetics (ROBIO). 2019

MISCELLANEOUS

Natural Languages:

Chinese (Mandarin), English (Certificate: IELTS **6.5 (6)**, cet-6 **500**), etc.

Programming Skills:

Matlab, C/C++, \LaTeX , etc.

Software & Tools:

Solidworks, Ansys, Photoshop, Premiere Pro, etc.