Jiajun An | https://jiajunan.github.io/

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RESEARCH INTERESTS:

Legged Robotics, Soft Robotics, Agriculture Robotics, Medical Robots, Mechanical Design

WORK EXPERIENCES:

Postdoctoral Researcher Purdue University May. 2024-Apr. 2025

Supervisor: Prof. Upinder Kaur. Department: Agriculture and Biological Engineering (Rank No. 1 US. News).

Postdoctoral Researcher The Chinese University of Hong Kong Aug. 2023-May. 2024

Supervisor: Prof. Xin Ma, Prof. Kwok Wai Samuel Au.

Department: Mechanical and Automation Engineering

Postdoctoral Fellow Multi-Scale Medical Robotics Center Aug. 2023-May. 2024

EDUCATION:

Ph.D. 2023, The Chinese University of Hong Kong (CUHK) Aug. 2018-Jul. 2023

Mechanical and Automation Engineering. Supervisor: Prof. Xin Ma, Prof. Kwok Wai Samuel Au. GPA: 3.787/4.0.

M.Sc. 2018, Purdue University, USA. Aug. 2016-May. 2018

Mechanical Engineering. 3+2 Program (1 year exchange). GPA: 3.823/4.0.

B.S. 2017, Shanghai Jiao Tong University (SJTU) Sep. 2013-Jul. 2017

Mechanical Engineering. Supervisor: Prof. Ruzhu Wang. GPA: 3.79/4.0 (5/37, Tsien Hsue-shen class).

PUBLICATION LIST

[1] **J. An**, X. Ma, C. H. David Lo, W. S. Ng, X. Chu, K. W. Samuel Au, "Design and Experimental Validation of a Monopod Robot with 3-DoF Morphable Inertial Tail for Somersault," in *IEEE/ASME Transactions on Mechatronics*, vol. 27, no. 6, pp. 5072-5083, 2022.

[2] **J. An**, X. Chu, M. J. Schwaner, and K. W. Samuel Au, "Enhanced Aerial Reorientation Performance Using a 3-DoF Morphable Inertial Tail Inspired by Kangaroo Rats," in *IEEE Robotics and Automation Letters*, vol. 9, no. 11, pp. 9470-9477, 2024.

[3] **J. An (co-first author)**, H. Zhang, S. Wang, Z. Li, H. Lin, Z. O. Zeng, Q. Wen, X. Gan, D. Gan, U. Kaur and X. Ma, "Bio-Inspired Soft Variable-Stiffness Prehensile Tail Enabling Versatile Grasping and Enhancing Dynamic Mobility," in *IEEE Robotics and Automation Letters*, vol. 10, no. 6, pp. 5753-5760, 2025.

[4] **J. An**, T. Y. Chung, C. H. D. Lo, C. Ma, X. Chu and K. W. Samuel Au, "Development of a Bipedal Hopping Robot with Morphable Inertial Tail for Agile Locomotion," *IEEE BioRob*, 2020, pp. 132-139.

[5] H. Zhang, **J. An (co-first author)**, T. F. Pan, U. Kaur, Z. Wang, Q. He, and X. Ma, "Miniature Reconfigurable Modular Soft Robots Using Liquid Crystal Elastomer Actuation," *IEEE ReMar*, 2024. (**Best Paper Finalist**)

[6] Y. Tang, **J. An (co-first author)**, X. Chu, S. Wang, C. Y. Wong, and K. W. Samuel Au, "Towards Safe Landing of Falling Quadruped Robots Using a 3-DoF Morphable Inertial Tail," *IEEE ICRA*, 2022, pp. 1141-1147.

[7] X. Chu, M. J. Schwaner, **J. An**, S. Wang, C. P. McGowan, and K. W. Samuel Au, “From behavior to bio-inspiration: Aerial reorientation and multi-plane stability in kangaroo rats, computational models, and robots,” in *Integrative and Comparative Biology*, vol. 64, no. 3, pp. 661-673, 2024.
[8] T. Pan, J. Zhou, Z. Zhang, **J. An**, H. Zhang, J. Hu, Y. Liu, and X. Ma, “Transformable Soft Gripper (TSG): Uniting Grasping and Suction for Amphibious Cross-Scale Objects Grasping,” in *Soft Robotics*, 2024.
[9] X. Wang, S. Wang, Y. Liang, **J. An**, P. Zhu, W. Li, J. Zhou, and X. Ma, “Visual Exploration-Enhanced Quadruped Robot with Active-Passive Composite Telescope Mechanism,” *2024 International Conference on Intelligent Robotics and Automatic Control (IRAC)*, 2024, pp. 198-202. (**Best Paper**)
[10] I. Noronha, A. P. Jawaji, J. Soto, **J. An**, Y. Gu, and U. Kaur, “MBE-ARI: A Multimodal Dataset Mapping Bi-directional Engagement in Animal-Robot Interaction,” *IEEE ICRA*, 2024, accepted.
[11] H. Zhang, T. Pan, J. Zhou, B. Liang, J. Shu, P. Zhu, **J. An**, Y. Liu, X. Ma, “A Variable Stiffness and Transformable Entanglement Soft Robotic Gripper,” *IEEE ICRA*, 2024, accepted.
[12] X. Chu, S. Wang, R. Ng, C. Y. Fan, **J. An**, and K. W. S. Au, “Combining Tail and Reaction Wheel for Underactuated Spatial Reorientation in Robot Falling with Quadratic Programming,” in *IEEE Robotics and Automation Letters*, vol. 8, no. 11, pp. 7783-7790, 2023.

PATENTS

[1] Y. Liu, T. Pan, **J. An**, X. Ma, and J. Zhou, "Soft Grippers, Methods of Making the Same, Systems and Methods of Controlling the Same,” *US Provisional Patent*, US 18/605, 865.
[2] K. W. Samuel Au, **J. An**, X. Chu, T. Y. Chung, C. H. Lo, H. W. Yip, Carlos Ma. “Morphable inertial appendage, systems and associated methods,” *US Provisional Patent*, US 12/064, 869.

GRANT EXPERIENCES

[1] Guangdong Provincial Natural Science Foundation, Research on Key Technologies of Rigid-Flexible Hybrid Tool with High Dexterity, 2023-01-01 to 2025-12-31, 100,000 HKD, in progress, the main participant.
[2] Hongkong RGC General Research Fund, Agile Legged Locomotion based on External Appendage and Null Space Avoidance Control Framework, 2020-01-01 to 2022-12-31, 800,000 HKD, completed, the main participant.

APPLICATION PROOF

• ***Quadrupedal Robot with a Bioinspired Soft Variable Stiffness Tail for Versatile Grasping and Enhanced Mobility***	***Mangdang Technology Co., Limited***	Nov. 2024

PAPER AWARDS

• ***2024 International Conference on Intelligent Robotics and Automatic Control (IRAC)***	***Best Paper***	Nov. 2024
• ***2024 6th International Conference on Reconfigurable Mechanisms and Robots (ReMAR)***	***Best Paper Finalist***	June. 2024

COMPETITION EXPERIENCES

•	**Professor Charles K. Kao Student Creativity Awards**	***2nd Place***	May. 2019
•	**RoboMaster 2018**		Jan. 2018-May. 2018
•	**Purdue Mechatronics Robot Competition**	***2nd Place***	Jan. 2017-May. 2017
•	**The 9th Social Practice and Technological Competition for Energy Conservation and Emissions Reduction**	***2nd Prize***	Feb. 2016-Aug. 2016
•	**RoboMaster 2016**		Jan. 2016-Jul.2016
•	**Mathematical Contest in Modeling America**	***2nd Prize***	Feb. 2015
•	**The 10th *Freescale* Cup National Smart Car Contest**	***1st Prize***	Jan. 2015-Aug. 2015
•	**RoboCup China Open 2014**	***2nd Place***	Jul. 2014-Dec. 2014
•	**The 2nd NAO Robot Online Programming Contest**	***Gold Award***	Feb.2014- Jul.2014

HONORS AND AWARDS

- **Eleme Industry Scholarship** 2014-15, Shanghai Jiao Tong University — Oct. 2015
- **National Scholarship** 2013-14, Shanghai Jiao Tong University — Oct. 2014

TECHNICAL SKILLS

Solidworks, Catia, Auto CAD, MATLAB, C++, Python, Altium Designer, Photoshop.