JIAXI ZHENG

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Education

Dalian Maritime University September 2019 – June 2023
Bachelor of Engineering in Civil Engineering *DaLian, China*
Advisors : Minyi Xu

Research & Work Experience

Carnegie Mellon University August 2023 – Present
Research Assistant *Pittsburgh, U.S.*
Advisors: Howie Choset

Westlake University May 2022 – July 2023
Undergraduate Research Assistant *HangZhou, China*
Advisors: Dixia Fan

The Chinese University of Hong Kong July 2022 – August 2022
Undergraduate Research Assistant *Hong Kong SAR, China*
Advisors: Au, Kwok Wai Samuel

Dalian Maritime University November 2019 – May 2022
Undergraduate Research Assistant *DaLian, China*
Advisors: Minyi Xu, Guangming Xie

Journal Publications

*** - equal contribution**

- **Jiaxi Z**, Peng X, Zhaochen M, Jianhua L, Siyuan W, Xinyu W, Guangming X, Jin T, and Minyi X. *"Design, Fabrication, and Characterization of a Hybrid Bionic Spherical Robotics With Multilegged Feedback Mechanism."* 2022 IEEE Robotics and Automation Letters
- Peng X*, **Jiaxi Z***, Xinyu W, Siyuan W, Jianhua L, Xiangyu L, Guangming X, Jin T, and Minyi X. *"Design and Implementation of Lightweight AUV With Multisensor Aided for Underwater Intervention Tasks."* 2022 IEEE Transactions on Circuits and Systems II: Express Briefs
- Peng Xu*, **Jiaxi Z***, Jianhua L*, Xiangyu L, Xinyu W, Siyuan W, Tangzhen G et al. *"Deep-Learning-Assisted Underwater 3D Tactile Tensegrity."* 2023 Research
- Jianhua L*, Peng X*, **Jiaxi Z***, Xiangyu L, Xinyu W, Siyuan W, Tangzhen G, Guangming X, and Minyi X. *"Whisker-inspired and self-powered triboelectric sensor for underwater obstacle detection and collision avoidance."* 2022 Nano Energy
- Siyuan W, Peng X, Xinyu W, **Jiaxi Z**, Xiangyu L, Jianhua L, Tianyu C et al. *"Underwater bionic whisker sensor based on triboelectric nanogenerator for passive vortex perception."* 2022 Nano Energy
- Xinyu W, Jianhua L, Siyuan W, **Jiaxi Z**, Tangzhen G, Xiangyu L, Tingyu W et al. *"A Self-powered Triboelectric Coral-Like Sensor Integrated Buoy for Irregular and Ultra-Low Frequency Ocean Wave Monitoring."* 2022 Advanced Materials Technologies
- Peng X, Jianhua L, Xiangyu L, Xinyu W, **Jiaxi Z**, Siyuan W, Tianyu C et al. *"A bio-inspired and self-powered triboelectric tactile sensor for underwater vehicle perception."* 2022 npj Flexible Electronics
- Peng Xu, Xinyu W, Siyuan W, Tianyu C, Jianhua L, **Jiaxi Z**, Wenxiang L et al. *"A triboelectric-based artificial whisker for reactive obstacle avoidance and local mapping."* 2021 Research

Conference Publications

- **Jiaxi Z**, Peng X, Zhaochen M, Jianhua L, Siyuan W, Xinyu W, Guangming X, Jin T, and Minyi X. *"Design, Fabrication, and Characterization of a Hybrid Bionic Spherical Robotics With Multilegged Feedback Mechanism."* 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- Jianhua L, **Jiaxi Z**, Peng X, Tingyu W, Jin T, Guangming X, and Minyi X. *"Development of AUV Mechatronics Integration for Underwater Intervention Tasks."* 2021 IEEE International Conference on Automation, Control and Robotics Engineering (CACRE)

- Xiangyu C, Shengzhi W, Minjian F, **Jiaxi Z**, Yuxuan Z, Jing H, and K. W. Au. *"Model-Free Large-Scale Cloth Spreading With Mobile Manipulation: Initial Feasibility Study."* 2023 IEEE International Conference on Automation Science and Engineering (CASE)
- Jianhua L, Peng X, Xinyu W, **Jiaxi Z**, Xiangyu L, Siyuan W, Tianyu C, Jin T, and Minyi X. *"Development of a triboelectric palm-like sensor aiming at underwater perceptual construction."* 2021 China Automation Congress (CAC)
- Xinyu W, Peng X, Jianhua L, Tingyu W, Siyuan W, Tangzhen G, Xiangyu L, Tianyu C, **Jiaxi Z** et al. *"Bio-Inspired Coral-like Sensor Aiming at Ocean Wave Monitoring."* 2021 China Automation Congress (CAC)

Projects

MARCS: Modular Aquatic Robotics for Complex Swarms | *CMU / Westlake University* **February 2023 – Present**
- Developing an innovative underwater robotic swarm system. This system is tailored for executing function-specific tasks in challenging environments, employing a modular approach for enhanced adaptability.

iSWARMs: Intelligent Swarms for Water Analysis Systems | *Westlake University* **May 2022 – February 2023**
- Developed intelligent swarms tailored for water analysis and resilience management systems. It's been an exciting endeavor in harnessing collective intelligence.

Teleoperated legged-manipulator robot system | *The Chinese University of Hong Kong* **July 2022 – August 2022**
- Developed a a teleoperated legged-manipulator robot system, with applications spanning healthcare and logistics. This project underscores the potential of robotics in diverse real-world scenarios.

Underwater Tactile Perception | *Dalian Maritime University / Peking University* **November 2020 – May 2022**
- Designed efficient piezoelectric sensors for autonomous underwater tactile perception tasks. This project underscores the importance of sensory innovation in underwater robotics.

Underwater Vessel Inspection | *Dalian Maritime University / Peking University* **October 2019 – May 2022**
- Developed a comprehensive robotics system encompassing both hardware and software components, for autonomous exploration and manipulation in underwater environments.

Patents

- **Jiaxi Z** et al. *"Design and implementation of lightweight AUV."* 2022, CN, No. 202220689117.5
- Minyi X, **Jiaxi Z** et al. *"An underwater hull cleaning robot with dual cleaning functions."* 2020, CH, No.2020 2 2135954.7
- Minyi X, **Jiaxi Z** et al. *"An adsorption and driving device of underwater hull cleaning robot and its working method."* 2020, CH, No.ZL 2020 1 1027003.6

Robotics Challenges

China Robotic Competition(RCCCAA) | *ROS, Python, C++, Solidworks, GAZEBO* **August 2020 – July 2022**
- Developed a comprehensive robotics system encompassing both hardware and software components, for autonomous exploration and manipulation in underwater environments.
- Won the 1st place and 2nd in the Underwater Circuit Event(AUV) on 2022 and 2020, 1st place in the Underwater Manipulation Event(ROV) on 2022.

"Internet +" Innovation & Entrepreneurship Competition | *Underwater Vessel Inspection* **2022**
- Commercialized the underwater vessel inspection project and secured contracts with vessel companies to implement our programs.
- Won the 1st place in the Undergraduate Event on 2022.

Awards & Honours

Technology Activities Scholarship 2021
Innovation Entrepreneurship Fund 2020, 2021, 2022

Service

Reviewer:
IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS), 2023
IEEE Intl. Conf. on Robotics and Automation (ICRA), 2022