

DU Liang (Dr. Eng.)

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CURRENT AFFILIATION

Senior Researcher (*Postdoc*)

Department of Robotics, Ritsumeikan University, Shiga, Japan

Apr. 2019 – Mar. 2021 (expected)

EDUCATION BACKGROUND

Ph.D. in Mechanical Engineering

Robotics Institute, Shanghai Jiao Tong University (SJTU), China

Apr. 2015 – Mar. 2019

M.S. in Mechanical Engineering

Robotics Institute, Shanghai Jiao Tong University (SJTU), China

Sept. 2012 – Mar. 2015

B.S. in Mechanical Engineering & Automation

Shanghai Jiao Tong University (SJTU), China

Sept. 2007 – Jun. 2011

RESEARCH DIRECTIONS

- Soft robotics: design, modeling, and control
- Robotic system innovative design based on novel robotic mechanisms

SELECTED RESEARCHES

Research on the design, modeling, and control of soft origami robots

Oct. 2019 – Present

- Proposed an origami fabrication method with quick design, easy fabrication advantages that can promote recyclable origami robots for application
- Developed a soft origami robotic gripper for grasping soft food objects in a grasping-safe and hygiene-cleanliness way for the industrial field requirements

Research on Dielectric Elastomer Actuator (DEA) and application as soft mobile robot

Apr. 2019 – Present

- Studied the DEA fabrication process for deformable soft robots, and the modeling and control techniques of DEA based soft robotic structures
- Developed a soft inchworm DEA crawler with simple actuation structure and control requirement for bidirectional locomotion.

Research on a robotic hot stick for overhead live powerline maintenance tasks

Jan. 2018 – Mar. 2019

- Proposed a robotic hot stick solution for the overhead live powerline maintenance tasks with reliable high voltage danger protection and simple operation procedure.
- Developed a robotic hot stick with tool actuation and tool changing ability and a human operator like robotic arm for the teleoperated live powerline maintenance robot.

Research on an explosive ordnance disposal (EOD) robot with full actuated flippers

Jan. 2015 – Dec. 2017

- Proposed a mobile platform with four tracked flippers, in which all flippers and tracks can be actuated separately to achieve high ground mobility and strong terrain adaptability.
- Developed and tested the EOD robot in limit space situations such as building corridors, underground tunnels, public buses and train carriages.

Research on a large toroidal workspace operation manipulator

Jan. 2013 – Dec. 2015

- Proposed an arcuate spreading big arm structure featured manipulator for the tokamak toroidal vessel first wall maintenance task with a large toroidal workspace coverage.
- Developed the manipulator prototype and completed the tokamak toroidal vessel deployment process experiment and the complex tokamak toroidal vessel maintenance task simulation experiment.

SELECTED PUBLICATIONS

- [1] Liang Du, Shugen Ma, Keisuke Tokuda, Yang Tian, and Longchuan Li. Bidirectional Locomotion of a Soft Inchworm Crawler Using Dynamic Gaits. IEEE Robotics and Automation Letters. (*SCI, Q1, IF3.6, Under review*)
- [2] Liang Du, Shugen Ma, Yang Tian, Longchuan Li and Jianjun Yuan. Kirigami Gripper for Soft Food Objects Grasping. Soft Robotics. (*SCI, Q1, IF6.1, Under review*)
- [3] Liang Du, Weijun Zhang, Jianjun Yuan. Design and experimental tests of an active cooling system for a kind of in-vessel inspection manipulator. Industrial Robot. 47/5 (2020), pp. 737-745. (*SCI*)
- [4] Liang Du, Weijun Zhang. A teleoperated robotic hot stick platform for the overhead live powerline maintenance tasks. IEEE International Conference on Advanced Robotics and Mechatronics (ICARM), Osaka, Japan, IEEE, 2019, pp. 337-342. (*EI*)
- [5] Liang Du, Jiabo Feng, Weijun Zhang, Hua Wang. EAST in-vessel operation manipulator with failure recovery ability. Fusion Engineering and Design. 131 (2018), pp. 150-155. (*SCI, Q1*)
- [6] Liang Du, Jiabo Feng, Hua Wang, Weijun Zhang. Design and qualification tests of a robotic joint module for tokamak in-vessel manipulator use. Industrial Robot: An International Journal. 45/3 (2018), pp. 337-342. (*SCI*)
- [7] Liang Du, Jiabo Feng, Tan Chen, Weijun Zhang. Design of a standalone joint module toward real EAST in-vessel operation use. Fusion Engineering and Design. 124 (2017), pp. 522-526. (*SCI, Q1*)
- [8] Liang Du, Jianjun Yuan, Weijun Zhang, Fashe Li. A new trial of tokamak in-vessel inspection manipulator. Fusion Engineering and Design. 98-99 (2015), pp. 1701-1705. (*SCI, Q1*)

OTHER PUBLICATIONS

- [1] Ruoyang Shi, Rui Wu, Dongaolei An, Binghua Chen, Chongwen Wu, Liang Du, Meng Jiang, Jianrong Xu, Lianming Wu. Texture analysis and machine learning of T1 maps and extracellular volume comparing with strain parameters: Differentiation among hypertrophic cardiomyopathy, hypertensive heart disease and normal control. Clinical Radiology (2020). (*SCI*)
- [2] Jianjun Yuan, Renming Guan, Liang Du, Shugen Ma. A Robotic Gripper Design and Integrated Solution Towards Tunnel Boring Construction Equipment. 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE, 2020. (*EI*)
- [3] Shugen Ma, Liang Du, Erina Tsuchiya, and Mana Fuchimi. Paper-Made Grippers for Soft Food Grasping. 2020 17th International Conference on Ubiquitous Robots (UR), Kyoto, Japan, IEEE, 2020, pp. 362-367. (*EI*)
- [4] Ruoyang Shi, Dongaolei An, Binghua Chen, Rui Wu, Liang Du, Meng Jiang, Jianrong Xu, Lianming Wu. Diffusion-weighted imaging in hypertrophic cardiomyopathy: association with high T2-weighted signal intensity in addition to late gadolinium enhancement. Int J Cardiovasc Imaging. (2020), pp. 1-10. (*SCI*)
- [5] Ruoyang Shi, Dongaolei An, Binghua Chen, Rui Wu, Chongwen Wu, Liang Du, Jiong Zhu, Meng Jiang, Jianrong Xu, Lianming Wu. High T2-weighted signal intensity is associated with myocardial deformation in hypertrophic cardiomyopathy. Scientific reports. 9.1 (2019), pp. 1-9. (*SCI, Q1*)
- [6] Liezhi Xu, Damao Yao, Zibo Zhou, Lei Cao, Yaowei Yu, Liang Du, EAST Contributors. Vacuum performance analysis of EAST in-vessel viewing system. Nuclear Fusion and Plasma Physics. 37(2017), pp. 215-219. (*EI*)
- [7] Tan Chen, Weijun Zhang, Jianjun Yuan, Liang Du, Zeyu Zhou. Design of cooling system for inspection manipulator and analysis based on experiment. Industrial Robot: An International Journal. 43/2 (2016), pp. 231-240. (*SCI*)
- [8] Jianjun Yuan, Tan Chen, Fashe Li, Weijun Zhang, Liang Du. Active cooling system for Tokamak in-vessel operation manipulator. Fusion Engineering and Design. 98-99(2015), pp. 1696-1700. (*SCI, Q1*)
- [9] Weijun Zhang, Zeyu Zhou, Jianjun Yuan, Liang Du, Ziming Mao. Analysis and optimization on in-vessel inspection robotic system for EAST. Fusion Engineering and Design. 101 (2015), pp. 192-196. (*SCI, Q1*)
- [10] Jianjun Yuan, Weijun Zhang, Yongtao Song, Liang Du and Feng Li. Design of novel terrain adaptable cascading wheeled mobile platform with passive planetary swing structure. 2011 IEEE International Conference on Robotics and Biomimetics, Karon Beach, Phuket, IEEE, 2011, pp. 2580-2585. (*EI*)