Ximeng Tao

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EDUCATION

National University of Singapore — Singapore
MSc., Mechanical Engineering — Jun. 2023
Cumulative Average Point (CAP): 4.85/5.0

Shandong University — Jinan, China
B.E., Design, Manufacture and Automation in Mechanical Engineering — Jun. 2022
GPA: 91.36/100 (Top 4%)

RESEARCH EXPERIENCE

National University of Singapore — Singapore
Research Engineer — Aug. 2023 - Present

- Worked on the electronics and control part of the port automation project.

National University of Singapore — Singapore
Master's Researcher — Aug. 2022 – Jun. 2023

- Designed controller boards for the shoes of humanoid robot NAO.
- Conducted experiments on the model-free self-calibration method of the humanoid robot NAO.
- Implemented SLAM algorithm A-LOAM for mapping, and navigated autonomous mobile robot in Gazebo.
- Designed a novel sonic crystal structure with double-layered tuneable concentric C-shaped Helmholtz resonators.

Shandong University — Jinan, China
Undergraduate Researcher — Sep. 2018 – Jun. 2022

- Proposed the design of an automated curb stone filling machine and introduced a novel curb stone gap filling device in collaboration with Jinan University and Shandong Hi-speed Road & Bridge Group Co., Ltd.
- Designed a controller board, and wrote control programs for the bone cement remote-controlled injection manipulator. This project is in cooperation with Shandong Dragon Crown Medical Co., Ltd.
- Developed an experimental device using Raspberry Pi as a soft PLC to control servo motors.
- Wrote a program in MATLAB for a small vehicle whose direction is controlled based on a cam, which outputs the corresponding cam according to the desired trajectory.
- Created an intelligent disinfection vehicle based on OpenCV that detects specific objects through a camera and disinfects them.
- Designed a novel underactuated robotic arm based on a parallelogram mechanism.
- Conducted research on continuum surgical robots, and studied the variable stiffness method and control system construction of continuum robots.

LEADERSHIP EXPERIENCE

Mechatronics Class | Shandong University — Jinan, China
Publicity & Psychological Commissioner — 2019-2022

- Organized class activities and wrote promotional articles.
- Provided personal and academic advising to classmates.

ITS Microcomputer Club | Shandong University — Jinan, China
Vice President — 2019-2020

- Prepared course material and slides about C language and microcomputer.
- Taught the basics of microcomputer applications.

PUBLICATIONS

[1] Jiang, B., **Tao, X.**, Han, Y., Li, W., & Chirikjian, G. S. (2023). Model-Free Self-Calibration of Force-Sensing Shoes for Humanoids. *18th International Symposium on Experimental Robotics*.

PATENTS

[1] Fuxin Du, Gang Zhang, Yulong Yuan, Tongrui Zhang, **Ximeng Tao**, Liyan Wei, Tao Zhang, Zihao Wang. Rope-driven flexible exoskeleton power-assisted robot. (CN110861074B) 2022

[2] Fuxin Du, Haojin Yang, Zihao Wang, **Ximeng Tao**, Jiajia Lu, Tao Zhang. High-rigidity flexible full-assembly friction identification servo feeding device and method. (CN110209117B) 2021

[3] Fuxin Du, Jiajia Lu, Gang Zhang, Hailin Sun, **Ximeng Tao**, Lianchen Qu, Zihao Wang, Tao Zhang, Haojin Yang. Variable-stiffness robot for minimally invasive surgery and working method. (CN110123457B) 2021

[4] Yanqiang Lei, Yibing Li, Fuxin Du, Gang Zhang, **Ximeng Tao**, Gan Wang, Tao Zhang. Main manipulator for continuum surgical robot and surgical robot. (CN111449758B) 2021

[5] Fuxin Du, **Ximeng Tao**, Gang Zhang, Hehua Zhang, Jiaqi Chen, Shuo Li, Tao Zhang. Double-operation mode surgical robot capable of realizing multi-hole single-hole interchange. (CN110811838B) 2020

HONORS AND AWARDS

- China National Scholarship (Top 2%) 2019
- Outstanding Academic Scholarship (Top 10%), Shandong University 2019, 2020, 2021
- The Deou Scholarship, Shandong University 2020, 2021
- Research and Innovation Scholarship, Shandong University 2019, 2020
- Entrepreneurship Practice Scholarship, Shandong University 2019, 2020
- National College Mechanical Innovation Competition: Provincial First Prize, Provincial Second Prize, Shandong, China 2019, 2021
- National Undergraduate Engineering Training Integration Ability Competition: Provincial Second Prize, Shandong, China 2021

SKILLS

- C/C++, Python, MATLAB, ROS, SolidWorks, AutoCAD, Altium Designer, etc.