Su Yinyin

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EDUCATION BACKGROUND

The University of Hong Kong (HKU) **Hong Kong, China**
Ph.D. student in Robotics and Control, Faculty of Engineering *Sept. 2020 - Present*
Supervised by Prof. James Lam and Prof. Zheng Wang

University of Chinese Academy of Sciences (UCAS) **Beijing, China**
M.Sc. in General and Fundamental Mechanics, Institute of Mechanics *Sept. 2014-Jun. 2017*
Supervised by Prof. Qi Kang

Northeastern University (NEU) **Shenyang, China**
B.Eng. in Engineering Mechanics *Sept. 2010-Jun. 2014*
GPA: 86.38/100

RESEARCH EXPERIENCE

Robotic arm *Sept. 2020 - Present*
- Developed the real-time ball recognition system based on *Realsense*. Through the full balls covered different colors, the positions and orientations of the end-effector installed in robotic arm can be realized.
- Verified the repeatability experiments and conducted bending experiments and working space experiments for the soft robotic arm via the proposed visual system.

Soft robotic face *May. 2019 - Present*
- Developed the overall pressure control system to drive the artificial face and image capture system to realize the face recognition. The proposed soft face can be implemented to increase the safety of the smart phone.
- Conducted the repeatability experiments, face space experiments and single channels feature experiments for the face.
- Analyzed the feature vectors extracted through the face recognition algorithm to verify the characteristics of the propose soft face.

Washing Machine in Space Station *May. 2016 - Jul. 2017*
- Developed on-orbit cleaning technology in space station to separate gas and liquid under microgravity in the condition of saving water and energy.
- Proposed centrifugal cone-shaped two-phase washing machine and simulated interior flow field of the device with CFD.

Surface Tension Vaned Tank of Satellite Propellant *Jun. 2015 - Dec. 2016*
- Designed a new structure of the satellite propellant tank and proposed the inner *Propellant Management Device* and its corresponding distribution mode.
- Conducted microgravity experiments of tank in drop tower and simulated the same cases to optimize its structure.
- Invited to participate in *Space Tea Cup in Shenzhou 11* and took charge of *drop-tower* experiments.

TianGong2 Space Laboratory (TG2) and ShiJian10 Satellite (SJ10) *Jun. 2015 - Dec. 2016*
- Conducted electrical experiments and mechanical vibration experiments for *Liquid Bridge Subsystem* in TG2.
- Monitored the data of subsystem in TG2 in *Jiuquan Satellite Launch Center* and preliminarily analyzed the experiment results.
- Was responsible for electrical experiments and thermal balance experiments in NSSC, and monitored the data from SJ10.

PROFESSIONAL EXPERIENCE

Southern University of Science and Technology (SUSTech) **Shenzhen, China**
Research assistant in MEE *Apr. 2019 - Aug. 2020*
- Proposed a high-payload hybrid robotic gripper based on the soft actuators, and submit the related paper and video in ICRA 2020. Also, displayed the gripper in *China hi tech fair (CHTF)*, 2018.

- Designed kinematic model and a dedicated experiment platform and control system for the proposed gripper.
- Built the dual-arm robotic experiment platform for *Biorobotic and Control Lab*.

The Chinese University of Hong Kong (CUHK) **Hong Kong, China**
Research assistant in MAE *Oct. 2018 - Apr. 2019*

- Simulated the task with QP controller and tuned the priorities of sub-tasks based on completeness of tasks automatically for open-door task through 6-DOFs arm, .
- Conducted the open-door experiment in UR5 arm and verified the proposed control strategy in real environment.

The Chinese University of Hong Kong, Shenzhen (CUHKSZ) **Shenzhen, China**
Research engineer in Institute of Robotics and Intelligent Manufacturing *Dec. 2017 - Sept. 2018*

- Built a robotic team (IRIM-Solver) to participate in *2018 JDX Robotics Challenge*. As team leader, was in charge of team cooperation, daily management and the overall design of robotic system, and implemented grasp system and vision system. At last, the team reached the final competition and was awarded **RMB 100,000. (10 final teams in the world)**.
- Proposed a control algorithm based on *Quadratic Programming* and *Bayesian Optimization* to tune the priority of multi-task controller automatically in project **Design, control and Scheduling of Logistical Service Robots in Complicated Environments** supported by *NSFC*.
- Wrote and applied the project **Research on Key Technologies of Heterogeneous Logistics Robot System Based on Integration of Human, Robot and Environment (RMB 3,000,000)** supported by *Shenzhen Science and Technology Innovation Committee*.

China General Nuclear Research Institute Co., Ltd. (CGN) **Shenzhen, China**
Assistant engineer *Jul. 2017 - Dec. 2017*

- Conducted research, especially fluid simulation, on fluid-structure coupling of **anti-sloshing design of liquid tank in marine nuclear reactor** supported by *CGN*.

PUBLICATIONS

1. **Yinyin Su**, Zhonggui Fang, Wenpei Zhu, Xiaochen Sun, Yuming Zhu, Hexiang Wang, Hailin Huang, Sicong Liu and Zheng Wang. "A Hybrid Robotic Gripper with High-payload Soft Origamic Actuators and Proprioception", in *IEEE International Conference on Robotics and Automation (**ICRA**) & IEEE Robotics and Automation Letters (**RA-L**)*, 2020.
2. Kang Qi, Wang Jia, Duan, Li, **Su Yinyin**, He Jianwu, Wu Di and Hu Wenrui. "The volume ratio effect on flow patterns and transition processes of thermocapillary convection", *Journal of Fluid Mechanic (**JFM**)*, 2019.
3. **Yinyin Su**, Yuquan Wang and Abderrahmane Kheddar."Sample-efficient learning of soft task priorities through Bayesian optimization" , in *IEEE-RAS 18th International Conference on Humanoid Robots (**Humanoids**)*, 2018.
4. **Su Yinyin**, Wu Di, Duan Li and Kang Qi. "Numerical Simulation of Flow Field in Centrifugal Cone-shaped Two - phase Washing Machine under Microgravity", ***Manned Spaceflight***, 2018.
5. Yongqiang Li, Mingzhu Hu, Ling Liu, **YinYin Su**, Li Duan and Qi Kang. "Study of Capillary Driven Flow in an Interior Corner of Rounded Wall under Microgravity", ***Microgravity Science and Technology***, 2015.

ACHIEVEMENTS & AWARDS

- Honorable Mention in the 2018 JRX ROBOTICS CHALLENGE (RMB 100,000) *Dec. 2018*
- National Xu Zhilun Outstanding Students Award (2 Candidates/province) *Nov. 2014*
- Outstanding Graduates (NEU) *May. 2014*
- National Scholarship *Nov. 2013*
- Honorable Mention in Mathematical Contest in Modeling *Mar. 2013*
- National Scholarship for Encouragement *Nov. 2012*
- The First Prize Scholarship (NEU) *Two times*

- The Second Prize Scholarship (NEU) *Three times*

SKILLS

- **Programming:** C++, Python, Matlab, Qt
- **Applications:** Ros, Ubuntu linux, Ansys, ICEM, Fluent, SolidWorks, Microsoft Word, Excel & Powerpoint, Latex, Photoshop, Premiere Pro, etc.
- **Language:** Mandarin (native), English (working language), basic Cantonese (could listen formal TV news).