Xin Lang

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Yungu Campus of Westlake University, Hangzhou City, Zhejiang Province
Interests: Deep Learning, RL, Soft Robot, Robot Control.

Education

2022.9 – 2023.9 **M.E. Mechanical Engineering** in Chongqing University (Voluntary dropout).

2018.9 – 2022.6 **B.E. Mechanical Design, Manufacture and Automation,** in Southwest University of Science and Technology.
Thesis title: *Development of Small Quadruped Robot*.
Overall GPA: **4.28/5.0** Rank: **3/310**

Research Experience

2023.9 – now **R.A. Research Assistant** in Wang Donglin' Lab, Westlake University.

Research Assistant

2024.2 – 2024.7 **Koopman-Based Robust Learning Control With Extended State Observer,**

- Contributions: code implementation, paper writing (**Co-first Author**).
- Propose RAL Algorithm, a general fast learning and robust control algorithm with Koopman Operator.
- Publish in *Robotics and Automation Letters*
- Paper link: https://ieeexplore.ieee.org/document/10842507 (**Accepted**).

2023.9 – 2024.2 **Rl2ac: Reinforcement learning-based rapid online adaptive control for legged robot robust locomotion,**

- Contributions: Algorithm conception and code implementation.
- Propose RL2AC Algorithm, Address the robustness and generalization of reinforcement learning in robot.
- Publish in *Robotics: Science and Systems* 2024 (**Westlake University first paper**)
- Paper link: https://roboticsconference.org/program/papers/60/ (**Accepted**).

Undergraduate

2021.6 – 2022.6 **Development of Small Quadruped Robot,**

- Complete and realize quadruped robot structure design, manufacture, circuit and PCB design, control algorithm, prototype deployment and so on.
- School-level excellent graduation project.

2020 – 2021 **Soft rod-climbing robot inspired by winding locomotion of snake,**

- Contributions: Control system design and experiment.
- The first pole-climbing soft robot.
- Public in *Soft robotics*. **(Highly cited)**

2019 – 2020 **Bionic torus as a self-adaptive soft grasper in robots,**

- Contributions: Propose idea, structural design, experiment and control.
- A passive bionic soft gripper is presented, which can grasp sand, paper, irregular geometric objects, etc.
- Paper link: https://doi.org/10.1063/1.5128474 (**Highly cited**).

Publications

Articles

1. S. Lyu*, **X. Lang***, and D. Wang, "Koopman-based robust learning control with extended state observer," *Robotics and Automation Letters*, 2024, **(Co-first author)**.
2. S. Lyu, **X. Lang**, H. Zhao, H. Zhang, P. Ding, and D. Wang, "Rl2ac: Reinforcement learning-based rapid online adaptive control for legged robot robust locomotion," *Robotics: Science and Systems XX*, 2024, **(Compilation of key scientific and technological developments of Westlake University in 2024)**.
3. H. Zang, B. Liao, **X. Lang**, Z.-L. Zhao, W. Yuan, and X.-Q. Feng, "Bionic torus as a self-adaptive soft grasper in robots," *Applied Physics Letters*, vol. 116, no. 2, 2020.
4. B. Liao, H. Zang, M. Chen, *et al.*, "Soft rod-climbing robot inspired by winding locomotion of snake," *Soft robotics*, vol. 7, no. 4, pp. 500–511, 2020.

Authorized Patents

1. "Flying quadruped robot," 2021-07-20, China, CN202130189311.8.
2. "Snake-like winding soft actuator," 2019-04-26, China, CN201910161779.8.
3. "A soft actuator simulating frog tongue and its application," 2019-05-17, China, CN201910161804.2.

Personal Experience

Project

2021 **Study on snake-like winding software actuator and its application**, Southwest University of Science and Technology.

2019 **Soft robot technology and its industrial application**, Sichuan students' platform for innovation training program. **(Project Leader)**

Awards and Achievements

2021 **Provincial second prize**, China College Students' 'Internet+'Innovation and Entrepreneurship Competition. **(Project Leader)**

Provincial first prize, The "Challenge Cup".

2020 **National first prize**, National University Students' Opt-Sci-Tech Competit. **(Project Leader)**

Sichuan Province comprehensive quality A level certificate, Southwest University of Science and Technology.

National Encouragement scholarship.

Science and technology Innovation Award, Southwest University of Science and Technology.

School level merit student, Southwest University of Science and Technology.

School level excellent Communist Youth League member, Southwest University of Science and Technology.

2019 **National Encouragement scholarship.**

Skills

Coding	Python, C, C++, ROS.
Software	UG, SolidWorks, CAD, Matlab, Altium designer, COMSOL.
Hardware	Arduino, STM32.
Office.	Office, PS, PR, LaTex.