# HANG YUAN

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## EDUCATION

**Xi'an Jiaotong-Liverpool University (XJTLU)**
Year 3 | Major in Mechatronics and Robotics Systems (rank top 5)

## PUBLICATIONS

[1] **Yuan H.**, Zhang W. (2019) A Novel Hedgehog-Inspired Pin-Array Robot Hand with Multiple Magnetic Pins for Adaptive Grasping. In: Yu H., Liu J., Liu L., Ju Z., Liu Y., Zhou D. (eds) *International Conference on Intelligent Robotics and Applications (ICIRA)* 2019. Lecture Notes in Computer Science, vol 11744. Springer, Cham. https://doi.org/10.1007/978-3-030-27541-9_56.

[2] **Yuan H.** Research Status and Prospects of Adaptive Robotic Hands (CN). *Science and Technology & Innovation*, 2019(04):10-11+15. doi: 10.15913/j.cnki.kjycx.2019.04.010.

[3] Zhu, J., **Yuan, H.**, Zhang, Q. *et al*. (2022) The impact of short videos on student performance in an online-flipped college engineering course. *Humanities and Social Sciences Communications* 9, 327. https://doi.org/10.1057/s41599-022-01355-6.

[4] Yuan, W., **Yuan, H.**, Jiao, K. *et al*. (2023) Facile Microembossing Process for Microchannel Fabrication for Nanocellulose-Paper-Based Microfluidics. *ACS Applied Materials & Interfaces, 15*(5), 6420-6430. https://pubs.acs.org/doi/10.1021/acsami.2c19354.

[5] **Yuan, H.**, Yuan, W., Duan, S. *et al*. (2023) Microfluidic Assisted *Caenorhabditis elegans* Sorting: Current Status and Future Prospects. *Cyborg and Bionic Systems*. https://spj.science.org/doi/10.34133/cbsystems.0011.

[6] Song, P., Ou, P., Wang, Y., **Yuan, H.** *et al*. (2023) An ultrasensitive FET biosensor based on vertically aligned $MoS_2$ nanolayers with abundant surface active sites. Analytica Chimica Acta, 341036. https://www.sciencedirect.com/science/article/pii/S000326702300257X.

[7] **Yuan H.**, Yong, R., Liu, S. *et al*. (2023) A Centrifugation-Assisted Lateral Flow Assay Platform for Bioassay Sensitivity and Visualization Enhancement. 45$^{th}$ *Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'23)*. [Research posters abstract - 1 page.]

[8] Yuan, W., **Yuan H.**, Duan, S. *et al*. (2023) Highly-integrated SERS-Based Immunoassay NanoPADs for Early Diagnosis of Alzheimer s Disease. 45$^{th}$ *Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'23)*. [Research posters abstract - 1 page.]

## PATENTS

[1] **Hang Yuan**, Wenzeng Zhang. Adaptive robotic hand device for force-controlled rapid gripping of pole gripper groups:, CN109571539A[P]. 2019.

[2] **Hang Yuan**. Hedgehog-like magnetic drive rod ball adaptive robotic hand device:, CN109397278A[P]. 2019.

[3] **Hang Yuan**. A magnetic drive linkage leveling robot hand device:, CN109531610A[P]. 2019.

## RESEARCH EXPERIENCES

**Research on microfluidic field** **01.2022-Current**
XJTLU Intelligent Microsystems Laboratory
XJTLU research assistant and SURF project member *Supervisor: Pengfei Song & Quan Zhang*

- Engaged in the field of microfluidic research, using centrifugal devices to assist biological detection

- Design and manufacture of devices, test strips, and sample solutions for lateral flow assay (LFA) to achieve increased biological detection sensitivity
- Write a review of microfluidic-assisted *C. elegans* sorting

**Research on Humanoid Robot and Bionic Robot** **10.2021-10.2022**

XJTLU research assistant *Supervisor: Min Chen & Quan Zhang*

- Arrange robotic action sets and display processes
- Design and build simple humanoid robots using 3D printing, Arduino, steering gear, *etc*.

**Research on Parametric and Lightweight Design of Free Shape Exoskeleton** **05.2021-09.2021**

XJTLU Summer Undergraduate Research Fellowships (SURF) Project

SURF project volunteer *Supervisor: Min Chen*

- Use simulation software ANSYS (workbench) in designing exoskeletal robots to implement parameterization
- Completed the mechanical part and the biped robot technical report and participated in a national robot competition

**Research based on $20^{th}$ and $21^{st}$ ROBOMASTER National University Robot Competitions** **11.2020-10.2022**

XJTLU Embedded Artificial Intelligence Hardware Universities-Enterprises Joint Key Laboratory

Mechanical Group Member-Sentry developer/ Investment Manager *Supervisor: Chun Zhao*

- Developed and designed the whole sentry robot and the chassis drawings of the engineering robot in RoboMaster
- Improved quick disassembly structure and Single muzzle head
- Took charge of the team's investment (Received sponsorship totaling 60,000 RMB in 2022)

## HONOURS & AWARDS:

- The $1^{st}$ Prize of 2022 RoboMaster University Championship in the $21^{st}$ National University Robot Competition *National Regional* 2022-2023
- The $1^{st}$ Prize of 2022 RoboMaster University Championship in the $21^{st}$ National University Robot Competition *Eastern China Regional* 2022-2023
- The $1^{st}$ Prize of 2022 RoboMaster University Championship in the $21^{st}$ National University Robot Competition *Standard Robot Strength Award* 2022-2023
- The $2^{nd}$ Prize of 2022 RoboMaster University Technical Challenge in the $21^{st}$ National University Robot Competition "Standard Racing and Smart Firing" *Eastern China Regional* 2022-2023
- The $3^{rd}$ Prize of 2022 RoboMaster University Technical Challenge in the $21^{st}$ National University Robot Competition "Standard Racing and Smart Firing" *National Regional* 2022-2023
- The $2^{nd}$ Prize of 2021 RoboMaster University Championship in the $20^{th}$ National University Robot Competition *South China Regional* 2021-2022
- The $2^{nd}$ Prize of 2021 RoboMaster University Technical Challenge in the $20^{th}$ National University Robot Competition "Standard Racing and Smart Firing" *National Regional* 2021-2022
- The $3^{rd}$ Prize of 2021 RoboMaster University Championship in the $20^{th}$ National University Robot Competition *National Regional* 2021-2022
- The $1^{st}$ Prize of 2021 China Engineering Robotics Competition and International Open Championship Vision Robotics Project Vision Robot Recognition Competition (Undergraduate) Project Competition 2021-2022
- The $2^{nd}$ Prize of 2022 RoboMaster University League (Online) 3V3 Confrontation in the $21^{st}$ National University Robot Competition 2022-2023
- The $2^{nd}$ Prize of 2021 RoboMaster University League (Jiangsu Province) Standard Robot Confrontation in the $20^{th}$ National University Robot Competition 2021-2022
- The $3^{rd}$ Prize of 2021 RoboMaster University League (Jiangsu Province) 3V3 Confrontation in the $20^{th}$ National University Robot Competition *Sentry Robot Strength Award* 2021-2022
- The $3^{rd}$ Prize of the 8th China International "Internet+" Student Innovation and Entrepreneurship Competition 2022-2023
- The $3^{rd}$ Prize of the 8th "Internet+" Student Innovation and Entrepreneurship Competition (Jiangsu Province) 2022-2023

- The $3^{rd}$ Prize of the 12th "Challenge Cup" Student Entrepreneurial Plan Competition (Jiangsu Province) 2022-2023
- The $3^{rd}$ Prize of 2022 Changzhou "International Intelligent Manufacturing" Innovation and Entrepreneurship Competition Robotics and Intelligent Hardware Challenge 2022-2023
- The $3^{rd}$ Prize of 2022 China-U.S. Young Maker Competition Suzhou Division *(6/77)* 2022-2023
- The Excellence Award and the Best Popularity Award of Yangtze River Delta (YRD) Intellectual Property Innovation and Application Competition 2022-2023
- The $1^{st}$ Prize of XJTLU Global Entrepreneurial Dream-chasers Competition 2022-2023
- The $No.1$ in China "Internet+" Student Innovation and Entrepreneurship Competition of XJTLU 2022-2023
- The $No.1$ in China "Internet+" Student Innovation and Entrepreneurship Competition of XJTLU 2021-2022
- *Outstanding Class Buddy,* **XJTLU** 2022-2023
- *Outstanding Student,* **XJTLU** 2021-2022
- *Outstanding Class Cadre,* **XJTLU** 2020-2021
- *Excellent Student Cadre,* **XJTLU** 2020-2021
- *Excellent Student Cadre,* **Jiangsu Province** 2022-2023
- *Entrepreneurship Star,* **2023 XJTLU i-Star** 2023-2024
- *Entrepreneurship Star,* **2022 XJTLU i-Star** 2022-2023
- *Pioneer Award,* **2020 I-Link of XJTLU** 2020-2021
- *Excellent model,* **2020 Military training of XJTLU** 2020-2021

## INTERNSHIP EXPERIENCES

*Summer internship,* **Suzhou Non-Fish Cultural Media Company Limited** **08.2021-09.2021**
- Deep exposure to industrial robots, AGVs, AR/VR/MR real-scene applications and project planning
- Communicate with suppliers and make working memos to provide reasonable purchasing solutions

## EXTRACURRICULAR ACTIVITIES

*President & Liaison Minister,* **XJTLU Sagittarius Astronomy Club** **03.2021-03.2022**
- Planned and organized astronomical observation activities, obtained “2022 Best Cooperation Club”
- Gave lectures on astronomy to high school students of XJTLU-affiliated schools

*Vice President*, **XJTLU Tea Club** **12.2020-12.2021**
- Planned and prepared event proposals on the theme of tea

*Liaison Minister,* **XJTLU G-Master Robot Club** **03.2021-03.2022**
- Designed and organized activities related to intra-school robot battles

*Project Leader,* **XJTLU College student entrepreneurship project-Inkless** **05.2021-05.2022**
- Write part of business plan and do roadshow presentation
- Provide technical support and operation of projects with 3D printing

*Project Leader,* **XJTLU College student entrepreneurship project-ESGrow** **05.2022-05.2023**
- Founded Yuanhe Technology (Changzhou) Co., Ltd. with the support of Changzhou Wujin district government
- Provide technical support for urban farm intelligent solutions

*Corporation &Executive Director,* **Yuanhe Technology (Changzhou) Co., Ltd.** **10. 2022-Current**

*Student lecturer,* **XJTLU Optional Course** **03.2021-12.2021**
- *Y1S2 & Y2S1 Unlocking robotic hands* optional course
- Taught students the basics of mechanical and robotic hands

*Student Mentor,* **XJTLU-Affiliated school** **09.2021-08.2022**
- Teach astronomy, tea art, incense, robotics, 3D printing, etc.

## OTHERS

**Computer Skills & Software:**

- SolidWorks, AutoCAD, 3ds Max, Rhino, SketchBook
- ANSYS (workbench), MATLAB, LTspice, Dr. Frame2D
- Adobe Premiere, Adobe Illustrator, KeyShot, Snagit, Origin
- C language, Arduino

**Language:** Mandarin (Native), English

**Hobbies:**

- Astronomy (The President of XJTLU Sagittarius Astronomy Club and Luoyang NO.1 Senior High School Astronomy Club)
- Robotics (Four designed robotic hand inventions)
- Tea culture *(*The Vice President of the tea club*)*
- 3D printing (Familiar with FDM and LCD 3D printers, and the relevant project won the championship of the school competition)