

# Shuhong Wang

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## RESEARCH INTERESTS

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Fabrication, Sustainability, Robotic Materials, Tangible Interface, Crafts, Sensing, Smart Materials, **Open to new things!**

## EDUCATION

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**Zhejiang University, School of Computer Science and Technology**

**Hangzhou, CN**

Bachelor of Art in Product Design & double major in Psychology

Sept. 2019 - present

- GPA: 3.92/4.0, Ranking: 2
- Relevant coursework: Computer Aided Industrial Design, Python Programming, Product and Fabrication, Design Innovation Practice, Design Thinking & Expression, User Experience Design.

**Ludwig Maximilian University of Munich**

Exchange in Master's Neuro-Cognitive Psychology Courses

Oct. 2021 – Mar. 2022

- Relevant coursework: Basic Neuro-Cognitive Psychology, Reaction Time and Psychophysical Methods.

**The Hong Kong Polytechnic University, School of Design**

Exchange in the BA (Hons) in Interactive Media

Jan. 2021 – May. 2021

- Relevant coursework: Furniture design, User Interface Design, Communication Design.

## PUBLICATIONS AND SUBMISSIONS

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### Publications

1. T, Y., **Wang, S.**, Ji, J., ... Wang, G. 2023. 4Doodle: 4D Printing Artifacts Without 3D Printers. In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23). Association for Computing Machinery, New York, NY, USA, Article 731, 1–16. <https://doi.org/10.1145/3544548.3581321> (**Project leader as the first student author**)
2. Cui, Z.\*, **Wang, S.\***, Li, J., Luo S., Ion, A. 2023. MiuraKit: A Modular Hands-On Construction Kit For Pneumatic Shape-Changing And Robotic Interfaces. In Proceedings of the 2023 ACM Designing Interactive Systems Conference (DIS '23). Association for Computing Machinery, New York, NY, USA, 2066–2078. <https://doi.org/10.1145/3563657.3596108> (**\*The two authors contributed equally**).
3. Wang, G., **Wang, S.**, Ye, T., Pan, D., Yang, Y., Chen, Y., ... & Tao, Y. 2021. 4D Doodling: Free Creation of Shape-Changing Decoration with A 3D Printing Pen. In Adjunct Proceedings of the 34th Annual ACM Symposium on User Interface Software and Technology (UIST '21 Adjunct). Association for Computing Machinery, New York, NY, USA, 70–73. <https://doi.org/10.1145/3474349.3480232> (**Project leader as the first student author**)

### Submissions

4. Cui, Z., **Wang, S.**, Anonymous author, Hudson, S., Ion, A. Robotic Metamaterials. Under revision at CHI 2024, went into the 2nd round with one A&R and one R&R. <https://drive.google.com/file/d/1tIn8qej3DZ8HwDhvfrQFsZ2PzE4TUeTx/view?usp=sharing>
5. Tucker Rae-Grant., **Shuhong Wang**, Lining Yao. ExCell: High Expansion Ratio Moisture-Responsive Wooden Actuators for DIY Shape-Changing and Deployable Structures. Under revision at CHI 2024, went into the 2nd round with one A&R and 3 R&Rs. [https://drive.google.com/file/d/19W\\_nx-BHLXmTNVmC9Jk3ru22kgDpORTz/view?usp=sharing](https://drive.google.com/file/d/19W_nx-BHLXmTNVmC9Jk3ru22kgDpORTz/view?usp=sharing)
6. Jianzhe Gu, Ziwen Ye, Tucker Rae-Grant, **Shuhong Wang**, Josiah Hester, Vickie Webster-Wood, Lining Yao. Muscle Synergy Inspired Evolution of Actuator Network. Under revision at Nature Machine Intelligence.

### Manuscripts

7. **Shuhong Wang**, Anonymous authors, Lining Yao. Autonomous Buoyancy Control by Magnesium Divers Inspired by Blue Algae. Manuscript, plan to submit to Nature.
8. Jianzhe Gu, **Shuhong Wang**, Lining Yao. Dissolvable Pneumesh. Plan to submit to IROS 2024.

### In Progress

9. **Shuhong Wang**, Lining Yao. A roadmap. Plan to submit to Journal of Physics: Condensed Matter IOPscience. before Feb 2024.

## RESEARCH EXPERIENCE

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### Morphing Matter Lab, University of California, Berkeley

**Remote**

*Research Associate* | *Supervisor: Professor Lining Yao*

Start from Jan. 2024 - Sep. 2024 (expected)

- Leading the project Diver [6]: developing an untethered, electronic-free, and self buoyancy control underwater robot.
- Working on a literature review [8].

### Morphing Matter Lab, Carnegie Mellon University

**Pittsburgh, PA** July. 2023 - Oct. 2023

*Research Associate* | *Supervisor: Professor Lining Yao*

**Remote** Nov. 2023 - Dec. 2023

- Leading the project Diver [6]: developing an untethered, electronic-free and self buoyancy control underwater robot.
- Researching on sustainable fabrication, robotics, and tangible interfaces. Supported the projects Morphing Wood [5], Muscle Synergy [6], and Dissolvable Pneumesh [7].

### Interactive Structures Lab, Carnegie Mellon University

**Pittsburgh, PA**

*Research Associate* | *Supervisors: Professor Alexandra Ion, Scott Hudson*

May. 2022 – Sep. 2023

- Co-led the project Miurakit, a pneumatic construction kit to enable novices without fabrication method and specialized hardwares to build shape-changing interfaces, robotics, and deployable structures. Published a full paper at DIS 2023 [2].
- Researched Robotic Metamaterial [4], a mechanical system consisting of a flexible, passive, shearing lattice structure, as well as rigid and active unit cells to be inserted into the lattice for configuration.

### Guanyunlab, International Design Institute at Zhejiang University

**Hangzhou, CN**

*Research Associate* | *Supervisors: Professor Guanyun Wang, Ye Tao*

Jan. 2021 – Sep. 2022

- Led 4Doodle, a method to enable novices to freely make 4D morphable crafts without 3D printers. Published and presented a full paper at ACM CHI 2023 [1] and a poster at ACM UIST 2021 [3].

## ACADEMICS SERVICE

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- ACM UIST 2024 Visual Identity Chair Oct. 2023 to present
- Reviewer: ACM Chinese CHI 2023 Sep. 2023

## SELECTED AWARDS AND RECOGNITIONS

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- Won the ‘Gold Prize’ in the National Internet + Competition (**first author**) (**ranked top 0.01% in China**) 2023
- ¥20,000 Won the second prize in ‘Xingquan Cup’ Social Enterprise Innovation and Entrepreneurship Competition 2022
- ¥10,000 Won the second national prize in the WeChat Application Development Competition (**first author**) 2020
- ¥20,000 Won the third prize at the ‘Energy Conservation and Emission Reduction Competition’ 2021
- Won the second prize in the Chinese mobile application development competition (**first author**) 2020
- ¥5,000 Won the Excellence Prize in the Chinese environmental protection competition 2020

- ‘Design for the visually impaired group’ Won the silver award in the National Student Business Plan Competition. 2022
- Awarded the ‘Excellent Student’ at Zhejiang University (**10 students at Computer Science College every year**) 2022
- ¥5,000 Won the ‘Gold Award’ in the Zhejiang Province Innovation Competition 2022
- Won the second prize at ‘Merck’ Career Planning Competition (**rank the 3rd among 300 students**) 2020
- Photography ‘Yuancao’ was selected for the China Art Newspaper Exhibition 2020
- Won the second prize at the Zhejiang University Industrial Design Competition 2021
- Awarded the ‘outstanding student’ at Zhejiang University. 2020 & 2021
- ¥12,000 Awarded the ‘first prize scholarship’ at Zhejiang University. 2020 & 2021
- Awarded the ‘Student Innovation and Entrepreneurship Award’ 2020 & 2021 & 2022
- Awarded the ‘Student Excellent Social Work Award’ 2020
- Awarded the ‘Student Excellent Academic Performance Award’ 2020 & 2021
- Awarded the ‘Student Pioneer of International Exchange Award’ 2022

### SELECTED SCHOLARSHIPS

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- ¥20,000 in total, Awarded the Highest Scholarship for University students (**0.2% in China**) 2020 & 2021
- ¥10,000 Won the first prize in Fashion and Design Scholarship (**2 students every year**) 2022
- ¥20,000 Won ‘Shangtang Scholarship’ in China (**30 university students in China**) 2022
- ¥6,000 Awarded Zhejiang Province Scholarship 2023
- ¥6,000 Research Scholarship at Zhejiang University 2021-2023
- ¥5,000 Scholarship for the Exchange Program at Ludwig Maximilian University of Munich 2022
- ¥3,000 Won the ‘Excellent Research Project Scholarship’ at Zhejiang University 2020

### ACADEMIC AND INVITED TALKS

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- Presented a full paper of 4Doodle at CHI 2023 in Hamburg April. 2023
- Presented a poster of 4Doodle at UIST 2021 Oct. 2021
- Gave a talk of 4Doodle at TUE, hosted by Ronghao Liang. April. 2023
- Gave a talk at ZJU, hosted by Guanyun Wang. Nov. 2023

### PATENTS

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- Chinese Utility Model Patent: A Solar Collector for Waste Heat Recovery and Utilization in Micro Data Centers 2021
- Chinese Appearance Design Patent: A Learning Machine for the visually Impaired Group 2021
- Innovation Patent: A Design and Fabrication System for 4D Printing with a 3D Pen Under MR Guidance, Under review 2023

### STUDENTS MENTORED

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- Bo Zhao, Undergraduate, Mechanical Engineering, Zhejiang University 2023
- Linlin Cai, Undergraduate, Industrial Design, Zhejiang University 2022
- Zhiqi Wang , Undergraduate, Industrial Design, Zhejiang University 2022
- Yilin Ye, Graduate, Product Design, Zhejiang University 2022
- Zhiqi Wang , Undergraduate, Industrial Design, Zhejiang University 2022
- Junxian Li, Graduate, Computer Science, Zhejiang University 2023

## SKILLS

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- **Language:** English: Tofel score: 108, over one year living in the US
- **Fabrication:** 3D printing (included repair machines), 4D printing, SLA printing, laser cutting, heat press machine, Knife cutting machine, Grasshopper, Rhino, Fusion and etc.
- **Design:** Keyshot (render), Blender (animation), Illustrator, Lr (photograph), Pr (video), XD (design prototype), PS
- **Hardware and programming:** Arduino, Sensing, Python, JavaScript
- **Psychology:** data analysis and programming (SPSS, MATLAB), quantitative psychology research methods

## RERERENCES

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**Dr. Lining Yao**

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Associate Professor

University of California, Berkeley

**Dr. Alexandra Ion**

**alexandraion@cmu.edu**

Associate Professor

Carnegie Mellon University

**Dr. Guanyun Wang**

**guanyun@zju.edu.cn**

Associate Professor

Zhejiang University

**Dr. Ye Tao**

**Dr. Ye Tao taoye@zucc.edu.cn**

Associate Professor,

Industrial Design Department,

Hangzhou City University

**Dr. Shijian Luo**

**sjluo@zju.edu.cn**

Full Professor, Dean of International

School of Design Ningbo Campus,

Zhejiang University