

# Liuchao (Christopher) Jin



✉ (+852) 9570 5790 ✉ liuchao.jin@link.cuhk.edu.hk [in](https://www.linkedin.com/in/liuchaojin) linkedin.com/in/liuchaojin  
📍 ERB201, The Chinese University of Hong Kong, Hong Kong SAR, 999077, China  
🌐 jin-liuchao.github.io 📅 20 Nov 1999, Shaoxing, Zhejiang, China

## 🎓 Education

08/2022-Present Hong Kong, China	Chinese University of Hong Kong (CUHK), Doctor of Philosophy - Ph.D. <b>Major :</b> Mechanical and Automation Engineering <b>Supervisor :</b> Prof. Wei-Hsin Liao <b>Research Direction :</b> 3D/4D Printing, Smart Materials & Adaptive Structures, Soft Robotics. <b>Award :</b> Hong Kong PhD Fellowship Scheme (HKPFS)
09/2018-06/2022 Chengdu, China	Sichuan University - Pittsburgh Institute (SCUPI), Bachelor of Engineering - BE <b>GPA :</b> 4.0/4.0 <b>Weighted Average Mark :</b> 96.29/100 <b>Major :</b> Mechanical Engineering <b>Ranking :</b> 1/79

## 💻 Experiences

- 09/2025 - Present, California Institute of Technology (CalTech), Visiting Scholar.  
Supervisor : Prof. Chiara Daraio. Program : CUHK Overseas Research Attachment Programme.
- 09/2025 - Present, AirWork Robotics Limited, CEO & Co-Founder.
- 09/2025 - Present, The Chinese University of Hong Kong, MAE Department, Website Developer.
- 08/2024 - 10/2025, Shenzhen University, Visiting Scholar.  
Supervisor : Prof. Shitong Fang and Zhihui Lai. Program : Shenzhen University Fellowship Program.
- 08/2023 - 09/2025, Southern University of Science and Technology (SUSTech), Visiting Scholar.  
Supervisor : Prof. Qi Ge. Program : SUSTech Fellowship Program.
- 08/2022 - 07/2025, The Chinese University of Hong Kong, MAE Department, Teaching Assistant.
- 07/2021 - 08/2021, Westlake University, Research Assistant.  
Supervisor : Prof. Weicheng Cui. Program : Westlake University Summer Graduate Research Internship.
- 06/2021 - 09/2021, McGill University, Research Assistant.  
Supervisor : Prof. Abdolhamid Akbarzadeh Shafaroudi. Program : Mitacs Globalink Research Internship.
- 02/2020 - 06/2022, Sichuan University - Pittsburgh Institute, Teaching Assistant.

## 📖 Publications & Patents

- **Liuchao Jin**, Shouyi Yu, Jianxiang Cheng, Zhigang Liu, Kang Zhang, Sicong Zhou, Xiangnan He, Guoquan Xie, Mahdi Bodaghi, Qi Ge, Wei-Hsin Liao. (2025). Machine learning powered inverse design of strain fields of hierarchical architectures. *Composites Part B : Engineering*, 299, 112372.
- **Liuchao Jin**, Xiaoya Zhai, Wenbo Xue, Kang Zhang, Jingchao Jiang, Mahdi Bodaghi, Wei-Hsin Liao. (2025). Finite element analysis, machine learning, and digital twins for soft robots : State-of-arts and perspectives. *Smart Materials and Structures*, 34(3), 033002.
- **Liuchao Jin**, Kang Zhang, Sicong Zhou, Guoquan Xie, Wei-Hsin Liao. (2025). Modulus tunability in hierarchical architectures : A machine learning-enabled approach. In *Multifunctional Materials and Structures 2025*, 13433, 133-143. SPIE.
- Wenpeng Xu, Mengyu Zhang, Hao Xu, **Liuchao Jin\***, Xiaoya Zhai\*, Jingchao Jiang. (2025). INPR-connector : Interlocking negative Poisson's ratio connectors design for deployable energy absorption structures. *Composites Part B : Engineering*, 297, 112243.
- Wenpeng Xu, Ning Zhang, Hao Xu, **Liuchao Jin\***, Jingchao Jiang\*. (2025). Stress-guided lightweight design and optimization for 3D printing sacrificial molds. *Materials & Design*, 255, 114161.
- **Liuchao Jin**, Shouyi Yu, Jianxiang Cheng, Haitao Ye, Xiaoya Zhai, Jingchao Jiang, Kang Zhang, Bingcong Jian, Mahdi Bodaghi, Qi Ge, Wei-Hsin Liao. (2024). Machine learning-driven forward prediction and inverse design for 4D printed hierarchical architecture with arbitrary shapes. *Applied Materials Today*, 40, 102373.
- **Liuchao Jin**, Xiaoya Zhai, Jingchao Jiang, Kang Zhang, Wei-Hsin Liao. (2024). Optimizing stimuli-based 4D printed structures : A paradigm shift in programmable material response. In *Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2024*, 12949, 321-332. SPIE.
- **Liuchao Jin**, Xiaoya Zhai, Kang Zhang, Jingchao Jiang. (2024). Unlocking the potential of low-melting-point alloys integrated extrusion additive manufacturing : Insights into mechanical behavior, energy absorption, and electrical conductivity. *Progress in Additive Manufacturing*, 10(4), 2733-2745.
- **Liuchao Jin**, Xiaoya Zhai, Kang Zhang, Jingchao Jiang, Wei-Hsin Liao. (2024). 3D printing low-melting-point alloys integrated soft robots. *Materials Science in Additive Manufacturing*, 3(3), 4144. (Top Cited, Most Downloaded)
- **Liuchao Jin**, Xiaoya Zhai, Kang Wang, Kang Zhang, Dazhong Wu, Aamer Nazir, Jingchao Jiang, Wei-Hsin Liao. (2024). Big

- data, machine learning, and digital twin assisted additive manufacturing : A review. *Materials & Design*, 244, 113086. (ESI Highly Cited Paper, Cover Paper, Top Cited, Top Downloaded)
- **Liuchao Jin**, Xiaoya Zhai, Kang Zhang, Jingchao Jiang, Wei-Hsin Liao. (2024). Spider web-inspired additive manufacturing : Unleashing the potential of lightweight support structures. In *21st International Conference on Manufacturing Research*.
  - **Liuchao Jin**, Weicheng Cui. (2024). On technical issues for underwater charging of robotic fish schools using ocean renewable energy. *Ships and Offshore Structures*, 19(9), 1465-1475.
  - **Liuchao Jin**, Yuchen Lou, Lu-An Chen, Qi Lu. (2022). 6 Degree of freedom unified tracking controller for tilt-rotor multi-rotor unmanned aerial vehicles based on unit dual quaternion. In *2022 5<sup>th</sup> IEEE International Conference on Unmanned Systems (ICUS)*, 1356-1363. IEEE.
  - Haitao Ye, Chong Li, Shouyi Yu, Honggeng Li, Yiling Lian, Xiangnan He, Juzheng Chen, Xingjian Huang, **Liuchao Jin**, Jianxiang Cheng, Rong Wang, Lixi Huang, Biao Zhang, Xu Song, Yang Lu, Qi Ge. (2025). Adaptive Energy Dissipator with Compression-to-Tension Design. *Advanced Functional Materials*, e21393.
  - Wenbo Xue, **Liuchao Jin**, Bingcong Jian, Qi Ge. (2025). Origami-based flexible robotic grippers via hard-soft coupled multi-material 3D printing for soft robotics. *Soft Robotics*.
  - Kiandokht Mirasadi, M Amin Yousefi, **Liuchao Jin**, Davood Rahmatabadi, Majid Baniassadi, Wei-Hsin Liao, Mahdi Bodaghi, Mostafa Baghani. (2025). 4D printing of magnetically responsive shape memory polymers : Toward sustainable solutions in soft robotics, wearables, and biomedical devices. *Advanced Science*, e13091.
  - Kang Zhang, Jingchao Jiang, **Liuchao Jin**, Qiang Gao, Xiaoya Zhai, Sicong Zhou, Zhenhong Li, Jifan Li and Wei-Hsin Liao. (2025). Low-melting-point alloy / polyurethane auxetic composite foam for outstanding impact protection with favorable shape memory effect. *Smart Materials and Structures*, 34(4), 045025.
  - Sicong Zhou, Kang Zhang, **Liuchao Jin**, Qiang Gao, Wei-Hsin Liao. (2025). Efficient data driven optimization framework for designing B-spline honeycombs with excellent energy absorption. *Thin-Walled Structures*, 209, 112941.
  - Wenbo Xue, Bingcong Jian, **Liuchao Jin**, Rong Wang, Qi Ge. (2025). Origami robots : Design, actuation, and 3D printing methods. *Advanced Materials Technologies*, e00278.
  - Changyue Liu, **Liuchao Jin**, Wei-Hsin Liao, Zhijian Wang, Qiguang He. (2025). Achieving rapid actuation in liquid crystal elastomers. *National Science Open*, 4(2), 20240013.
  - Tielin Dai, **Liuchao Jin**, Chen Shang, Xiaoya Zhai, Xiao-Ming Fu, Ligang Liu. (2025). Advances in Intelligent Design of Metamaterials. *Journal of Computer-Aided Design & Computer Graphics*, 37(1), 1-27.
  - Linlin Wang, Jingchao Jiang, Yanyan Tian, Yicheng Dong, Haobing Li, **Liuchao Jin**, Voicu Ion Sucala. (2025). Prediction of process parameters based on stress-strain behaviour in 3D printing using deep neural network. In *2025 International Conference on Intelligent Digitization of Systems and Services (IDSS)*. IEEE.
  - Kang Zhang, Qiang Gao, Jingchao Jiang, Meishan Chan, Xiaoya Zhai, **Liuchao Jin**, Jiangfan Zhang, Jifan Li, Wei-Hsin Liao. (2024). High energy dissipation and self-healing auxetic foam by integrating shear thickening gel. *Composites Science and Technology*, 249, 110475.
  - Jingchao Jiang, Xiaoya Zhai, **Liuchao Jin**, Kang Zhang, Jun Chen, Qitao Lu, Wei-Hsin Liao. (2023). Design for reversed additive manufacturing low-melting-point alloys. *Journal of Engineering Design*, 36(10), 1617-1630.
  - Jingchao Jiang, Xiaoya Zhai, Kang Zhang, **Liuchao Jin**, Qitao Lu, Zhichao Shen, Wei-Hsin Liao. (2023). Low-melting-point alloys integrated extrusion additive manufacturing. *Additive Manufacturing*, 72, 103633.
  - Jingchao Jiang, **Liuchao Jin**, Xiaoya Zhai, Kang Zhang, Jun Chen, Wei-Hsin Liao. (2023). A novel strategy to fabricate low-melting-point alloy and its composite parts using extrusion additive manufacturing. In *The 50th International Conference on Computers and Industrial Engineering*.
  - Xiaoya Zhai, Yundong Gai, **Liuchao Jin**, Wei-Hsin Liao, Falai Chen, Ping Hu. (2023). Isogeometric topology optimization of auxetic materials based on moving morphable method. In *Materials Research Proceedings*, 31, 172-186.
  - Xiaoya Zhai, **Liuchao Jin**, Jingchao Jiang. (2022). A survey of additive manufacturing reviews. *Materials Science in Additive Manufacturing*, 1(4), 21. (Most Downloaded)
  - China Invention Grant Patent : Tracking Control Method for Tilt-Rotor Multi-Rotor UAV Based on Dual Quaternion. Patent number : ZL 2022 1 0739442.2.
  - China Utility Model Patent : Air Purification Device. Patent number : ZL 2021 2 2679101.4.

## 🎙 Conferences & Talks

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- 2025/10/12–10/15. 2025 SES Annual Technical Meeting. Atlanta, Georgia, United States.
- 2025/09/08–09/10. ASME's Premier Conference on Smart Materials, Adaptive Structures, and Intelligent Systems. St. Louis, Missouri, United States.
- 2025/07/08–07/10. 4D Materials Design and Additive Manufacturing Conference. Singapore.
- 2025/03/17–03/20. SPIE Smart Structures + NDE 2025. Vancouver, Canada.
- 2025/01/06–01/10. 13th edition of the Global Young Scientists Summit (GYSS). Singapore.
- 2024/09/25. SCUPI Alumni Sharing Session. Sichuan University-Pittsburgh Institute, Chengdu, China.
- 2024/07/04–07/05. 4D Materials Design and Additive Manufacturing Conference 2024. Ajaccio, Corsica, France.
- 2024/03/25–03/28. SPIE Smart Structures + NDE 2024. Long Beach, California, United States.
- 2023/07/08. Seminar on Frontiers of Mathematics and Interdisciplinarity. University of Science and Technology of China, Hefei, China.
- 2022/10/28–10/30. 2022 5<sup>th</sup> IEEE International Conference on Unmanned Systems. Guangzhou, China.

## Honors & Awards

- 07/2025 Honorary Alumni Mentor of Sichuan University-Pittsburgh Institute  
05/2025 CUHK PhD International Mobility for Partnerships and Collaborations Award (PhD IMPAC Award)  
02/2025 Outstanding Students Award at The Chinese University of Hong Kong  
11/2022 Outstanding Senior Project Award in Sichuan University  
10/2022 Best Paper Award in 2022 IEEE International Conference on Unmanned Systems (ICUS)  
06/2022 Outstanding Senior Project Award in Sichuan University-Pittsburgh Institute  
05/2022 First Prize in The 7th National Academic English Vocabulary Competition (NAEV)  
05/2022 Outstanding Senior Project Poster Award in Sichuan University-Pittsburgh Institute  
03/2022 Outstanding Graduate of Sichuan Province  
01/2022 A-level Certificate in Comprehensive Quality of University Students in Sichuan Province  
12/2021 2020-2021 Academic Year National Scholarship (China) (¥8,000)  
10/2021 Outstanding Graduate of Sichuan University  
10/2021 2020-2021 Academic Year Outstanding Student of Sichuan University  
10/2021 2020-2021 Academic Year Sichuan University-Pittsburgh Institute Best Academic Achiever Award (¥60,000)  
09/2021 First Prize in Chinese Tale - English Talk  
06/2021 Second Prize in Videos and Voices Short Video Contest  
05/2021 Second Prize in The 6th National Academic English Vocabulary Competition (NAEV)  
04/2021 Honorable Mention in 2021 Mathematical Contest in Modeling (MCM)  
12/2020 2019-2020 Academic Year National Scholarship (China) (¥8,000)  
10/2020 2019-2020 Academic Year Outstanding Student of Sichuan University  
09/2020 Excellent Teaching Assistant Award for Sichuan University-Pittsburgh Institute  
09/2020 2019-2020 Academic Year Sichuan University-Pittsburgh Institute Academic Star (¥10,000)  
12/2019 2018-2019 Academic Year National Scholarship (China) (¥8,000)  
10/2019 2018-2019 Academic Year Outstanding Student of Sichuan University  
09/2019 2018-2019 Academic Year Sichuan University-Pittsburgh Institute Best Academic Achiever Award (¥60,000)  
07/2019 First Prize in the Special Category of the 9th "Video Friends Cup" China University TV Awards  
02/2019 Student Ambassador of Sichuan University-Pittsburgh Institute

## Leadership & Extracurricular Activities

- > 06/2024 - Present, Sichuan University - Pittsburgh Institute Alumni Association, Alumni Mentor.
- > 09/2022 - 09/2023, The Postgraduate Halls Residents' Association, General Administrator.
- > 03/2022 - 03/2023, Mitacs Globalink, Ambassador.
- > 09/2019 - 09/2020, Sichuan University The 31st Student Congress, Representative.
- > 03/2019 - 06/2020, Sichuan University Student Television Station, Deputy Director.
- > 09/2018 - 06/2019, Sichuan University-Pittsburgh Institute Student Council, Member.

## Community Contributions

- > 05/2021 & 11/2019, Chengdu Blood Center, Blood Donor.
- > 02/2021, UNESCO, Disaster Risk Management at UNESCO Designated Sites, Volunteer.
- > 07/2020-08/2020, GREENPEACE, Blue Planet Rescue Plan, Volunteer.
- > 02/2019, SCU – Return to Alma Mater, Social Practice of Winter Vacation, Participant.

## Reference

**Prof. Wei-Hsin Liao, The Chinese University of Hong Kong**

-  +(852) 3943 8341
-  whliao@cuhk.edu.hk

**Prof. Chiara Daraio, California Institute of Technology**

-  +(1) 626 395 8515
-  daraio@caltech.edu

**Prof. Xiaohao Sun, University of Science and Technology of China**

-  +(86) 152 0982 6085
-  sunxiaohao@ustc.edu.cn

**Dr. Xiaoya Zhai, University of Science and Technology of China**

-  +(86) 188 5608 9304
-  xiaoyazhai@ustc.edu.cn

**Prof. Qi Ge, Southern University of Science and Technology**

-  +(86) 139 2348 5190
-  geq@sustech.edu.cn

**Prof. Mahdi Bodaghi, Nottingham Trent University**

-  +(44) 115 848 3470
-  mahdi.bodaghi@ntu.ac.uk

**Dr. Jingchao Jiang, University of Exeter**

-  +(44) 758 743 4550
-  J.Jiang2@exeter.ac.uk

**Dr. Shitong Fang, Shenzhen University**

-  +(86) 188 1946 1303
-  stfang@szu.edu.cn