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Education

08/2022-07/2026 | Chinese University of Hong Kong (CUHK), Doctor of Philosophy - Ph.D.
Hong Kong, China | **Major** : Mechanical and Automation Engineering (MAE) **Supervisor** : Prof. Wei-Hsin Liao
Award : Hong Kong PhD Fellowship Scheme (HKPFS)

09/2018-06/2022 | Sichuan University - Pittsburgh Institute (SCUPI), Bachelor of Engineering - BE
Chengdu, China | **Major** : Mechanical Engineering **GPA** : 4.0/4.0 **WAM** : 96.29/100 **Ranking** : 1/79

Experiences

- 02/2027 - 01/2029, Massachusetts Institute of Technology, Postdoctoral Fellow.
- 08/2026 - 02/2027, The Chinese University of Hong Kong, Postdoctoral Fellow.
- 05/2026 - 08/2026, University of Science and Technology of China, Visiting Scholar.
- 09/2025 - 03/2026, California Institute of Technology (Caltech), Visiting Scholar.
  Supervisor : Prof. Chiara Daraio. Program : CUHK Overseas Research Attachment Programme.
- 08/2024 - 07/2026, 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.

Selected Publications

* Corresponding author; † Equal contribution

- Weihao Lin†, **Liuchao Jin†**, Zhifei Jiang, Mingjing Cai, Zhihui Lai, Daniil Yurchenko, Bo Yan, Shengxi Zhou, Kostya S. Novoselov, Wei-Hsin Liao, Shitong Fang. (2026). Machine learning-based inverse design for functional materials : Methods, challenges, and engineering applications. *Advanced Functional Materials*, 36(40), e75070.
- **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.
- Wenpeng Xu, Mengyu Zhang, Hao Xu, Menglin Yu, **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, 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**, 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* 5th *IEEE International Conference on Unmanned Systems (ICUS)*, 1356-1363. IEEE.
- Shouyi Yu, Yingbo Yan, Mei Chen, Xingjian Huang, **Liuchao Jin**, Rong Wang, Kun Zhou, Qi Ge. (2026). 3D printing of magnetic soft materials for functional structures and devices. *Advanced Materials*, e74024.
- Kiandokht Mirasadi, M Amin Yousefi, **Liuchao Jin**, Davood Rahmatabadi, Majid Baniassadi, Wei-Hsin Liao, Mahdi Bodaghi, Mostafa Baghani. (2026). 4D printing of magnetically responsive shape memory polymers : Toward sustainable solutions in soft robotics, wearables, and biomedical devices. *Advanced Science*, 13(15), e13091. (ESI Highly Cited Paper)
- Sicong Zhou, **Liuchao Jin**, Guoquan Xie, Kang Zhang, Qiang Gao, Wei-Hsin Liao. (2026). Thermally driven reusable dual-phase honeycombs with enhanced mechanical properties. *International Journal of Mechanical Sciences*, 326, 111900.
- Haitao Ye, Xingjian Huang, **Liuchao Jin**, Sicong Zhou, Guoquan Xie, Zongxin Hu, Rui Li, Haoming Mo, Shitong Fang, Wei-Hsin Liao, Qi Ge, Xu Song. (2026). Multi-material 3D printed compression-induced stretching lattice metamaterials with superior reusable energy absorption. *Virtual and Physical Prototyping*, 21(1), e2637380.
- Ali Zolfagharian, **Liuchao Jin**, Qi Ge, Wei-Hsin Liao, Andrés Díaz Lantada, Francisco Franco Martínez, Tianyu Zhang, Tao Liu, Charlie C.L. Wang, Mohammad Hossein Mosallanejad, Reza Ghanavati, Abdollah Saboori, Alejandro De Blas-De Miguel, William Solórzano-Requejo, Yi Cai, Xiangyang Dong, Huangyi Qu, Najmeh Samadiani, Guangyan Huang, Austin Downey, Yanzhou Fu, Lang Yuan, Tsz-Kwan (Glory) Lee, Arbind Agrahari Baniya, Eisha Waseem, Abdul Rahman Sani, Abbas Z Kouzani, Yijia Wu, Markus P. Nemitz, Masoud Shirzad, Dageon Oh, Seung Yun Nam, Amedeo Franco Bonatti, Irene Chiesa, Gabriele Maria Fortunato, Giovanni Vozzi, Carmelo De Maria, Mahdi Bodaghi. (2026). Roadmap on Artificial Intelligence-Augmented Additive Manufacturing. *Advanced Intelligent Systems*, 8(4), e202500484.
- Sicong Zhou, Qiang Gao, **Liuchao Jin**, Guoquan Xie, Kang Zhang, Wei-Hsin Liao. (2026). CM-Net : A general machine learning architecture for predicting mechanical properties of cellular materials. *Advanced Intelligent Systems*, e70501.
- Jian Wang, **Liuchao Jin**, Qiang Gao, Wei-Hsin Liao. (2026). Graded infill design of thin-walled structures with connectable nonuniform microstructures based on the data-driven surrogate model. *Thin-Walled Structures*, 231, 115426.
- Wenpeng Xu, Dongxia Wang, Jinglong Zhang, Jiahe Hu, Hao Xu, **Liuchao Jin**, Haitao Ye, Haisen Zhao, Wei-Hsin Liao. (2026). Enhanced energy absorption in re-entrant honeycombs via elliptical double-arrow hybrid design. *Thin-Walled Structures*, 230, 115252.
- 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. (2026). Adaptive energy dissipator with compression-to-tension design. *Advanced Functional Materials*, 36(19), e21393.
- Shitong Fang, Haoxian Peng, Mingjing Cai, **Liuchao Jin**, Yuelong Yu, Mianxin Xiao, Qingyang Xue, Jiacheng Hou, Degui Yu, Zhihui Lai, Xin Li, Shuxiang Dong, Biao Wang, Wei-Hsin Liao. (2026). Gecko-like multi-directional high-power magneto-mechano-electric energy harvesters for self-powered, hundred-meter-scale LoRa communication. *Advanced Science*, 13(32), e74974.
- Shitong Fang, Jinkang Liu, Yufeng Guo, Qingyang Xu, Kui Wu, Yi Guan, **Liuchao Jin**, Zhihui Lai, Mingjing Cai, Keyu Chen, Wei-Hsin Liao. (2026). High-power-density energy harvester via optimized negative Poisson's ratio metastructure with nonlinear gradient wall thickness. *Energy*, 354, 140984.
- Wenbo Xue, **Liuchao Jin**, Bingcong Jian, Qi Ge. (2025). Origami-based flexible robotic grippers via hard-soft coupled multimaterial 3D printing for soft robotics. *Soft Robotics*, 12(5), 537-552.
- Siqian Wu, Rong Wang, **Liuchao Jin**, Xingjian Huang, Wuzhao Li, Kun Zhou, Qi Ge. (2025). Digital light processing 3D printing of large-scale and crack-free ceramics with perforated internal honeycomb structures. *Virtual and Physical Prototyping*, 20(1), e2589472.
- Kang Zhang, Jingchao Jiang, **Liuchao Jin**, Qiang Gao, Xiaoya Zhai, Sicong Zhou, Zhenhong Li, Jifan Li, 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*, 10(17), 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.
- 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, Kang Zhang, **Liuchao Jin**, Qitao Lu, Zhichao Shen, Wei-Hsin Liao. (2023). Low-melting-point alloys integrated extrusion additive manufacturing. *Additive Manufacturing*, 72, 103633.

Honors & Awards

07/2026 Honorary Alumni Mentor of Sichuan University-Pittsburgh Institute
07/2026 Best Presentation Award in 5th 4D Materials Design and Additive Manufacturing Conference (4DMDA 2026)
06/2026 Best Poster Award in 35th International Conference on Adaptive Structures and Technologies (ICAST 2026)
05/2026 Reaching Out Award - HKSAR Government Scholarship Fund (HK$10,000)
07/2025 Honorary Alumni Mentor of Sichuan University-Pittsburgh Institute
05/2025 CUHK PhD International Mobility for Partnerships and Collaborations Award (HK$50,000)
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 Outstanding Senior Project Poster Award in Sichuan University-Pittsburgh Institute
03/2022 Outstanding Graduate of Sichuan Province
12/2021 National Scholarship (China) (¥8,000)
10/2021 Outstanding Graduate of Sichuan University
10/2021 Outstanding Student of Sichuan University
10/2021 Sichuan University-Pittsburgh Institute Best Academic Achiever Award (¥60,000)
04/2021 Honorable Mention in 2021 Mathematical Contest in Modeling (MCM)
01/2021 Mitacs Globalink Research Internship Award
12/2020 National Scholarship (China) (¥8,000)
10/2020 Outstanding Student of Sichuan University
09/2020 Excellent Teaching Assistant Award for Sichuan University-Pittsburgh Institute
09/2020 Sichuan University-Pittsburgh Institute Academic Star (¥10,000)
12/2019 National Scholarship (China) (¥8,000)
10/2019 Outstanding Student of Sichuan University
09/2019 Sichuan University-Pittsburgh Institute Best Academic Achiever Award (¥60,000)

Conferences & Talks

- 2026/07/08–07/10. 4D Materials Design and Additive Manufacturing Conference 2026. Dublin, Ireland.
- 2026/06/01–06/03. 35th International Conference on Adaptive Structures and Technologies (ICAST 2026). Hong Kong, China.
- 2025/10/30. GAMES Webinar : Geometric Design and Intelligent Manufacturing (CAX Session). Online. (Invited Talk)
- 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 2025. 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 5th IEEE International Conference on Unmanned Systems. Guangzhou, China.