

# Danli Luo

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RESEARCH INTERESTS	Computational Fabrication, Sustainable Making, Material-Driven Design	
EDUCATION	<b>University of Washington</b> , Seattle, WA Ph.D, Human-Centered Design & Engineering Advisor: Nadya Peek	2021 - present
	<b>Carnegie Mellon University</b> , Pittsburgh, PA M.S., Materials Science & Engineering	2015 - 2017
	<b>Imperial College</b> , London, UK B.Eng., Materials Science & Engineering	2010 - 2013
PROFESSIONAL EXPERIENCE	<b>Accenture Labs</b> , Seattle, WA Technology R&D Associate Research Principal Mentors: Wade Ingram, Andreea Danielescu	Jun - Sep 2024
	<b>Human-Computer Interaction Institute, CMU</b> , Pittsburgh, PA Research Associate Mentor: Lining Yao	2018 - 2021
HONORS AND AWARDS	<b>MIT Technology Review</b> 35 Innovators Under 35	2024
	<b>Heidelberg Laureate Forum</b> Young Researcher	2024
	<b>Fast Company's World Changing Ideas</b> Honorable Mention	2024
PUBLICATION	<ol style="list-style-type: none"><li>13. <b>Danli Luo</b>, Aditi Maheshwari, Andreea Danielescu, Jiaji Li, Yue Yang, Ye Tao, Lingyun Sun, Dinesh K. Patel, Guanyun Wang, Shu Yang, Teng Zhang, Lining Yao. Autonomous self-burying seed carriers for aerial seeding. <i>Nature</i> <b>614</b>, 463–470 (2023).</li><li>12. <b>Danli Luo</b>, Daniela Rosner, Nadya Peek. Doufu, Rice Wine, and 面饼: Supporting the Connections between Precision and Cultural Knowledge in Cooking. In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23). Association for Computing Machinery, New York, NY, USA, Article 475, 1–13.</li><li>11. Zihan Yan, Yanhong Wu, <b>Danli Luo</b>, Chao Zhang, Qihang Jin, Wei Chen, Yingcai Wu, Xiang 'Anthony' Chen, Guanyun Wang, and Haipeng Mi. 2023. NaCanva: Exploring and Enabling the Nature-Inspired Creativity for Children. Proc. ACM Hum.-Comput. Interact. 7, MHCI, Article 215 (September 2023), 25 pages.</li><li>10. Guanyun Wang, Yue Yang, Mengyan Guo, Kuangqi Zhu, Zihan Yan, Qiang Cui, Zihong Zhou, Junzhe Ji, Jiaji Li, <b>Danli Luo</b>, Deying Pan, Yitao Fan, Teng Han, Ye Tao, Lingyun Sun. 2023. ThermoFit: Thermoforming Smart Orthoses via</li></ol>	

Metamaterial Structures for Body-Fitting and Component-Adjusting. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT '23) 7, 1, Article 31 (March 2023), 27 pages.

9. **Danli Luo**, Chao Zhao, Guanyang Xue, Zhibo Cao, Alparslan Oztekin, Xuanhong Cheng. (2022). Label-free focusing of viral particles under a temperature gradient coupled with continuous swirling flow. *RSC Advances*, 12(7), 4263-4275.
  8. Zihan Yan, Jiayi Zhou, Yufei Wu, Guanhong Liu, **Danli Luo**, Zihong Zhou, Haipeng Mi, Lingyun Sun, Xiang'Anthony' Chen, Ye Tao. Shoes++: A Smart Detachable Sole for Social Foot-to-foot Interaction. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT '22) 6, 2, Article 85 (July 2022), 29 pages.
  7. Ye Tao, Yi-Chin Lee, Haolin Liu, Xiaoxiao Zhang, Jianxun Cui, Catherine Mondoa, Mahnoush Babaei, Jasio Santillan, Guanyun Wang, **Danli Luo**, Di Liu, Humphrey Yang, Youngwook Do, Lingyun Sun, Wen Wang, Teng Zhang, Lining Yao. Morphing pasta and beyond. *Science Advances* 7, 19, eabf4098 (2021).
  6. Humphrey Yang, **Danli Luo**, Kuanren Qian, Lining Yao. Freeform Fabrication of Fluidic Edible Materials. Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21). Association for Computing Machinery, New York, NY, USA, Article 620, 1-10.
  5. Lingyun Sun, Jiaji Li, Yu Chen, Yue Yang, Zhi Yu, **Danli Luo**, Jianzhe Gu, Lining Yao, Ye Tao, Guanyun Wang. FlexTruss: A Computational Threading Method for Multi-material, Multi-form and Multi-use Prototyping. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21), Association for Computing Machinery, New York, NY, USA, 1-12.
  4. Lingyun Sun, Yue Yang, Yu Chen, Jiaji Li, **Danli Luo**, Haolin Liu, Lining Yao, Ye Tao, Guanyun Wang. ShrinCage: 4D Printing Accessories that Self-Adapt. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21). Association for Computing Machinery, New York, NY, USA, Article 432, 1-12.
  3. **Danli Luo**, Jianzhe Gu, Fang Qin, Guanyun Wang, Lining Yao. E-seed: Shape-Changing Interfaces that Self Drill. In Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology (UIST '20). Association for Computing Machinery, New York, NY, USA, 45-57.
  2. Yuxuan Yu, Haolin Liu, Kuanren Qian, Humphrey Yang, Matthew McGehee, Jianzhe Gu, **Danli Luo**, Lining Yao, Yongjie Jessica Zhang. Material characterization and precise finite element analysis of fiber reinforced thermoplastic composites for 4D printing. *Computer-Aided Design* 122 (2020): 102817.
  1. Jianzhe Gu, Vidya Narayanan, Guanyun Wang, **Danli Luo**, Harshika Jain, Kexin Lu, Fang Qin, Sijia Wang, James McCann, Lining Yao. 2020. Inverse Design Tool for Asymmetrical Self-Rising Surfaces with Color Texture. In Proceedings of the 5th Annual ACM Symposium on Computational Fabrication (SCF '20). Association for Computing Machinery, New York, NY, USA, Article 14, 1-12.
- POSTER & DEMO 2. **Danli Luo**, Nadya Peek. 2022. Demonstrating a Fabricatable Bioreactor Toolkit for Small-Scale Biochemical Automation. In Adjunct Proceedings of the 35th

Annual ACM Symposium on User Interface Software and Technology (UIST '22 Adjunct). Association for Computing Machinery, New York, NY, USA, Article 81, 1–3.

1. **Danli Luo**, Humphrey Yang, Malika Khurana, Kuanren Qian, Lining Yao. 2021. Demonstrating Freeform Fabrication of Fluidic Edible Materials. In Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems (CHI EA '21). Association for Computing Machinery, New York, NY, USA, Article 201, 1–4.

PATENT

1. Lining Yao, **Danli Luo**, Jianzhe Gu, Fang Qin, Guanyun Wang  
*Methods and devices for biomimetic hygromorphic composite.*  
**US Patent App. US 2022/0322599 A1**, patent granted.

SERVICE

- Organizing Committee, Student Volunteer Co-Chair**
- ACM UIST 2024
- Program Committee, Associate Chair**
- ACM Chinese CHI 2021, 2023
- Paper Reviewing**
- ACM CHI 2023, 2024, 2025
- ACM UIST 2023, 2024
- ACM TEI 2024
- ACM DIS 2023
- ACM Chinese CHI 2022
- Session Chairing**
- ACM SCF 2022
- Student Volunteer**
- ACM SCF 2019

STUDENTS  
MENTORED

- Taylor Hilton**, Masters, Materials Science and Engineering, UW 2024
- Yuecheng Peng**, Masters, Global Innovation Exchange, UW 2023
- Malika Khurana**, Masters, Computational Design, CMU 2020
- Prabin Paneru**, Research Intern, CMU 2019
- Rahul Sharma**, Masters, Mechanical Engineering, CMU 2019

SELECTED PRESS

- Nature Cover Story** Gone to earth
- Wall Street Journal** Five farming technologies tackle climate change threats
- London Design Biennale 2023, Automorph Network** Self-burying seed
- Science Friday** A new twist on sowing seeds
- Reuters** Wooden seed carriers mimic self-burying seeds
- New Atlas** Plant-inspired E-seeds drill themselves into the dirt when moistened
- Futurity** Wooden carrier unwinds to bury seeds
- ZME Science** Scientists create wooden seeds carrier that imitates self-burying seeds
- New York Times** Flat pasta that turns into 3-D shapes — just add boiling water

**Science Magazine** A new twist on pasta dough could reshape food manufacturing

**ABC News** Groovy flat-packed pasta could help revolutionize food production

**Science Friday** A bowl full of pasta engineering

**Smithsonian Magazine** Mighty morphing 'flat-pack' pasta changes shape in boiling water

**UK Daily Mail** Don't tell the Italians! 'Flat-pack pasta' morphs from 2D to 3D while cooking and could slash the need for excessive plastic packaging

**Designboom** This flatpack pasta will morph into all sorts of 3D shapes when cooked