高蕾

助理教授

伦敦大学学院（UCL）

计算机科学系

lei.g@ucl.ac.uk | 个人网站 | LinkedIn

研究领域

我的研究主要聚焦于**人机交互、物理计算与智能交互系统**的交叉领域，致力于构建融合计算感知、物理驱动与人工智能控制的**可编程物理交互界面**，以支持具身化、自适应及多感官交互。研究尤其关注将声场操控作为一种计算媒介，探索非接触式交互与动态物理界面的设计方法，进而推动智能化、可重构交互系统的发展。

工作经验

伦敦大学学院（UCL） 2026.10 – 至今
助理教授 (物联网与系统工程)

伦敦大学学院（UCL） 2024.12 – 2026.09
博士后研究员

教育背景

伦敦大学学院（UCL） 2020.10 – 2024.10
计算机科学博士—人机交互方向

导师：Prof. Sriram Subramanian 和 Prof. Diego Martinez Plasencia

博士论文课题：基于声场操控界面的应用设计与原型构建

西安电子科技大学 2017.09 – 2020.06
计算机技术工程硕士

导师：万波教授

硕士论文课题：增强现实环境中的多用户交互机制研究

山东大学 2013.09 – 2017.06
数字媒体技术工学学士

科研资助和获奖

- UCL-CS **青年学者短期资助计划** — Acoustophoretic Food Printing，2025 年 2 月–7 月。
- **最佳论文奖**，2025 年 ACM Designing Interactive Systems Conference（DIS）。

教学经历

联合授课教师 — COMP0183，Designing Sensor Systems，伦敦大学学院 2026/27

联合授课教师 — COMP0182，Real-World Multi-Agent Systems，伦敦大学学院 2026/27

助教 — COMP0160，Perception and Interfaces，伦敦大学学院 2023/24

助教 — PSYC0095，Future Interfaces，伦敦大学学院 2022/23

助教 — COMP0113，Virtual Environments，伦敦大学学院 2021/22

助教 — COMP0021，Interaction Design，伦敦大学学院 2020/21

学术外展

SIGGRAPH Technical paper demo in Denver, Temporal acoustic point holography 2024

CHI Interactivity Demo in Hamburg, Acoustophoretic Data Physicalisation 2023

UIST Demo in Bend, Acoustophoretic Data Physicalisation 2022

New Scientist Live in London, Interactive acoustic levitation 2022

学术服务

副主席／副编辑（Associate Chair / Associate Editor）
ISS 2026

会议论文审稿
CHI 2027, CHI 2026, UIST 2025, CHI 2023, ISS 2023, Chinese CHI 2023, TEI 2024

期刊论文审稿
Ultrasonics, International Journal of Human-Computer Studies (IJHCS), Human-Computer Interaction (HCI)

主题报告、研讨会

新加坡管理大学 — Enabling Multimodal Interaction Systems with Acoustophoretic Interfaces；邀请人：Prof. Tony Tang 2026

香港科技大学（广州）— Acoustic Interfaces for Mid-air and Tangible Interactions 2025

香港城市大学 — Enabling Multimodal Interaction Systems with Acoustophoretic Interfaces；邀请人：Prof. Shengdong Zhao 2025

意大利锡耶纳大学 — Food for Thought Seminar：Acoustic Levitation and Beyond Innovations in Food Technology；邀请人：Prof. Patrizia Marti 2025

英国布里斯托，South West UK Pre-CHI — StableLev: Data-Driven Stability Enhancement for Multi-Particle Acoustic Levitation 2024

英国伦敦，Cockney Kai — StableLev: Data-Driven Stability Enhancement for Multi-Particle Acoustic Levitation 2024

中国科学院软件研究所 — DataLev: Mid-air Data Physicalisation Using Acoustic Levitation；邀请人：Prof. Teng Han 2023

丹麦哥本哈根大学，Post-CHI XR summer school 2023

德国汉堡，CHI Workshop：Physicalisation from Theory to Practice 2023

美国旧金山, UIST Workshop：XR and AI: AI-Enabled Virtual, Augmented and Mixed Reality 2023

西安电子科技大学 — Modern Magic Tricks: Mid-air displays using acoustic levitation；邀请人：万波教授 2022

会议期刊论文

1. Jincheng Wang, **Lei Gao**, Zhouyang Shen, Pengyuan Wei and Diego Martinez Plasencia. 2026. AAC: An Acoustic Actor-Critic Trajectory Planning and Correction System for Stable Multi-Particle Levitation Displays. In Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems **(CHI'26)** https://doi.org/10.1145/3772318.3791903. (CCF A 类人机交互顶会)

2. Ceylan Besevli, **Lei Gao**, Narsimlu Kemsaram, Giada Brianza, Orestis Georgiou, Sriram Subramanian and Marianna Obrist. 2025. SONARIOS: A Design Futuring-Driven Exploration of Acoustophoresis. In Proceedings of the 2025 ACM Designing Interactive Systems Conference **(DIS'25)**. **最佳论文奖.** https://doi.org/10.1145/3715336.3735775

3. Hongyi Chen, James Hardwick, **Lei Gao**, Diego Martinez Plasencia, Sriram Subramanian and Ryuji Hirayama. 2025. Acoustics in additive manufacturing: A path toward contactless, scalable, and high-precision manufacturing. **Applied Physics Reviews**, 12, 031305 (2025). https://doi.org/10.1063/5.0271688 (中科院二区 TOP 期刊)

4. Narsimlu Kemsaram, James Hardwick, Jincheng Wang, Bonot Gautam, Ceylan Besevli, Giorgos Christopoulos, Sourabh Dogra, **Lei Gao**, Akin Delibasi, Diego Martinez Plasencia, Orestis Georgiou, Marianna Obrist, Ryuji Hirayama and Sriram Subramanian. 2025. AcoustoBots: A swarm of robots for acoustophoretic multimodal interactions. **Frontiers in Robotics and AI**, 12, 1537101. https://doi.org/10.3389/frobt.2025.1537101

5. Hongnan Lin, **Lei Gao**, Shengsheng Jiang, Hongyu Yue, Ziyi Fu, Jinyi Luo, Chengxiao Wu, Teng Han, Feng Tian, and Sriram Subramanian. 2025. Slip-Grip: An Electrotactile Method to Simulate Weight. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems **(CHI '25)**. https://doi.org/10.1145/3706598.3713361. (CCF A 类人机交互顶会)

6. Tor-Salve Dalsgaard, Arpit Bhatia, **Lei Gao**, Ryuji Hirayama, Sriram Subramanian, Joanna Bergström, and Kasper Hornbæk. "Ultrasound can deliver chemical stimulants to the skin and modulate their perception." **Nature Scientific Reports** 15, no. 1 (2025): 10297. DOI: https://doi.org/10.1038/s41598-025-94463-7

7. **Lei Gao**, Giorgos Christopoulos, Prateek Mittal, Ryuji Hirayama, and Sriram Subramanian. 2024. StableLev: Data-Driven Stability Enhancement for Multi-Particle Acoustic Levitation. In Proceedings of the CHI Conference on Human Factors in Computing Systems **(CHI'24)**. DOI: https://doi.org/10.1145/3613904.3642286. (CCF A 类人机交互顶会)

8. **Lei Gao**. 2024. Designing and Prototyping Applications Using Acoustophoretic Interfaces. In Extended Abstracts of the 2024 CHI Conference on Human Factors in Computing Systems **(CHI EA'24)**. DOI: https://doi.org/10.1145/3613905.3651135. (CCF A 类人机交互顶会)

9. Giorgos Christopoulos, **Lei Gao**, Diego Martinez Plasencia, Marta Betcke, Ryuji Hirayama, Sriram Subramanian. Temporal acoustic point holography. ACM SIGGRAPH 2024 Conference Papers **(SIGGRAPH'24)** DOI: https://doi.org/10.1145/3641519.3657443. (CCF A 类图形学顶会)

10. **Lei Gao**, Pourang Irani, Sriram Subramanian, Gowdham Prabhakar, Diego Martinez Plasencia, and Ryuji Hirayama. 2023. DataLev: Mid-air Data Physicalisation Using Acoustic Levitation. In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems **(CHI'23)**. DOI: https://doi.org/10.1145/3544548.3581016. (CCF A 类人机交互顶会)

11. Xianbing Zhao, Yixin Chen, Wanting Li, **Lei Gao**, and Buzhou Tang. "MAG+: An Extended Multimodal Adaptation Gate for Multimodal Sentiment Analysis." In IEEE International Conference on Acoustics, Speech and Signal Processing **(ICASSP 2022)**, pp. 4753-4757. IEEE, 2022. DOI: https://doi.org/10.1109/ICASSP43922.2022.9746536. (CCF B 类多媒体期刊)

12. **Lei Gao**, Bo Wan, Gang Liu, Guojun Xie, Jiayang Huang, and Guanglan Meng (2021). Investigating the effectiveness of virtual reality for culture learning. International Journal of Human–Computer Interaction **(IJHCI)** 37.18 (2021): 1771-1781. DOI: https://doi.org/10.1080/10447318.2021.1913858(CCF B 类人机交互期刊)

13. **Lei Gao**, Bo Wan, Cheng Fang, Yangyang Li, and Chen Chen (2019). Automatic Clustering of Different Solutions to Programming Assignments in Computing Education. In Proceedings of the ACM Conference on Global Computing Education **(CompEd '19)**. ACM, New York, NY, USA, 164-170. DOI: https://doi.org/10.1145/3300115.3309515

短文, Demos 和 Workshops

1. Hongyue Wang, Jialin Deng, Yuchen Zheng, Ziqi Fang, Charles Spence, Ferran Altarriba Bertran, Koya Narumi, **Lei Gao**, Weijen Chen, Lining Yao, Mako Miyatake, Marianna Obrist, Homei Miyashita, Chi Thanh Vi, Oussama Metatla, Florian ‘Floyd’ Mueller. Beyond Interfaces: the Future of Edible Interactions. In Companion Publication of the 2026 ACM Designing Interactive Systems Conference **(DIS 2026 Workshop)**. DOI: https://www.edibleinteractions.art/

2. **Lei Gao**, Yutaka Tokuda, Shubhi Bansal, Sriram Subramanian. Computational Gastronomy and Eating with Acoustophoresis. In Companion Publication of the 26th International Conference on Multimodal Interaction **(ICMI'24 Companion)**. DOI: https://doi.org/10.1145/3686215.3686218.

3. **Lei Gao**, Pourang Irani, Sriram Subramanian, Gowdham Prabhakar, Diego Martinez Plasencia, and Ryuji Hirayama. 2023. DataLev: Mid-air Data Physicalisation Using Acoustic Levitation. **(CHI'23 Interactivity demo)**

4. **Lei Gao**. Domain-specific data physicalisations enabled by DataLev (CHI'23 Workshop on physicalisation from Theory to Practice)

5. **Lei Gao**, James Hardwick, Diego Martinez Plasencia, Sriram Subramanian, and Ryuji Hirayama. 2022. DATALEV: Acoustophoretic Data Physicalisation. In Adjunct Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology **(UIST'22 Demo)**. DOI: https://doi.org/10.1145/3526114.3558638 (CCF A 类人机交互顶会)