

Jiahao Nick LI

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EDUCATION

- 2018–2024 University of California, Los Angeles
Ph.D. in Mechanical Engineering
Advisor: Xiang ‘Anthony’ Chen
- 2017–2018 University of California, Los Angeles
M.S. in Mechanical Engineering
- 2013–2017 Shanghai Jiao Tong University
B.E. in Naval Architecture and Ocean Engineering

RESEARCH FOCUS

My research lies in the intersection of human-computer interaction (HCI) and machine learning (ML), where I develop interactive AI systems that assist humans with everyday tasks. I specialize in building embodied AI assistance on wearable devices and multimodal understanding and reasoning on extensive personal data, such as long-form egocentric data.

Areas of Interest: **Human-AI Interaction**; **Multimodal AI Agents**; Pervasive Augmented Reality; Generative AI.

PUBLICATIONS

- 2024 [F.8] **Jiahao Nick Li***, Li Gu*, Yang Wang. EgoRAG: Multimodal Retrieval Augmented Generation for Natural Language Query in Egocentric Videos. *Work in progress*.
- [F.7] **Jiahao Nick Li**, Yan Xu, Tovi Grossman, Stephanie Santosa, Michelle Li. OmniActions: Predicting Digital Actions in Response to Real-World Multimodal Sensory Inputs with LLMs. *In Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24)*.
- [F.6] Xingyu Bruce Liu, **Jiahao Nick Li**, Xiuxiu Yuan, David Kim, Xiang ‘Anthony’ Chen, Ruofei Du. Human I/O: Towards a Unified Approach to Detecting Situational Impairments. *In Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24)*.
🏆 **Best Paper Honorable Mention.**
- 2022 [F.5] Xiaoying Yang, Jacob Sayono, Jess Xu, **Jiahao Nick Li**, Josiah Hester, Yang Zhang. MiniKers: Interaction-Powered Smart Environment Automation. *In Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), Volume 6 Issue 3, September, 2022*.
- [F.4] **Jiahao Nick Li**, Alexis Samoylov, Jeeun Kim, Xiang ‘Anthony’ Chen. Roman: Making Everyday Objects Robotically Manipulable with 3D-printable Add-on Mechanisms. *In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI '22)*.
- [F.3] Abul Al Arabi, **Jiahao Nick Li**, Xiang ‘Anthony’ Chen, Jeeun Kim. Mobiot: Augmenting everyday objects into moving IoT devices using 3D printed attachments generated by demonstration. *In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI '22)*.
- 2020 [F.2] **Jiahao Nick Li**, Meilin Cui, Jeeun Kim, Xiang ‘Anthony’ Chen. Romeo: A Design Tool for Embedding Transformable Parts in 3D Models to Robotically Augment Default Functionality. *In*

Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology (UIST '20).

- 2019 [F.1] **Jiahao Nick Li**, Jeeun Kim, Xiang ‘Anthony’ Chen. Robiot: A Design Tool for Actuating Everyday Objects with Automatically Generated 3D Printable Mechanisms. *In Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology (UIST '19).*

Preprints

Jiahao Nick Li*, Toby Chong*, Zhongyi Zhou, Hironori Yoshida, Koji Yatani, Xiang ‘Anthony’ Chen, Takeo Igarashi. RoCap: A Robotic Data Collection Pipeline for the Pose Estimation of Appearance-Changing Objects. *In submission.*

Jiahao Nick Li, Ruolin Wang, Li-Yi Wei, Rubaiat Habib Kazi, Stephen DiVerdi, Xiang ‘Anthony’ Chen. RealityPlay: Authoring Interactive and Embedded Graphics Driven by Everyday Objects with User-defined Mappings. *In submission.*

Posters & Extended Abstract & Workshop

- 2020/2022 **Jiahao Nick Li**, Meilin, Cui, Jeeun Kim, Xiang ‘Anthony’ Chen. Romeo: A Design Tool for Embedding Transformable Parts in 3D Models to Robotically Augment Default Functionality. *Demo at ACM UIST 2020 and Poster at ACM UIST 2022.*

- 2019 **Jiahao Nick Li**, Jeeun Kim, Xiang ‘Anthony’ Chen. Robiot: A Design Tool for Actuating Everyday Objects with Automatically Generated 3D Printable Mechanisms. *Demo in ACM UIST 2019.*

Ruolin Wang, Yuqi Tang, Hsuan Wei Fan, **Jiahao Nick Li**, Xiang ‘Anthony’ Chen. Auxiscope: Improving Awareness Surroundings for People with Tunnel Vision. *UIST Student Innovation Competition 2019.*

Patent

- 2023 [P.3] **Jiahao Li**, Li-Yi Wei, Stephen DiVerdi, Kazi Rubaiat Habib. Interactive virtual graphics with physical objects. *US Patent 20230368452A1.*
- [P.2] Nurcan Gecer, ULUErva ULU, Walter Hsiao, **Jiahao Nick Li**. Controller and 3D printing apparatus for varying density support structures through interpolation of support polygon boundaries with scalar density fields. *US Patent 11654616B2.*
- [P.1] Nurcan Gecer, ULUErva ULU, Walter Hsiao, **Jiahao Nick Li**. Interactive design tool for varying density support structures. *US Patent 11639023B2.*

PROFESSIONAL EXPERIENCE

- 2022/2023 **Meta Reality Labs**, Research Intern. Toronto, Canada
Mentor: Tovi Grossman, Yan Xu
Developed OmniActions [F.7], a multimodal pipeline powered by large language models that predict users’ follow-up actions when interacting with real-world multimodal information. Conducted data crowdsourcing with a five-day diary study and leveraged the collected data to finetune a large language model comparing with other techniques such as in-context learning.
- 2022 **Igarashi Lab at University of Tokyo**, Visiting Ph.D. student Tokyo, Japan
Supervisor: Takeo Igarashi
Built a data collection pipeline for pose estimation of physical objects.
- 2021 **Adobe Research**, Research Intern. San Jose, CA
Mentor: Li-Yi Wei, Rubaiat Habib Kazi, Stephen DiVerdi
Built an interactive creativity-support tool for crafting AR effects driven by physical objects. [P.3]

2019	PARC, A Xerox Company , Research Intern. <i>Mentor: Erva Ulu, Nurcan Ulu</i>	Palo Alto, CA
2018–2019	DMAI Inc. , Part-time Robotic Design Engineer.	Los Angeles, CA
2018–2023	UCLA HCI Research , Research Assistant.	Los Angeles, CA

SERVICE

Organizing

2024	Proceedings Co-Chair . ACM UIST.
2022	Student Volunteer . ACM CHI 2022.

Program Committee

2024	Associate Chair , ACM UIST.
2020–2021	Associate Chair . ACM CHI Late-Breaking Work.

Reviewing

2019–2023	The ACM Symposium on User Interface Software and Technology (UIST).
2020–2023	The ACM Conference on Human Factors in Computing Systems (CHI).
2023	The ACM Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH) Poster

INVITED TALKS

2023	“Making Everyday Objects Physically Interactable with Robotic-augmented Sensing and Actuation.” Dynamic Graphics Project (DGP), University of Toronto (hosted by Bryan Wang).
2022	“Making Everyday Objects Physically Interactable with Robotic-augmented Sensing and Actuation.” Acuated Experience Lab (Ken Nakagaki) and Human Computer Integration Lab (Pedro Lopes), University of Chicago (hosted by Yudai Tanaka). Purdue University (hosted by Liang He).

PRESS COVERAGE

Keynote and Plenary Addresses

2019	New Scientist . Turn any object into a robot using this program and a 3D printer. Hackster News . Robiot Is a Design Tool That Generates Mechanisms to Motorize Everyday Objects. Fabbaloo . Robiot Can Automatically Design Handy Household Machines.
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