

# 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 is in the intersection of human-AI interaction and computer vision, where I study human needs and build interactive systems for novel real-world tasks. I am particularly interested in embodied AI assistance for pervasive AR and in long-form egocentric video understanding.

Areas of Interest: Human-AI Interaction; Pervasive Augmented Reality; AI for personal data; Multimodal Reasoning; Multimodal RAG.

## 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. *Conditionally accepted to 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. *Conditionally accepted to CHI '24*.
- 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*  
 Designed and conducted a study to gain understanding of users’ needs when interacting with multimodal information in physical world and built an LLM-powered system to predict users’ intent in pervasive AR. [F.7]
- 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. Palo Alto, CA  
*Mentor: Erva Ulu, Nurcan Ulu*

2018–2019	<b>DMAI Inc.</b> , Part-time Robotic Design Engineer.	Los Angeles, CA
2018–2023	<b>UCLA HCI Research</b> , Research Assistant.	Los Angeles, CA

## SERVICE

### Organizing

2024	<b>Proceedings Co-Chair.</b> ACM UIST.
2022	<b>Student Volunteer.</b> ACM CHI 2022.

### Program Committee

2020–2021	<b>Associate Chair.</b> ACM CHI Late-Breaking Work
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### 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	<b>New Scientist.</b> Turn any object into a robot using this program and a 3D printer. <b>Hackster News.</b> Robiot Is a Design Tool That Generates Mechanisms to Motorize Everyday Objects. <b>Fabbaloo.</b> Robiot Can Automatically Design Handy Household Machines.
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