

# Jae (Jaewook) Lee

Curriculum Vitae  
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Last Updated: 11/30/2023

## RESEARCH INTERESTS

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HCI, Augmented Reality (AR), Human-AI Interaction, and Accessibility

## EDUCATION

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**University of Washington** Seattle, WA  
Ph.D. in Computer Science (HCI), Advised by Prof. Jon Froehlich Aug. 2022 –Present

**University of Illinois at Urbana-Champaign** Urbana, IL  
B.S. in Computer Science, Minor in Psychology (GPA: 3.96/4.00) Aug. 2018 –May 2022

## PROFESSIONAL EXPERIENCE

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**University of Washington** Seattle, WA  
Graduate Research Assistant, Advised by Prof. Jon Froehlich Aug. 2022 - Present

- I design AI-powered AR solutions capable of comprehending us and our surroundings, providing personalized assistance during our everyday tasks. I also study how such a system can assist the blind or low vision (BLV) and deaf or hard of hearing (DHH) communities. I am re-imagining AR for all!

**Meta** Redmond, WA  
Research Scientist Intern, Advised by Tianyi Wang, Jacqui Fashimpaur, and Tanya Jonker Jun. 2023 - Nov. 2023

- Designed continuous in-world gaze interaction for wearable AR devices. This involved analyzing user’s temporal multimodal data using a large language model (LLM).

**NASA** Virtual  
AR/VR Intern Jun. 2022 - Aug. 2022

- Contributed to the Mixed Reality Exploration Toolkit (MRET) open-source software. Designed a set of tools for virtual reality that enables scientists and researchers to easily author space-related experiences.

**Microsoft Research** Virtual  
Open Source Researcher, Advised by Dr. Eyal Ofek May. 2021 - Aug. 2022

- Led an effort to design an open-source Unity toolkit to facilitate remote user studies for VR researchers. This modular and platform-agnostic toolkit allows researchers to observe participants across multiple remote locations, collect behavioral data, and replay data from multiple media sources. [C9]

**Carnegie Mellon University - Human-Computer Interaction Institute** Virtual  
REU Research Intern, Advised by Prof. David Lindlbauer Jun. 2021 - Nov. 2021

- Studied which MR navigation visualizations (e.g., arrows, avatar) work best in scenarios consisting of different combinations of contexts (e.g., environment – outdoors vs. indoors). [C7]

**University of California, Los Angeles** Virtual  
Research Intern, Advised by Prof. Yang Zhang Apr. 2021 - Sep. 2021

- Designed an on-body interaction method for VR, which enable users to use their hands as tools in a VR environment (e.g., a user can form scissors using their index and middle fingers). [C6]

### University of Michigan

Virtual

Research Intern, Advised by Prof. Anhong Guo

Aug. 2020 - Sep. 2021

- Designed a layer-based tactile interaction method for smartphones to empower blind users to judge the accuracy of AI-generated captions. [P1, C5]

### Carnegie Mellon University - Human-Computer Interaction Institute

Virtual

REU Research Intern, Advised by Prof. Vincent Allevin

Jun. 2020 - Nov. 2020

- Studied whether a mid-fidelity prototyping method (which we call Virtual Prototyping Method) can be an effective tool in remotely co-designing spatial displays. [C2]

### University of Illinois at Urbana-Champaign

Urbana, IL

Undergraduate Research Assistant, Advised by Prof. Alex Kirlik and Prof. Brian P. Bailey

May. 2019 - May 2022

- Conducted a field study using Decipher, a tool that facilitates understanding a large feedback set. This work was done in collaboration with Dr. Joy Kim from Adobe Research. [J1]
- Studied how a data-driven conversational agent can best assist under-contributing members to contribute more in a group chat setting. [C8, C10]
- Researched whether a tool that visualizes data from multiple teamwork-related software (e.g., Google Drive, Slack, Github) can be effective in assisting the peer evaluation process. [C4]
- Researched whether touch is a good additional modality to resolving ambiguities (e.g., “What is this?” – ‘this’ is ambiguous) in voice assistant queries. [C3]
- Examined the effects of complacency on humans as they interact with autonomous agents in a human-agent team. This work was done in collaboration with the *Army Research Lab (ARL)*. [C1]

## PEER-REVIEWED PUBLICATIONS (\* DENOTES EQUAL CONTRIBUTION)

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- C.11 Kaiming Cheng, Arka Bhattacharya, Michelle Lin, **Jaewook Lee**, Aroosh Kumar, Jeffery F. Tian, Tadayoshi Kohno, and Franziska Roesner. 2024. When the User Is Inside the User Interface: An Empirical Study of UI Security Properties in Augmented Reality. *To Appear at USINEX 2024*
- D.4 **Jaewook Lee**, Devesh P. Sarda, Eujan Lee, Amy Lee, Jun Wang, Adrian Rodriguez, and Jon E. Froehlich. 2023. Towards Real-time Computer Vision and Augmented Reality to Support Low Vision Sports: A Demonstration of ARTennis. In *Adjunct Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology (UIST '23 Adjunct)*. Association for Computing Machinery, New York, NY, USA, Article 81, 1–3. <https://doi.org/10.1145/3586182.3615815>
- D.3 **Jaewook Lee**, Jun Wang, Elizabeth Brown, Liam Chu, Sebastian S. Rodriguez, and Jon E. Froehlich. 2023. Towards Designing a Context-Aware Multimodal Voice Assistant for Pronoun Disambiguation: A Demonstration of GazePointAR. In *Adjunct Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology (UIST '23 Adjunct)*. Association for Computing Machinery, New York, NY, USA, Article 92, 1–3. <https://doi.org/10.1145/3586182.3615819>
- D.2 Xia Su, Kaiming Cheng, Han Zhang, **Jaewook Lee**, Wyatt Olson, and Jon E. Froehlich. 2023. A Demonstration of RASSAR: Room Accessibility and Safety Scanning in Augmented Reality. In *The 25th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '23)*. Association for Computing Machinery, New York, NY, USA, Article 90, 1–4. <https://doi.org/10.1145/3597638.3614504>
- C.10 Hyo Jin Do, Ha-Kyung Kong, Pooja Tetali, **Jaewook Lee**, and Brian P. Bailey. 2023. To Err is AI: Imperfect Interventions and Repair in a Conversational Agent Facilitating Group Chat Discussions.

Proc. ACM Hum.-Comput. Interact. 7, CSCW1, Article 99 (April 2023), 23 pages.  
<https://doi.org/10.1145/3579532>

- J.1 Patrick Crain, **Jaewook Lee**, Yu-Chun Yen, Joy Kim, Alyssa Aiello, and Brian Bailey. 2023. Visualizing Topics and Opinions Helps Students Interpret Large Collections of Peer Feedback for Creative Projects. *ACM Trans. Comput.-Hum. Interact.* 30, 3, Article 49 (June 2023), 30 pages. <https://doi.org/10.1145/3571817>
- W.1 Xia Su, Kaiming Cheng, Han Zhang, **Jaewook Lee**, Yueqian Zhang, and Jon E. Froehlich. 2022. Towards Semi-automatic Detection and Localization of Indoor Accessibility Issues using Mobile Depth Scanning and Computer Vision. *ASSETS '22 - Future of Urban Accessibility Workshop*. <https://doi.org/10.48550/arXiv.2210.02533>
- C.9 **Jaewook Lee**, Raahul Natarrajan, Sebastian S. Rodriguez, Payod Panda, and Eyal Ofek. 2022. RemoteLab: A VR Remote Study Toolkit. In *Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology (UIST '22)*. Association for Computing Machinery, New York, NY, USA, Article 51, 1–9. <https://doi.org/10.1145/3526113.3545679>
- C.8 Hyo Jin Do, Ha-Kyung Kong, **Jaewook Lee**, and Brian P. Bailey. 2022. How Should the Agent Communicate to the Group? Communication Strategies of a Conversational Agent in Group Chat Discussions. *Proc. ACM Hum.-Comput. Interact.* 6, CSCW2, Article 387 (November 2022), 23 pages. <https://doi.org/10.1145/3555112>
- C.7 **J. Lee**, F. Jin, Y. Kim and D. Lindlbauer, “User Preference for Navigation Instructions in Mixed Reality,” 2022 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), 2022, pp. 802-811, doi: <https://doi.org/10.1109/VR51125.2022.00102>
- C.6 Siyou Pei, Alexander Chen, **Jaewook Lee**, and Yang Zhang. 2022. Hand Interfaces: Using Hands to Imitate Objects in AR/VR for Expressive Interactions. In *CHI Conference on Human Factors in Computing Systems (CHI '22)*. Association for Computing Machinery, New York, NY, USA, Article 429, 1–16. <https://doi.org/10.1145/3491102.3501898> [**Honorable Mention Award**]
- C.5 **Jaewook Lee**, Jaylin Herskovitz, Yi-Hao Peng, and Anhong Guo. 2022. ImageExplorer: Multi-Layered Touch Exploration to Encourage Skepticism Towards Imperfect AI-Generated Image Captions. In *CHI Conference on Human Factors in Computing Systems (CHI '22)*. Association for Computing Machinery, New York, NY, USA, Article 462, 1–15. <https://doi.org/10.1145/3491102.3501966>
- C.4 Wenxuan Wendy Shi, Akshaya Jagannadharao, **Jaewook Lee**, and Brian P. Bailey. 2021. Challenges and Opportunities for Data-Centric Peer Evaluation Tools for Teamwork. *Proc. ACM Hum.-Comput. Interact.* 5, CSCW2, Article 432 (October 2021), 20 pages. <https://doi.org/10.1145/3479576>
- C.3 **Jaewook Lee**, Sebastian S. Rodriguez, Raahul Natarrajan, Jacqueline Chen, Harsh Deep, and Alex Kirlik. 2021. What’s This? A Voice and Touch Multimodal Approach for Ambiguity Resolution in Voice Assistants. In *Proceedings of the 2021 International Conference on Multimodal Interaction (ICMI '21)*. Association for Computing Machinery, New York, NY, USA, 512–520. <https://doi.org/10.1145/3462244.3479902>
- D.1 **Jaewook Lee**, Yi-Hao Peng, Jaylin Herskovitz, and Anhong Guo. 2021. Image Explorer: Multi-Layered Touch Exploration to Make Images Accessible. In *The 23rd International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '21)*. Association for Computing Machinery, New York, NY, USA, Article 69, 1–4. <https://doi.org/10.1145/3441852.3476548>
- C.2 JiWoong Jang\*, **Jaewook Lee\***, Vanessa Echeverria, LuEttaMae Lawrence, and Vincent Aleven. 2021. Explorations of Designing Spatial Classroom Analytics with Virtual Prototyping. In *LAK21: 11th*

International Learning Analytics and Knowledge Conference (LAK21). Association for Computing Machinery, New York, NY, USA, 518–524. <https://doi.org/10.1145/3448139.3448192>

C.1 Sebastian S. Rodriguez, Jacqueline Chen\*, Harsh Deep\*, **Jaewook (Jae) Lee\***, Derrik E. Asher, and Erin Zaroukian “Measuring complacency in humans interacting with autonomous agents in a multi-agent system”, Proc. SPIE 11413, Artificial Intelligence and Machine Learning for Multi-Domain Operations Applications II, 114130U (21 April 2020); <https://doi.org/10.1117/12.2559474>

## AWARDS AND HONORS

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- **NSF GRFP (\$34,000 per year, 3 years)** 2022
- **Best Paper Honorable Mention Award - CHI 2022** 2022
- **Bridge to VR Scholarship - IEEE VR Conference** 2021
- **3rd Place, Voice Capabilities and AI Category - Illinois Datathon 2021** 2021
- **Runner-Up Masterpiece (2nd Place Overall) - VandyHacks VI** 2019
- **Best Oculus Hack - Facebook @ HackIllinois 2019** 2019
- **President’s Volunteer Service Award - 141 hours in one year** 2016

## MENTORSHIP

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- **Ben S. Kosa** Aug. 2023 - Present  
*CSE Undergraduate Student at the University of Washington*
- **Ritesh Kanchi** Aug. 2023 - Present  
*CSE Undergraduate Student at the University of Washington*
- **Minji Park** Aug. 2023 - Present  
*CS Undergraduate Student at Sungkyunkwan University*
- **Dylan Bunarto** Aug. 2023 - Present  
*CSE Undergraduate Student at the University of Washington*
- **Eujean Lee** Jun. 2023 - Present  
*CSE Undergraduate Student at the University of Washington*
- **Andrew D. Tjahjadi** Feb. 2023 - Present  
*CSE Undergraduate Student at the University of Washington*
- **Junpu Yu** Feb. 2023 - Present  
*CSE Undergraduate Student at the University of Washington*
- **Jun Wang** Nov. 2022 - Present  
*CSE Undergraduate Student at the University of Washington*
- **Davin Kyi** Nov. 2022 - Present  
*CSE Undergraduate Student at the University of Washington*
- **Arvind Manivannan** Oct. 2022 - Present  
*CSE Undergraduate Student at the University of Washington*
- **Amy S. Lee** Jun. 2023 - Aug. 2023  
*CogSci Undergraduate Student at the University of California, Davis*
- **Jamil Islam** Feb. 2023 - Jun. 2023  
*CSE Undergraduate Student at the University of Washington*
- **Devesh P. Sarda** Jan. 2023 - Aug. 2023  
*Next Position - CS Ph.D. at the University of Wisconsin-Madison*

- **Elizabeth Brown** Nov. 2022 - Apr. 2023  
*Next Position - Data Scientist (Generative AI) at T-Mobile*
- **Liam Chu** Nov. 2022 - Apr. 2023  
*Applied Mathematics Undergraduate Student at the University of Washington*
- **Student Mentor** at ACM SIGCHI, UIUC Chapter Sep. 2021 - May 2022  
*Providing mentorship to undergraduate students who are interested in HCI*

## PAPER REVIEWING

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- **ACM TEI** 2024
- **ACM ICMI** 2023
- **ACM CHI Late-Breaking Work (LBW)** 2023
- **ACM CHI** 2023
- **ACM ICMI** 2022
- **ACM MobileHCI** 2022
- **ACM CHI Late-Breaking Work (LBW)** 2022
- **ACM ICMI** 2021

## INVITED TALKS AND PRESENTATIONS

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- **UW MHCI+D Program Guest Lecturer** - Future of Access Technology 2022
- **Undergraduate Research Seminar Panel Speaker** - Participating in Research as an Undergraduate 2020

## SELECTED PRESS COVERAGE

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- Q&A: Researchers aim to improve accessibility with augmented reality
- Even if you can't see or don't know a foreign language... There will come a time where you only need XR
- Early Impact: Undergraduate Jaewook Lee Learns to Quickly Thrive Through Research