Rei (Wen-Ying) Lee

✉ wl593@cornell.edu | https://infosci.cornell.edu/~reilee/
☏ +1 (315) 728 - 9579 | https://scholar.google.com/citations?user=m-_tA-IAAAAJ
11 E Loop Rd Tata 351, New York, NY 10044, USA

I am currently working with Prof. Malte Jung and Prof. Wendy Ju for my thesis research. My thesis work adopts Research through Design approaches to explore future human-robot interactions that are not driven by utilitarian values. I design and build robots with no explicit functionality to explore how people perceive and interact with them as independent agents. I hold expertise in designing, planning, and executing lab and field studies with mixed methods to gain user experience insight and perspective. I am especially interested in adopting the concept of ludic (playful) design in the research field of Human-Robot Interaction (HRI) to provide a different perspective on what robots can mean to humans and how the interaction can look like without necessarily offering services and utilitarian values.

EDUCATION

Cornell University (CU), Ithaca, United States — Aug. 2017 – Present
Ph.D., Mechanical Engineering, minor in Information Science

Cornell University (CU), Ithaca, United States — Aug. 2017 – Jul. 2020
M.S., Mechanical Engineering, minor in Information Science

National Taiwan University (NTU), Taipei, Taiwan — Aug. 2013 – Jul. 2017
B.S., Mechanical Engineering

PROFESSIONAL SKILLS

Software:	SolidWorks, AutoCAD, Autodesk 360, Matlab, Rhino, C/C++, Python, C# (Unity), R, JavaScript (Processing), ROS, Git, GitHub, html, CSS, Illustrator, PhotoShop, Adobe Premiere,
Research:	lab & field experimental study design, survey, interviews, focus groups, video coding, data analysis, Qualtrics, Prolific, Amazon MTurk
Languages:	Taiwanese (Native), Mandarin, English, Japanese (Basic)

RESEARCH EXPERIENCE

Lead Research Scientist @ Cornell University | Robots in Group Lab — Aug. 2017 – Present
Designing for Playfulness in Human-Robot Interaction

- Thesis research project, exploring the ludic interaction design space for robots without the focus of utilitarianism.
- Conduct literature reviews on different robot designs in HRI research field for publications
- Design and build physical robots (3D modeling, rapid prototyping, mechatronics design)
- Frame, plan, execute lab and field studies with mixed-methods research approaches

UX Researcher @ Cornell Tech | Future Automation Research Lab — Jul. 2022 – Present
Van Life: Understanding How People Set up Personal Space for Adventure

- Explore the design space for van life
- Conduct research on the popular van life styles in the US
- Plan and execute user studies with mixed-methods approaches to discover user need and value for van life planning

Project Manager @ Cornell University | Robots in Group Lab — Jul. 2021 – Present
Robotic Toaster: Exploring and Developing Interaction Paradigm for One to Multiple Users

- Manage and communicate with teams of undergraduate research assistants to work collaboratively
- Forming visions, strategies, and roadmaps for the research project and set up timeline and deliverable milestones
- Keep track on progress and deal with changes along with execution

Research Engineer w/ Yale University | Implicit Social Cognition Lab Jun. 2021 – Present

Perceptions toward the Competence of Robots

- Apply and program in Unity to implement a testing WebGL platform for online studies
- Design and animate robot's behaviors based on needed study conditions

Lead Research Scientist & Project Manager @ Cornell University | Prof. Guimbretière Sep. 2019 – Jul. 2021

Integrating Robotic and AI Technologies to Support Embodied Collaborative Design

- Managed the research team to explore the design space for robots to assist remote embodied design collaboration
- Designed and built a novel telepresence robotic system to perform physical sketching
- Applied Unity and WebGL to implement virtual iterative design platform and enable iterative design process
- Planned and executed large-scale online studies to evaluate the design features of the telepresence robotic system
- Analyzed collected survey data with R to inform data-driven design recommendations

Research Engineer w/ Northeastern University | Advancing Teams, Leaders, and Systems Lab Aug. 2019 – Jan. 2020

Exploring Robotic and AI Systems as Teammates

- Designed and built the robot prototypes for user studies (3D modeling, rapid prototyping, mechatronics design)

UX Researcher @ Cornell University Aug. 2018 – Jan. 2019

Visual Illusions as Human Interactive Proofs

- Conducted literature reviews on Visual Illusions in context to Human Interactive Proofs or CAPTCHAs.
- Designed and conducted user studies to evaluate the performance of Visual Illusions as CAPTCHAs

Lead Research Scientist @ National Taiwan University Sep. 2015 – Jun. 2017

"Blind Grasping" with Multi-fingered Robotic Hand using Tactile Sensors

- Proposed, designed, and conducted the experiments for the project
- Published 2 papers with the results of developed algorithms and proposed innovative methods
- Won the 2016 Ministry of Science and Technology Undergraduate Student Research Project Scholarship

Undergraduate Research Assistant @ National Taiwan University Jan. 2016 – Jul. 2016

Formula Air: Propeller-Powered Racing Vehicle

- Designed and built robot prototypes and mechatronics system

Undergraduate Research Assistant @ National Taiwan University Aug. 2015 – Jan. 2016

Shaft-Climbing and Ball-Gripping Robot

- Designed and built robot prototypes and mechatronics system

Undergraduate Research Assistant @ National Taiwan University Jan. 2014 – Jul. 2014

Automatic Tracking Electro-Motion Vehicle, design and building

- Designed and built robot prototypes and mechatronics system

WORK EXPERIENCE

Intern, Universal Studio, Universal Creative - Advanced Technology Interactives/R&D Summer 2019

Collaborated with interdisciplinary teams to conduct research, development, mock-up, and play-testing for practical interactive concepts and mechatronics prototypes for several nondisclosure projects.

Teaching Assistant, Cornell University Dept. of Mechanical and Aerospace Engineering Fall 2018

Mechatronics, undergraduate junior-level course: leading lab section, designing homework and exam questions.

Teaching Assistant, Cornell University Dept. of Information Science Spring 2019

Human-Robot Interaction - Design and Research: undergraduate course for designing and exploring HRI.

Teaching Assistant, Cornell University Dept. of Information Science Fall 2019 & Fall 2020

Teams and Technology, undergraduate course for understanding how teams function with technology.

Teaching Assistant, Cornell University Dept. of Information Science Fall 2021

Developing and Designing Interactive Devices, graduate-level course for designing and building interactive device with microprocessors based on python scripts.

HONORS AND AWARDS

2022	2021-22 Cornell Tech Outstanding Teaching Assistant Award
2021	\Art Microgrant Award for Combining Art Works and Emerging Digital Technologies.
2020	Human-Robot Interaction Conference Pioneer as Outstanding Graduate Researcher in the Field
2018	The Walt Disney Company Award at 2018 Bits On Our Minds (Boom) Student Design Competition.
2016	The Best Undergraduate Research Paper Award at 24th Conference on Automation Technology
2016	Taiwan's Ministry of Science and Technology Undergraduate Student Research Project Scholarship
2015	Third Place in The 3rd Freescale (NXP) Cup in Taiwan

OTHERS

Art Exhibition, robot designer/choreographer for the Art Exhibition, LAMINATED EARTH, at the ZAZ10TS Gallery @ NYC. https://www.zaz10ts.com/laminated-earth

Workshop, co-organizer of the 1st international workshop on Research through Design in HRI in conjunction with the 16th international conference on Human-Robot Interaction (HRI'21). https://rtdxhri.com/

Reading Group, organizer of a semester-long (Fall 2020) reading group on design research and design epistemology, which led to the graduate-level seminar course, Info6309 Design Research, offered at Cornell Information Science Department during Spring 2021. https://classes.cornell.edu/browse/roster/SP21/class/INFO/6309

PUBLICATIONS IN WORK

- A. Della, A. Bremers, **W. Lee**, and W. Ju, ""Ah! He wants to win!": Social responses to playing Tic-Tac-Toe against a physical drawing robot," In *Sixteenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI '22)* (Article 67, pp. 1-6). ACM.
- **W. Lee**, M. Sakashita, E. Ricci, H. Claure, F. Guimbretière, and M. Jung (2021). "Interactive Vignettes: Enabling Large-Scale Interactive HRI Research," In *Proceedings of the 30th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN'21)* (pp. 1289-1296). IEEE.
- M. Luria, M. Hoggenmüller, **W. Lee**, L. Hespanhol, M. Jung, and J. Forlizzi, "Research through Design Approaches in Human-Robot Interaction," In *Companion of the 2021 ACM/IEEE International Conference on Human-Robot Interaction (HRI'21)* (pp. 685-687). ACM.

- M. Hoggenmueller*, **W. Lee***, L. Hespanhol, M. Jung, and M. Tomitsch, “Eliciting New Perspectives in RtD Studies through Annotated Portfolios: A Case Study of Robotic Artefacts.,” In *Proceedings of the 2021 ACM Designing Interactive Systems Conference (DIS’21). ACM.* ***Co-First Authors**
- M. Hoggenmueller, **W. Lee**, L. Hespanhol, M. Tomitsch, and M. Jung, “Beyond the Robotic Artefact: Capturing Designerly HRI Knowledge through Annotated Portfolios,” In *1st First international workshop on Designerly HRI Knowledge. Held in conjunction with the 29th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN'20).*
- **W. Lee**, and M. Jung, “Ludic-HRI: Designing Playful Experiences with Robots,” In *Companion of the 2020 ACM/IEEE international conference on Human-robot interaction (HRI’20)* (pp. 582-584). ACM.
- **W. Lee**, T. Hou, C. Zaga, and M. Jung, “Design for Serendipitous Interaction: BubbleBot - Bringing People Together with Bubbles,” *In Proceedings of the 2019 ACM/IEEE international conference on Human-robot interaction (HRI’19)* (pp. 759-760). ACM.
- **W. Lee**, and M. Jung, “Design Framework for Joyful Human-Robot Interaction,” *In Proceedings of the 2019 ACM/IEEE international conference on Human-robot interaction. ACM, Workshop for Expressivity.*
- H. Tennent, **W. Lee**, T. Hou, I. Mandel, and M. Jung, (2018, October). “PAPERINO: Remote Wizard-Of-Oz Puppeteering for Social Robot Behaviour Design.” *In Companion of the 2018 ACM Conference on Computer Supported Cooperative Work and Social Computing* (pp. 29-32). ACM.
- **W. Lee**, M. Huang, and H. Huang, “Learning Robot Tactile Sensing of Object for Shape Recognition Using Multi-Finger Robot Hands,” *26th International Symposium on Robot and Human Interactive Communication (RO-MAN 2017)* (pp. 1311-1316). IEEE.
- **W. Lee**, M. Huang, and H. Huang, ““Blind Touching” for Stable Grasping and Dexterous Manipulation by Multi-fingered Robot Hands,” *Proceedings of 24th Conference on Automation Technology,* Taichung, Taiwan, pp. 67-72, 04-05 Nov. 2016. **(Best Paper Award)**