TED JUNSHU LIU

Ph.D. Researcher. Interaction Designer.

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personal statement

Ted Junshu Liu is a Design Researcher, Interaction Designer, and XR Interface & app designer. He has been pursuing a Ph.D. in Design at IIT Institute of Design since 2023. He focuses on research in applications of multimodal AI on novel platforms such as XR (eXtended Reality), as well as the user experience & human-computer interaction of these applications. As part of this research, he integrates culture and interaction design, leading to his research on "Cross-Cultural Communication/Interaction/Understanding/Experience," which aims to design digitally assisted experiences for cross-cultural communication that are relevant in the age of AI and globalization, in order to break the boundaries of language and cultural perceptions, etc.

His research includes:

- Multimodal AI-based cross-language dialogue & conversation that is applicable to multiple platforms and occasions, which breaks through the bottleneck of machine translation and enhances both content understanding and user experience;
- VR (Virtual Reality) or AR (Augmented Reality), AI-assisted/driven interactive demonstration of world cultural heritage, which leads to a more intuitive or deeper understanding, with immersive and multi-dimensional user experience;
- Participatory design within communities for the multimedia/multimodal-assisted cross-cultural communication experience: for understanding and communicating specific, foreign cultural content in a multiple-people cross-cultural communication environment;
- Cross-cultural understanding and comparison of worldwide cultural content, assisted by large AI models and multimedia/multimodality.

The team of Ted's Ph.D. advisor and committee includes: Professor Zach Pino, expert in Data Science and HCI (Human-Computer Interaction), published in *She Ji*; Anijo Mathew, former Dean of IIT Institute of Design and the current Dean of USC Iovine and Young Academy; and more professors & experts in various fields.

Ted holds an M.A. Degree in Digital Studies from UChicago and an M.S. Degree in Digital Media from Georgia Tech. During his studies, internships, and research, he has directed or participated in multiple projects and research in XR, Data Visualization, product design, motion capture systems, and front-end for web, desktop, and mobile apps. Besides, he actively utilizes his leadership and communication skills by organizing or leading school events, hackathons, and academic workshops. He worked with Dr. Robert LiKamWa on AR Data Visualization research and published together in 2017. He is a three-time hackathon prize winner, worked at Qualcomm from 2020 to 2021 as a Front-End Engineering Intern, and peer-reviewed at the Design Research Society (DRS) 2026 conference. He presented at the Doctoral Consortium at the ACM CUI (Conversational User Interface) conference in July 2026.

In addition to his primary research during his Ph.D., Ted is open to collaborating with various companies/universities/institutes/government agencies/organizations and, at the same time, teaching courses in XR experience design & prototyping.

education

Ph.D. Design | **Institute of Design (ID) @ Illinois Institute of Technology** 5/2023 - present
Advisors: Prof. Zach Pino, Dr. Anijo Mathew, Dr. Jessica Meharry

M.S. Digital Media | **Georgia Institute of Technology** 8/2019 - 5/2021
Master's Project: GT VR Tour, a location-based virtual reality campus tour
Advisors: Dr. Jay Bolter, Dr. Janet Murray, Dr. Michael Nitsche

M.A. Digital Studies of Language, Culture, and History | **The University of Chicago** 6/2018 - 6/2019
Master's Project: Knowledge Globe (KnoGlo), a statistical data visualization tool & a corpus generator with an NLP analysis tool for a scholarly publication database
Advisors: Dr. David Schloen, Dr. Jeffrey Tharsen, Dr. Miller Prosser

B.A. Digital Culture (concentration: Media Processing) | **Arizona State University** 8/2014 - 5/2018

attended competitions

HARD MODE: The MIT Hardware x AI Hackathon | **MIT Media Lab** 3/2026
Accepted for attendance; won the Sponsor Prize from Giglabs Boston, MA, United States

MIT Reality Hack 2026 1/2026
Accepted for attendance Boston, MA, United States

Hacks for Humanity 2017 | **Project Humanities at Arizona State University (ASU)** 10/2017
1st-Place Award Tempe, AZ, United States

Hacks for Humanity 2016 | **Project Humanities at Arizona State University (ASU)** 10/2016
3rd-Place Award Tempe, AZ, United States

judging activities

Peer Reviewer 12/2025 - 3/2026
Design Research Society (DRS) 2026 conference

User Experience (UX) Design Judge 4/2018
sunhacks 2018 hackathon

- Reviewed the user experience (UX) design of sunhacks 2018 entries. These works contain products and services in the form of apps or websites.

projects

GT VR Tour | **Location-based Virtual Reality Campus Tour** 5/2021
Master's Project - Georgia Tech Digital Media Program Link: tedjl.com/GT-VR-Tour

- GT VR Tour is a location-based virtual reality (VR) campus tour web application.
- With the 3D model of the campus plus additional information and graphical decorations presented by multiple kinds of media (i.e. text, images, hyperlinks, etc.), the three-dimensional VR experience offers an intuitive and immersive perspective of the campus, along with information on hot spots and tourist attractions that helps

people to learn Georgia Tech's history and campus culture & tradition, which results in a fun, efficient, and interactive information visualization and story-telling.

- It runs on mobile with all WebVR-supported browsers, and with location access enabled, on-site users can see what's around them directly from where they are. It also runs on desktop and VR headsets as a standard web VR app for online, remote users.
- Tools & programming language used: A-Frame, JavaScript, Blender

Herberger Experience | **Augmented Reality (AR) Campus Tour** 5/2018

Final Project - Special Topics: Intro to Interactive Products course | GaTech Link: tinyurl.com/herbergerexperience

- Herberger Experience is a marker-based, mobile web AR app that offers a new way to take a campus tour at ASU Herberger Institute for Design and the Arts with an AR experience.
- Programming Language & Tools used: ar.js (a web AR framework), A-Frame, HTML, CSS

research & teaching experience

Research Assistant | **Institute of Design (ID) - Inclusive Data Lab** Fall 2024

- Recruiting participants for two research studies. Recruiting through online platforms (Slack & Email) and in person. 25 ID students participated in the preliminary study, and 20 results were usable. 50 ID students participated in the main study, and 40 results were usable.
- Assisting in running research experiments by setting up VR equipment, guiding participants for pre-experiment quizzes, signing consent forms, and ensuring safety precautions.
- Managing the results of post-experiment quizzes taken by the participants to analyze their performance.
- Conduct one-on-one interviews for qualitative data analysis and assist the research team in analyzing interview results. The interview contents & data, and analysis results helped the research team to make conclusions for the experiment.

Guest Lecturer | **Institute of Design (ID) @ IIT** Spring 2026, Spring 2024, Fall 2024

- Discussed AR & design: Understanding AR; discussed what designers can do with AR, how to design AR products and experiences, and how to develop prototypes; demoed multiple examples of AR applications on multiple platforms, including mobile and head-mounted display (HMD). (Course: Multidisciplinary Innovation, by Prof. Anijo Mathew)
- Discussed digital avatars and demoed the "persona" feature in Apple Vision Pro (an eXtended Reality (XR) platform) as an example of digital avatars applicable to AR platforms. (Course: Advanced Inclusive Design by Prof. Zach Pino)
- Discussed data visualization in AR and demoed examples in Apple Vision Pro (an XR platform) & XReal Air glasses (Course: Data Visualization by Prof. Zach Pino)

Technological Assistant | **Meteor Studio, Arizona State University** Summer 2017

- Project: Shoestring — an Augmented Reality (AR) Real-time Data Visualization Framework
- Paper Title: Characterizing Bottlenecks towards a Hybrid Integration of Holographic, Mobile, and Screen-based Data Visualization
- Conference: Immersive Analytics @ IEEE VIS 2017 (Paper: http://www.aviz.fr/~bbach/immersive2017/papers/IA_2253-paper.pdf)
- Research goals: Design and implement a distributed particle rendering framework for mixed-reality 3D data visualization to bridge mobile mixed-reality devices with a 2D immersive screen-based stage environment.
- Ted's responsibilities & outcomes:

- Research & Development tasks: Developed a protocol for Augmented Reality Data Visualization in Max/MSP (visual programming language) and tested it on Microsoft HoloLens and Android mobile devices. The output data includes multiple attributes ("planes" in Max/MSP/Jitter) for each particle, including dimensions, colors, and size.
- Assisted in demoing the AR Data Visualization in Microsoft HoloLens, Android mobile devices, and the interactive environment at iStage.
- Recorded and produced the first version of the project demo video for the team's online presence.

work experience

Engineering Intern | **Qualcomm** 10/2020 - 4/2021

Location: Remote (company location: San Diego, CA)

- Designed elegant UI for desktop apps and developed the front end using the electron.js framework.
- Collaborated with back-end developers, software engineers, and the team's project lead to make the apps work with our team's database. My front-end contribution has increased the productivity of our team's work on app development.
- Designed the visual identity (VI) and related materials for our team to show our character through our products and give strong impressions for our team in the company.

Web Designer | **IIT Institute of Design (ID)** 5/2024 - 11/2024

Location: Chicago, IL and remote

- Joined the ID web design team to rebuild ID Action Labs' website that both aligns with ID's branding and reflects ID Action Labs' characteristics.
- Used WordPress to redesign the website for the lab of the IIT Design Institute; developed and managed the web pages.
- Before designing, interviewed the core members of the lab, including the director of the lab and the in-service researchers, to understand the focus, mission, audience, and stakeholders of the lab, as well as the website design preferences of the lab director.
- During the design process, regularly or irregularly report to the leaders of the lab and website design team, show the progress and ideas of website design, and collect opinions.
- Host a multi-party meeting (Project lead and supervisor who I directly report to, lab director, assistant lab director, website developer for site functions)

skills & tools

eXtended Reality (XR) Design & Development: visionOS (operating system of Apple Vision Pro, a spatial computing device), ar.js, A-Frame (visualize in visionOS), Spline (visualize in visionOS), Swift (for visionOS), Reality Composer Pro (for visionOS)
User Interface (UI) & User Experience (UX): Persona, Affinity Diagram, Wireframe, Interview & Survey, User Flow, Miro, Axure RP, Figma, Adobe XD, User Testing
Graphic & Visual Communication Design: Adobe Photoshop, Illustrator, InDesign, Branding & Visual Identity (VI)
Media Production, Project & Product Presentation, Promotion, and Marketing: Apple Keynote, Final Cut Pro
Other Dev Tools & Languages: JavaScript, HTML, CSS, WordPress, Max/MSP/Jitter, Arduino, Processing, Python, R, English, Chinese