JINGFEI HUANG

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RESEARCH INTEREST

Human–AI interaction and generative interfaces in spatial computing, creating and evaluating agentic and generative systems that let people explore, manipulate, and co-create complex environments and media through multimodal, spatial interaction.

EDUCATION

Harvard University Cambridge, MA

Master of Design Engineering. GPA 3.92 / 4.00 (Calculated) 2023 - 2025

- *Selected coursework*: Research in HCI, Human–AI Interaction Design Engineering, AR/VR Prototyping, Machine Learning, Computer Vision, Computational Design, Data Science, Product Analytics.

Pratt Institute Brooklyn, NY

Bachelor of Architecture. GPA 3.66 / 4.00 2015 - 2020

- *Selected coursework*: Statics, Computation Design, Design Computation Studio, Architectural Research.

PUBLICATIONS & MANUSCRIPTS

Peer-Reviewed Publications:

Posterity: Balancing Historical Context and Visual Dynamism While Visualizing a Collection of American Labor Poster

L Pham*, D Rodriguez*, **J Huang***, H Suk*. To appear in IEEE VIS 2025 (co-first author).

- Co-designed, implemented an interactive archive that combines curatorial metadata with visual encodings (cloud, 3D similarity spiral) to support exploration of visual motifs and rhetorical patterns in historical labor posters.

Evaluation of Architectural Synthesis Using Generative AI: A case study on Palladio's architecture

J Huang, A Haridis†. In *Proceedings of CAADRIA 2025*.

- Designed and evaluated generative-AI pipelines, comparing text-to-image and image-to-3D workflows on spatial fidelity, typological consistency, and perceived design usefulness in Palladian villa case studies.

The House of the Impossible Gables: Player Engagement and Spatial Perception of Physically Impossible Spaces in Social VR

J Huang, Y Zhang, J Ge, Y Li, R LC†. In *Proceedings of HCII 2025*.

- Designed and implemented a set of "physically impossible" VRChat rooms and a task-based study to analyze how impossible geometry shapes players' spatial perception, wayfinding strategies, and engagement.

Inconsistent affective reaction: sentiment of perception and opinion in urban environments

J Huang, H Tu†. In *Proceedings of CAADRIA 2024*.

- Quantified mismatches between affect inferred from street-level imagery and self-reported opinions of public spaces across time and land use, revealing systematic divergences between "seen" and experienced urban affect.

Manuscripts Under Review:

"Vistoria": A Multimodal System to Support Fictional Story Writing through Instrumental Text–Image Co-Editing

K Fu*, **J Huang***, L Ling*, S Hong, Y Zuo, R LC, T Li†. **Under Review at CHI 2025.**

- Designed and evaluated a spatial co-editing interface that externalizes LLM text–image alternatives on a canvas, enabling authors to compare, reorganize, and adopt AI suggestions while maintaining a sense of agency.

"Spatial Balancing": Harnessing Spatial Reasoning to Balance Scientific Exposition and Narrative Engagement in LLM-assisted Science Communication Writing

K Fu*, J Leng*, Y Zhang*, **J Huang**, Y Zuo, R Cai, Z Ding, R LC, S Zhao, Q Lei †. **Under Review at CHI 2025.**

- Co-designed a co-writing system that externalizes revision strategies as navigation in a 2D rhetorical space, allowing science communicators to explore and compare alternative drafts that trade off rigor and engagement.

"Hakka Kitchen": Immersive Game-based Representation of Culinary Cultural Heritage

J Huang*, Y Wang*, R Chen*, R LC†. **Under Review at CHI 2025.**

- Developed a VR cooking game that encodes Hakka culinary knowledge into embodied interaction and conducted a controlled study against VR video condition to examine effects on sensory engagement and cultural awareness.

"Excising 'Love Brain'": Designing a Personalized Conversational Persuasion System for Intimate Relationship Support

J Huang*, H Li*, T Huang*, Y Tang, J Gong†. **Under Review at CHI 2025.**

- Designed and studied a conversational agent that maps users' relationship concerns to a literature-based causes→strategies knowledge base, delivering tailored micro-actions and tracking changes in attitudes and planned behaviors over time.

"My Future Is Still Vague": Chatting with Current and Future Versions of Our Selves Created Through Survey Data and Generative AI

J Huang*, X Zeng*, X Chen*, R LC†. **Under Review at CHI 2025.**

- Designed a self-chatbot that generates personalized future perspectives from survey data and studied how different self-frames (current vs. future) influence participants' career reflection and planning attitudes.

RESEARCH EXPERIENCE

Graduate Researcher 2023 – Present

Harvard MDE, Advisor: Jose Luis Garcia del Castillo Lopez, Juan Pablo Ugarte & Martin Bechthold

- **Project: NEXUS** (agentic urban routing + decision support). Architecting a multi-modal navigation system that employs LLM agents to personalize inclusive walking routes based everyday decisions of subjective experience. Developing the multi-agent orchestration layer in Python to process real-time environmental signals and user preference constraints.
- **Project: Attention-Aware Audio Guide**. Designed and prototyped a gaze-contingent interaction modality for artwork viewing. Implemented eye-tracking integration to trigger audio based on gaze dwell time and attention.

Research Collaborator – Studio for Narrative Spaces

City University of Hong Kong, PI: Ray LC, Toby Jia-Jun Li (remote) 2023 – Present

- **Focus:** Generative AI workflows, creativity support tools, VR design and study.
- Co-led the system design and evaluation of multimodal writing support tools. Designed and engineered the front-end interface and coordinated user studies (see Manuscript [1], [2], [4]). Developed physics-based interaction mechanics for VR games (see Publication [3] and Manuscript [5]).

Research Collaborator

Tsinghua University AIR, PI: Jiangtao Gong (remote) 2025 – Present

- **Focus:** Human-AI Interaction & Persuasive Technology.
  Contributing to the design of a conversational agent for intimate relationship support (see Pub Manuscript [3]). Designing the **decision-tree logic** for adaptive persuasion strategies and curating the literature-based knowledge base. Assisting in the quantitative analysis of user attitude shifts regarding relationship dependency behaviors.

Researcher Assistant

Harvard FAS CAMLab, Advisor: Simone Levine, Eugene Wang 2023 – 2024

- Project: Heritage Interfaces. Developed VR interaction strategies for the Yingxian Pagoda and spatial interaction for Chromatic Dream. Prototyped VR in large-scale virtual environments for cultural heritage dataset display.
- Conducted iterative testing to refine spatial cues, resulting in improved content discoverability and user comfort.

Research Assistant – Future Space Vision Lab

Southern University of Science and Technology, PI: Mirna Zordan 2023 – 2025

- Project: **Inclusive Medical Interfaces.** Addressed the lack of ergonomic consideration in gynecological exams.
- Led a mixed-methods study (interviews + ergonomic simulation) to identify stress factors in clinical environments. Engineered a patented add-on device that improved patient physical comfort and exam efficiency.

SELECTED PROJECTS

MOOD.ai – Multi-Agent Retrieval System for Design

Advisor: Lock Liu (Tencent Collaboration) May 2024 – Aug 2024

- Built a multi-agent RAG pipeline that decomposes complex motion-design search queries into sub-tasks, allowing agents to retrieve, critique, and cluster reference materials for designers. Designed interaction hooks so agents' decisions can later be surfaced in a designer-facing interface, to augment designer's evaluation logic.

Three Body Social Network (Conflux) Sep 2024 – Mar 2025

- Developed a sentiment analysis engine that models social dynamics using "three-body" physics simulations. Embedded a pre-trained **BERT model** to calculate real-time user sentiment scores, mapping social interaction forces to visual particle systems. Deployed as an interactive installation at SKF/Konstnärshuset.

Dark Voice

Advisor: Studio TIMI (Tencent Collaboration) Dec 2024 – Mar 2025

- Designed and prototyped a narrative-driven horror experience focused on **timing, uncertainty, and constrained perception** to probe how audio/visual cues shape felt tension. Structured the prototype so that future studies can systematically vary mechanics (e.g., line-of-sight, sound cues) and measure their effect on fear and engagement.

Beesper XR Jan 2024

- Designed and developed XR games for learning of American Sign Language.

EMPLOYMENT EXPERIENCE

Stealth AI Startup Boston, MA

Product Design Lead (Agentic Caregiving Workflow) Jun 2025 – Present

- Designing the interaction paradigm for a multi-agent caregiving system and "human-in-the-loop" verification protocols that allow non-technical users to audit AI agent decisions with AI-resilient interfaces.
- Defining the information architecture for the agent orchestration layer, translating vague user intents into concrete logic for the engineering team.

Realix.ai Cambridge, U.S (Hybrid)

Product Designer (Part-time) (Agentic Project Management) Aug 2024 – Mar 2025

- Designed the task decomposition interface for an AI-driven PM dashboard by mapping current workflow.
- Developed the logic for "project-based agents" that break high-level goals into granular, assignable tasks. Created an adaptive training module that adjusts content difficulty based on real-time user performance metrics.

Whale Hangzhou, China

Product Design Intern (AI & Analytics) Jun 2024 – Aug 2024

- Designed the interaction logic for batch-processing AI video workflows.
- Specified the "suggestion-review" loop for generative video features, prioritizing user agency and creative control. Designed the visualization schema for "Harbor" (data analytics dashboard), simplifying high-dimensional datasets into actionable insights for non-expert users by mapping current workflow.

vchnl Toronto, Canada (Remote)

Lead Product Designer (Part-time) (Social Computing) May 2024 – Feb 2025

- Led the 0-to-1 design of a geo-fenced social platform connecting physical events with digital chatrooms.
- Defined privacy-preserving moderation patterns and proximity-based interaction flows for student communities.

Context + Intelligence, DigitalFUTURES by Tongji University Shanghai, China (Remote)

Teaching Assistant Jun 2023 – Jul 2023, Jun 2024 – Jul 2024

- Co-instructed workshops on context-aware intelligent environments with MIT researchers. Mentored student teams on integrating ML workflows into spatial interaction prototypes and guided evaluation methodologies.

Woods Bagot (Beijing), **Maki & Associates** (Tokyo), **junya.ishigami+associates** (Tokyo)

Architectural Design Experience (Selected) 2018 - 2022

- Five years of professional experience in computational design and complex spatial modeling.
- Applied parametric modeling (Rhino/Grasshopper) to optimize large-scale geometries (56,000 sqm) and developed user-flow simulations for high-density public infrastructures

HONORS, AWARDS. ACCREDITATIONS

Sep 2025 Shortlisted for *Prototypes for Humanity*
Apr 2024 Recipient of *Harvard University HMUI Grant*
Jan 2024 Winner of Best Hand Gesture, *MIT Reality Hack*
Nov 2022 Shortlisted for *Melbourne Affordable Housing Design Competition*
Sep 2022 Top 100 Young Creator, *RIBA Metaverse Design Idea in Metaverse of "My Future City"*
2015 – 2020 Received Merit-Based *Scholarship* $20,000, Dean's and President's Lists, *Martin Rich Award* in Pratt Institute
8 x archived works in school publication: *InProcess*

SKILLS

Technical:

- Language: Python, C# (Unity), HTML/CSS, JavaScript
- Creative Technology: Unity, Unreal Engine, Arduino, Adobe Creative Suite (Aero, XD)
- Development: Git/GitHub, Google Colab, PyCharm

Research Methods & Analysis:

- Quantitative: Experimental Design, Statistical Analysis, Survey Design
- Qualitative: Semi-structured Interviews, Thematic Analysis, Grounded Theory, Usability Testing, Contextual Inquiry.
- Tools: IBM SPSS, Python (Pandas, NumPy, Scikit-learn), Qualtrics

Design, Interaction & Spatial Computing:

- 2D/UI: Figma, Adobe Creative Suite (Ps, Ai, Id, Ae, Pr), Data Visualization
- 3D/CAD: Rhino 3D (Grasshopper/Parametric Modeling), Fusion 360, Cinema 4D
- Prototyping: Rapid Prototyping (Laser Cutting, 3D Printing), Wireframing, Video Prototyping
- Communication: design documentation, storyboards, research posters, and paper-ready figures

Language: English (Fluent), Mandarin (Native), Cantonese (Native)