Botao 'Amber' Hu

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Bio

Botao 'Amber' Hu is a social computing researcher and experiential futures designer. He is a PhD candidate in Human Centred Computing group at University of Oxford's Department of Computer Science. As a researcher, his research focuses on Decentralized AI (DeAI), specifically through Trustworthy Agentic Web, Agent Ethology, and Agentive Commoning, involving Protocol Studies, Artificial Life, Collective Intelligence, Trust Systems, Human-AI Symbiosis thinking. As a designer, he creates experiential futures using social mixed reality as his primary medium. He also serves as a visiting lecturer for Mixed Reality Design at the China Academy of Art while directing Reality Design Lab, an independent interdisciplinary research and design lab that explores the intersection of soma design, speculative design, spatial computing, and social computing. His work has been featured at leading conferences including SIGGRAPH, CSCW, CHI, UbiComp, WWW, TEI, ISEA, IEEEVR, IEEEVIS, ISMAR, ALIFE, Ars Electronica, SXSW, and TEDx. He has received numerous accolades, including the SIGGRAPH Best in Show, CHI Best Interactivity, Webby, Red Dot, iF Design, Good Design, A' Design, Core77 Design Award, and grants from the Ethereum Foundation. He holds a bachelor's degree in computer science from Tsinghua University and a master's degree in computer science with AI concentration from Stanford University.

Education

- **University of Oxford** — *2025 - Present*
  PhD in Computer Science for Human Centred Computing — Oxford, UK
  - Research Topic: Decentralized AI (DeAI)
  - Subtopics: Trustworthy Agentic Web, Agent Ethology, and Agentive Commoning
  - Advisor: Max Van Kleek
- **Stanford University** — *2012 - 2014*
  Master of Science in Computer Science concentrated in Artificial Intelligence — Palo Alto, US
  - Advisors: Andrew Ng, Jure Leskovec, Dan Boneh
- **Tsinghua University** — *2007-2012*
  Bachelor in Computer Science and Technology, Institute for Interdisciplinary Information Sciences — Beijing, China
  - Advisor: Andrew Chi-Chih Yao
  - Enrolled in Special Pilot Theoretical Computer Science Class "Yao class" (Selected 30 out of all admitted students).

Professional Experiences

- **Human Centred Computing, University of Oxford** — *2025 - Present*
  PhD Researcher in Social Computing — Oxford, UK
  - Research Interests: Decentralized AI
    Trustworthy Agentic Web, Agent Ethology, and Agentive Commoning
- **Reality Design Lab** — *2024 - 2026*
  Founder, Lead Researcher, Experiential Futures Designer — Remote
  - Research Interests: *Designing-with More-Than-Human Through Human Augmentation* (>HtH+) — Becoming Bat (2024) — EchoVision (2024), Entangling Like Mycorrhizae (2026) — FungiSync (2024), Becoming Moles (2025) - FeltSight (2025), Moving Like an Octopus (2026) — TentacUs (2025), Embodying as AI (2025) — City of Sparkles (2019)
  - Research Interests: *Designing Realverse Through Protocolizing Mixed Reality* — Mixed Reality Street Play (2025) — MOFA (2023), Nudging the Somas (2026) — GravField (2024), Allow Me Into Your Dream (2026) — TouchPort (2025), Just a Glimpse (2026) — HoloMasks (2025), Autonomous Realities (2025)
  - Research Interests: *Open-Ended Creativity* (OEC) — Protocol as Poetry (2025), On Improvisation and Open-Endedness (2025)
  - Conducted award-winning mixed reality design projects, such as EchoVision, Composable Life, FungiSync, MOFA, Cell Space, and etc.
- **China Academy of Art** — *2023 - 2025*
  Visiting Lecturer — Hangzhou, China

- Developed and taught course "Somaesthetic Realities". Spring 2025.
- Developed and taught course "Speculative Realities". Fall 2024.
- Developed and led 21 days workshop "Latent Spaces and Permissionless Dreams". Summer 2024.
- Developed and taught course "Design New Realities". Fall 2023.

- **Holo Interactive** *2018 - 2023*
  Founder and CEO New York City, NY
  - Founded and led Holo Interactive, an educational technology startup serving as CEO from 2018 to 2023.
  - Secured $7.5M through successful fundraising.
  - Invented and developed an open-source stereoscopic mixed reality headset, HoloKit.
  - Led manufacturing scale-up from prototype to 10,000 units of mixed reality headsets.

- **Amber Garage** *2014 - 2018*
  Founder, New Media Artist and Software Engineer Atherton, CA, USA
  - Directed and Developed City VR. An interactive visual reality experience art installation using the photogrammetry technology to visualize the city.
  - Produced City Of Sparkles. An interactive virtual reality experience art installation using real Twitter messages to visualize cities with millions of particles.
  - Invented and Developed Skywand. A new software tool utilizing virtual reality to bring pre-planning capabilities to aerial cinematography and deploy robotics technology to the aerial filming robot. Talked in TEDx 2017 Beacon St, Boston *"What you get is what you imagine"*.

- **thatgamecompany** *2016 - 2017*
  Game Engineer Santa Monica, CA, USA
  - Build a game recommendation and backend system for a mobile-based social adventure art game: Sky: Children of the Light. 🏆 2019 Best iPhone Game.

- **DJI** *2015 - 2015*
  Robotics Software Engineer Shenzhen, China
  - Founding and major contributing DJI Onboard Robotics Operating System SDK, a software library enables millions of DJI drones to fly for industrial applications autonomously.
  - Develop M100 industrial and research flight drone platform.

- **Twitter** *2014*
  Software Development Engineer and Data Scientist, Social Discovery Team San Francisco, USA
  - Developed Whom To Follow feature: Created recommendation system to suggest relevant connections for new users, driving network growth
  - Developed MagicRecs project: Built trending content recommendation system to boost user engagement within social circles

- **Microsoft Research Asia** *2010 - 2011*
  Research Intern, Machine Learning Group Beijing, China
  - Developed SIGMA, a large scale machine learning toolkit: Constructed a MPI-like parallel framework in C# specially tailored for the characteristics of machine learning algorithms. Outperformed traditional algorithms by achieving 10 – 1000x speedup on large training data
  - Developed ClickBoost, a commercial large-scale framework for Click Models used in Bing.com: Applied the "Probit" method in my research work to a MapReduce-based parallel framework in Bing.com. First in the world, with throughput up to 1PB data, completed the learning processing of click models in few hours

Research Residencies

- **Cambridge Existential Risk Alliance (ERA) Fellowship** *2026*
  Research Cohort Cambridge, UK
  - Research Question: Can Insurance Models Stabilize Trustworthy Equilibrium in LLM Agent Behavior in Evolutionary Games?
  - Related Research Question: Machine Death
  - Advisor: Joel Lehman

- **Civilizational AI Camp** *2026*
  Research Lead Chiangmai, Thailand
  - Hosting Research Workshop: AI for future commons
  - Host: Michel Bauwens from P2P Foundation

- **Somabotics, University of Nottingham** *2025*
  Visiting Scholar in Mixed Reality Laboratory Nottingham, UK
  - Research Topic: On Improvisation and Open-Endedness: Insights for Experiential AI
  - Participating in Research Workshop: Soma Glitching
  - Advisor: Steve Benford
- **Impact Evaluator Research Retreat** *2025*
  Research Cohort Reykjavik, Iceland
  - Research Topic: AI-based funding allocation for digital commons through impact evaluation.
  - Advisor: Juan Benet
- **Royal College of Art** *2025*
  Summer School: Futures Through Design London, UK
  - Advisor: Rob Phillips, Gem Barton and John Willshire
- **Summer Of Protocols** *2024*
  Research Cohort Remote
  - Protocology Research: *Protocolizing Mixed Realities*
  - Securing a $90K research grant by Ethereum Foundation
  - Publication: Autonomous Realities (2025), a protocol design fiction to explore Digital Object Permanence
- **Hong Kong University of Science and Technology** *2011*
  Visiting Scholar for Machine Learning in Computer Science Hong Kong
  - Advisor: Qiang Yang

PUBLICATION (FOR PHD): DECENTRALIZED AI

[S.1] **Botao Amber Hu**, Helena Rong, Max Van Kleek. **Is That Agent Credible? Ontological Challenges of LLM Agent Reputation Systems Toward a Trustworthy Agentic Web**. Manuscript submitted for publication in *ACM FAccT 2026*. Under Review.

[S.2] **Botao Amber Hu**, Helena Rong. **Sovereign Agents: Towards Infrastructural Sovereignty and Diffused Accountability in Decentralized AI**. Manuscript submitted for publication in *ACM FAccT 2026*. Under Review.

[S.3] **Botao Amber Hu**, and Bangdao Chen. **Insured Agents: An Trust Insurance Mechanism for Agentic Economy** Manuscript submitted for publication in AAMAS 2026. Under Review.

[S.4] **Botao Amber Hu** and Helena Rong. **Position: Some[Body] Needs to Receive That Pain for Agentic Accountability**. Manuscript submitted for publication in ICML 2026. Under Review.

[S.5] **Botao Amber Hu** and Helena Rong. **Inter-Agent Trust Models: A Comparative Study of Brief, Proof, Stake, and Reputation in Agentic Web Protocol Design—A2A, AP2, ERC-8004, and Beyond**. Manuscript submitted for publication in *AAAI 2026 TrustAgent Workshop*.

[S.6] Helena Rong and **Botao Amber Hu**. **Turning to Trust Experience Design (TXD): A Manifesto for Distributed Autonomous Futures**. Manuscript submitted for publication in *Interactions 2026*.

[S.7] **Botao Amber Hu**, Yuhan Liu, and Helena Rong*. **Trustless Autonomy: Understanding Motivations, Benefits and Governance Dilemmas in Self-Sovereign Decentralized AI Agents** . Manuscript submitted for publication in *CSCW 2026*. Under Review.

[S.8] **Botao Amber Hu**, Helena Rong and Janna Tay. **Is Decentralized AI Governable? A Paradigm Shift from Policy to Protocol**. Manuscript submitted for publication in *AI & Ethics*. Under Review.

[S.9] **Botao Amber Hu**, Samuel Chua, and Helena Rong. **Protocol Futuring: Speculating Second-Order Dynamics of Protocols in Sociotechnical Infrastructural Futures**. Accepted by *CHI 2026*.

[S.10] **Botao Amber Hu** and Helena Rong. **Spore in the Wild: A Case Study of Spore.fun as an Open-Environment Evolution Experiment with Sovereign AI Agents on TEE-Secured Blockchains**. In *Proceedings of the 2025 Conference on Artificial Life (ALIFE '25)*. Full Paper.

[S.11] **Botao Amber Hu*** and Fangting (2025). **Composable Life: Speculation for Decentralized AI Life**. In *2025 International Symposium on Electronic/Emerging Art (ISEA '25)*. Short Paper.

[S.12] **Botao Amber Hu*** and Fangting (2024). **EverForest: A More-Than-AI Sustainability Manifesto from an On-Chain Artificial Life**. *In Proceedings of the Halfway to the Future Symposium 2024 (HTTF 2024)*. Critique Paper.

[S.13] **Botao Amber Hu*** and Fangting (2024). **Speculating on Blockchain as an Unstoppable 'Nature' Towards the Emergence of Artificial Life**. In *Proceedings of the 2024 Conference on Artificial Life (ALIFE '24)*. Extended Abstract.

PUBLICATIONS (BEFORE PHD)

[S.1] Danwen Ji, **Botao 'Amber' Hu**. **Infrastructuring Pop-Up Cities with "Social Layer": Designing Serendipitous Co-Livings for Temporary Intentional Communities**. Manuscript submitted for publication in DRS 2026. Under Review.

[S.2] Ke Huang, **Botao Amber Hu***. **Don't Die! Performing Cybroc**. Manuscript submitted for publication in *Leonardo*. Under Review.

[S.3] **Botao Amber Hu**, and Danlin Huang. **Designing-with More-than-Human Through Human Augmentation**. Manuscript submitted for publication in *DRS 2026*. Under Review.

[S.4] **Botao Amber Hu***, Danlin Huang, Yiyang Sun, Ziying Chen, La Luo (2026). **Moving Like an Octopus: Exploring Decentralized Tentacular Coordination via Inter-Bodily Electromyostimulation Relays**. Accepted in *MOCO 2026*.

[S.5] **Botao Amber Hu***, Yilan Elan Tao, Rem Rungu Lin, Mingze Chai, Yuemin Huang, and Rakesh Patibanda (2026). **Nudging the Somas: Exploring How Lived-Configurable Mixed Reality Objects Shape Open-Ended Intercorporeal Movements**. *CHI 2026*. Full Paper.

[S.6] **Botao Amber Hu***, Yuemin Huang, Mingze Chai, Xiaobo Aaron Hu, Yilan Elan Tao, and Rem RunGu Lin (2025). **GravField: Entangling Digital Objects with Bodies**. In *2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*. XR Gallery.

[S.7] **Botao Amber Hu***, Rem RunGu Lin, Yilan Elan Tao, Samuli Laato, and Yue Li (2025). **Towards Immersive Mixed Reality Street Play: Understanding Co-located Bodily Play with See-through Head-mounted Displays in Public Spaces**. In *Proceedings of the ACM on Human-Computer Interaction (CSCW 2025)*. Full Paper.

[S.8] **Botao Amber Hu***. **City of Sparkles: Embodying Cityscape of Human Memories**. In *Proceeding of SIGGRAPH Asia 2025 (SA '25)*. Art Paper.

[S.9] Danlin Huang, **Botao Amber Hu***, Dong Zhang, Yifei Liu, Takatoshi Yoshida, and Rem Rungu Lin*. **Becoming Mole with "FeltSight": Hyper-sensitizing the Surrounding through Mixed Reality Haptic Proximity Gloves**. In *Proceeding of SIGGRAPH Asia 2025 (SA '25)*. Art Paper.

[S.10] Yiyang Sun, Ziying Chen, La Luo, and **Botao Amber Hu***. **I Become Tentacle, We Become "Tentacus": A Mixed Reality Ritual for Distributed Bodies and Collective Minds**. In *Adjunct Proceeding of SIGGRAPH Asia 2025 (SA '25)*. XR.

[S.11] Rem RunGu Lin, **Botao Amber Hu***, and Yongen Ke (2025). **Cell Space**. In *Proceedings of the 19th International Conference on Tangible, Embedded, and Embodied Interaction (TEI '25)*. Art and Performance.

[S.12] **Botao Amber Hu***, Danlin Huang, Yilan Elan Tao, Xiaobo Aaron Hu, and Rem RunGu Lin (2025). **FungiSync: Merging Cyberdelic Mixed Realities**. In *Proceedings of the 2025 Conference and Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH '25)*. Immersive Pavilion.

[S.13] **Botao Amber Hu**, Jiabao Li*, Danlin Huang, Jianan Johanna Liu, Xiaobo Aaron Hu, and Yilan Elan Tao (2025). **Seeing with Sound: Demonstrating "EchoVision", a Mixed Reality Simulation of Bat Echolocation**. In *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI EA '25)*. Interactivity.

[S.14] **Botao Amber Hu**, Jiabao Li*, Danlin Huang, Jianan Johanna Liu, Xiaobo Aaron Hu, and Yilan Elan Tao (2025). **Demonstrating "EchoVision": Mixed Reality Sensory Substitution with Bat Echolocation**. In *The Augmented Humans International Conference 2025 (AHs '25)*. Demo. 🏆 Best Demo Award.

[S.15] Yilan Elan Tao, and **Botao Amber Hu*** (2025). **Towards Spatial Introspection and Experiential Prospection: A Speculative Design Inquiry in Extended Reality**. In *2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*. Workshop.

[S.16] **Botao Amber Hu**. **On Improvisation and Open-Endedness: Insights for Experiential AI**. In Proceeding of *AAAI 2026 CLIP Workshop*.

[S.17] Rem RunGu Lin, **Botao Amber Hu***, and Shuyan Zhang. **Media Farm: Reinventing the Tetrad for AI-driven Reinterpretation and Generation of Media Art**. Accepted at *Leonardo* Journal.

[S.18] **Botao Amber Hu** (2025). **Protocol as Poetry: A Case Study of Pak's Smart Contract-based Protocol Arts**. In *Proceedings of ARTECH 2025*. Full Paper.

[S.19] **Botao Amber Hu** (2025). **Autonomous Realities: A Journey into Protocolizing Digital Object Permanence in a Future of Many Mixed Realities**. In *Proceedings of the sixth Decennial Aarhus Conference on Critical Computing (Aarhus 2025)*. Critique Paper.

[S.20] **Botao Amber Hu***, Yuemin Huang, Mingze Chai, Xiaobo Aaron Hu, Yilan Elan Tao, and Rem RunGu Lin (2025). **Improvising within "GravField": A Participatory Live-coding Performance Exploring How Digital Objects Mediate Intercorporeal Movements in Collocated Mixed Reality**. *NIME 2025 Music*.

[S.21] **Botao Amber Hu***, Yuemin Huang, Mingze Chai, Xiaobo Aaron Hu, Yilan Elan Tao, and Rem RunGu Lin (2025). **GravField: Entangling Digital Objects with Bodies**. In *2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*. XR Gallery.

[S.22] Rem RunGu Lin, **Botao Amber Hu***, and Yongen Ke (2025). **Cell Space**. In *2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*. XR Gallery.

[S.23] Samuli Laato, Timo Nummenmaa, Hironori Yoshida, Philip Chambers, Ville-Veikko Uhlgren, **Botao Amber Hu**, Bastian Kordyaka, and Juho Hamari (2025). **Crowdsourcing Environment Data with Gamified Augmented Reality Mini-Games**. In *Proceedings of the ACM on Human-Computer Interaction (CHI PLAY 2025)*. Full Paper.

[S.24] Danlin Huang, Ke Huang, Ruoqi Wang, and **Botao Amber Hu***. **"Body Oracle" Translator: Translating Body Postures into Speculative Hieroglyphs**. In *Adjunct Proceeding of SIGGRAPH Asia 2025 (SA '25)*. XR.

[S.25] Danlin Huang, Ke Huang, Ruoqi Wang, and **Botao Amber Hu*** (2025). **Body Oracle: Exploring Somatic Hieroglyphs for Collective Bodily Awareness**. In *Proceedings of Ars Electronica Expanded 2025*. Full Paper.

[S.26] Ke Huang, Yue Zhou, Xi He, Weibo Chen and **Botao Amber Hu*** (2025). **Cybroc: Cyborgizing Broccoli for Longevity**. In *2025 International Symposium on Electronic/Emerging Art (ISEA '25)*. Short Paper.

[S.27] Ke Huang, Danlin Huang, Cun Lin, and **Botao Amber Hu*** (2025). **Body Oracle**. In *Proceedings of the 19th International Conference on Tangible, Embedded, and Embodied Interaction (TEI '25)*. Art and Performance.

[S.28] Rem Rungu Lin, **Botao Amber Hu**, Koo Yongen Ke, Wei Wu, and Kang Zhang* (2024). **Cell Space: Augmented Awareness of Intercorporeality**. In *Proceedings of the Conference and Exhibition on 2024 Computer Graphics and Interactive Techniques (SIGGRAPH '24)*. Art Paper.

[S.29] **Botao Amber Hu***, Yuchen Zhang, Yilan Elan Tao, and Tongzhou Yu (2024). **HoloKit: Demonstrating an Open-Source Smartphone-Based Mixed Reality Headset for Mixed Reality Design Education**. In *Adjunct Proceedings of the 2024 ACM International Joint Conference on Pervasive and Ubiquitous Computing & the 2024 ACM International Symposium on Wearable Computing (UbiComp/ISWC '24 Adjunct)*. Demo. 🏆 Best Demo Award.

[S.30] **Botao Amber Hu***, Yuchen Zhang, Sizheng Hao and Yilan Tao (2024). **MOFA: Multiplayer Omnipresent Fighting Arena**. In *Proceedings of the 2024 Conference and Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH '24)*. Immersive Pavilion. 🏆 Best in Show.

[S.31] **Botao Amber Hu***, Yilan Elan Tao, Yuchen Zhang, Sizheng Hao, and Rem RunGu Lin (2024). **MOFA The Ghost: Demonstrating an Asymmetrical Social Exertion Game in Spontaneous Collocated Mixed Reality**. In *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY Companion '24)*. Interactivity.

[S.32] **Botao Amber Hu***, Yuemin Huang, Mingze Chai, Xiaobo Aaron Hu, and Yilan Elan Tao (2024). **GravField: Towards Designing an Inter-bodily Live-Coding Performance System within Collocated Mixed Reality Field**. In *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY Companion '24)*. Work-in-Progress.

[S.33] **Botao Amber Hu***, Yilan Elan Tao, Rem Rungu Lin, and Yue Li (2024). **On Intent Inclusivity in Spontaneous Cross Realities**. In *2024 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct)*. Workshop Paper.

[S.34] Bingqing Chen, Yue Li*, **Botao Amber Hu**, and Yilan Elan Tao (2024). **Awkward or Acceptable? Understanding the Bystander Perspective on the Ubiquity of Cross Reality in Ambiguous Social Situations**. In *2024 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct)*. Workshop Paper.

[S.35] **Botao Hu***, Yuemin Huang, Mingze Chai, Yilan Tao and Xiaobo Hu (2024). **GravField: A Participatory Performance Exploring Intercorporeality as Live-Coding Instruments within a Co-located Mixed Reality**. In *Proceedings of the 2024 International Conference on Live Coding (ICLC '24)*. Live Performance.

[S.36] **Botao Amber Hu***, Yang Liu, and Ran Duan (2024). **City of Sparkles**. In *2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*. XR Gallery.

[S.37] **Botao Amber Hu**, Jiabao Li*, Danlin Huang, Jianan Johanna Liu, Xiaobo Aaron Hu, and Yilan Elan Tao (2025). **EchoVision**. In *2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*. XR Gallery.

[S.38] **Botao Amber Hu**, Jiabao Li*, Danlin Huang, Jianan Johanna Liu, Xiaobo Aaron Hu, and Yilan Elan Tao (2024). **Becoming Bats with "EchoVision": Towards Eco-Phenomenological Mixed Reality**. In *Proceeding of SIGGRAPH Asia 2024 (SA '24)*. Art Paper.

[S.39] **Botao Amber Hu***, Rem RunGu Lin, Yuemin Huang, Mingze Chai, Xiaobo Aaron Hu, and Yilan Elan Tao (2024). **GravField: Live-Coding Bodies through Mixed Reality**. In *Adjunct Proceeding of SIGGRAPH Asia 2024 (SA '24)*. XR.

[S.40] **Botao Amber Hu**, Jiabao Li*, Danlin Huang, Jianan Johanna Liu, Xiaobo Aaron Hu, and Yilan Elan Tao (2024). **EchoVision: A Handheld Mixed Reality Mask for Experiencing Bat Echolocation**. In *Adjunct Proceedings of the 2024 ACM International Joint Conference on Pervasive and Ubiquitous Computing & the 2024 ACM International Symposium on Wearable Computing (UbiComp/ISWC '24 Adjunct)*. Design Exhibition.

[S.41] Jiabao Li, Matt McCorkle, and **Botao Amber Hu** (2024). **Becoming Bat**. In *Proceedings of the Halfway to the Future Symposium 2024 (HTTF '24)*. Pictorial.

[S.42] **Botao Amber Hu**, Jiabao Li*, Danlin Huang, Jianan Johanna Liu, Xiaobo Aaron Hu, and Yilan Elan Tao (2024). **EchoVision: Experiencing Bat Echolocation via Mixed Reality**. In *Adjunct Proceeding of SIGGRAPH Asia 2024 (SA '24)*. XR.

[S.43] Kaiqing Huang, Chu Zhang, Wangyu Ping, Boxiong Zhao, **Botao Hu** (2024). **CrossReality**. In *Proceedings of the 2024 International Conference on Live Coding (ICLC '24)*. Live Performance.

[S.44] Jianan Johanna Liu, Danlin Huang, Yuqi Song, Shan Luo, and **Botao Amber Hu*** (2024). **Foldiverse: Augmenting Paper Folding Physiotherapy for Children with Autism via Family-Centered Mixed Reality Design**. In *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY Companion '24)*. Student Competition. 🏆 Best Student Competition Award.

[S.45] Shan Luo, Jianan Johanna Liu, and **Botao Amber Hu*** (2024). **Hearing the Bullseye: An Auditory-Cued Archery Exergame for the Visually Impaired and Their Sighted Family and Friends**. In *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY Companion '24)*. Student Competition.

[S.46] Shan Luo, Jianan Johanna Liu, and **Botao Amber Hu*** (2024). **Demonstrating an Auditory-Cued Archery Social Exertion Game for the Blind and Sighted to Play Together**. In *Companion Publication of the 2024 Conference on Computer Supported Cooperative Work and Social Computing (CSCW '24 Companion)*. Demo.

[S.47] Shan Luo, Jianan Johanna Liu, and **Botao Amber Hu*** (2024). **Designing a Safe Auditory-Cued Archery Exertion Game for the Visually Impaired and Sighted to Enjoy Together**. In *The 26th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '24)*. Poster.

[S.48] **Botao Hu***, Yuchen Zhang, Sizheng Hao, and Yilan Tao (2023) **InstantCopresence: A Spatial Anchor Sharing Methodology for Co-Located Multiplayer Handheld and Headworn AR**. In *2023 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct '23)*. Demo. 🎗 Honorable Mention.

[S.49] **Botao Hu***, Yuchen Zhang, Sizheng Hao, and Yilan Tao (2023) **MOFA: Exploring Asymmetric Mixed Reality Design Strategy for Co-located Multiplayer Between Handheld and Head-mounted Augmented Reality**. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA '23)*. Interactivity. 🏆 Jury's Best Demo Recognition.

[S.50] **Botao Hu***, Yang Liu, and Ran Duan (2019). **City of Sparkles**. In *ACM SIGGRAPH 2019 Virtual, Augmented, and Mixed Reality (SIGGRAPH '19)*. Immersive Pavilion.

[S.51] Peiliang Li, Tong Qin, **Botao Hu**, Fengyuan Zhu, and Shaojie Shen* (2017). **Monocular Visual-Inertial State Estimation for Mobile Augmented Reality**. In *2017 IEEE International Symposium on Mixed and Augmented Reality (ISMAR '17)*. Full Paper.

[S.52] **Botao Hu**, Yuchen Zhang, Weizhu Chen, Gang Wang, and Qiang Yang* (2011). **Characterizing search intent diversity into click models**. In *Proceedings of the 20th international conference on World wide web (WWW '11)*. Full Paper.

[S.53] Si Shen, **Botao Hu**, Weizhu Chen, and Qiang Yang* (2012). **Personalized click model through collaborative filtering**. In *Proceedings of the fifth ACM international conference on Web search and data mining (WSDM '12)*. Full Paper.

[S.54] Yuchen Zhang*, Dong Wang, Gang Wang, Weizhu Chen, Zhihua Zhang, **Botao Hu**, and Li Zhang (2010). **Learning click models via probit bayesian inference**. In *Proceedings of the 19th ACM international conference on Information and knowledge management (CIKM '10)*. Full Paper.

[S.55] Dakan Wang*, Gang Wang, Pinyan Lu, Yajun Wang, Zheng Chen, and **Botao Hu** (2011). **Is pay-per-click efficient? an empirical analysis of click values**. In *Proceedings of the 20th International Conference Companion on World Wide Web (WWW '11)*. Poster.

[S.56] Dong Wang*, Weizhu Chen, Gang Wang, Yuchen Zhang, and **Botao Hu** (2010). **Explore click models for search ranking**. In *Proceedings of the 19th ACM international conference on Information and knowledge management (CIKM '10)*. Poster.

EXHIBITIONS

[E.1] **IEEE Virtual Reality (VR) 2026 XR Gallery**. *Body Oracle*. Daegu, Korea.

[E.2] **IEEE Virtual Reality (VR) 2026 XR Gallery**. *FeltSight*. Daegu, Korea.

[E.3] **ACM SIGGRAPH Asia 2025 XR**. *Body Oracle*. Hong Kong, China.

[E.4] **ACM SIGGRAPH Asia 2025 XR**. *TentacUs*. Hong Kong, China.

[E.5] **ALIFE 2025 Art Exhibition**. *Cybroc*. Kyoto, Japan.

[E.6] **IEEE Visualization (VIS) 2025 Arts Program**. *FeltSight*. Vienna, Australia.

[E.7] **NIME 2025**. *GravField*. Canberra, Australia.

[E.8] **SIGGRAPH 2025 Immersive Pavilion**. *FungiSync*. Vancouver, Canada.

[E.9] **SURREALITY 2025**. *Body Oracle*. The Hong Kong University of Science and Technology (Guangzhou), Guangzhou, China.

[E.10] **IEEE AIART Gallery 2025**. *Body Oracle*. Nantes, France.

[E.11] **CVPR 2025 AI Art Gallery**. *Body Oracle*. Nashville, US.

[E.12] **IJCAI 2025 Art Gallery**. *Body Oracle*. Montreal, Canada.

[E.13] **CURRENTS 2025 Art & Technology Festival**. *EchoVision*. Santa Fe, US.

[E.14] **ISEA 2025**. *City Of Sparkles*. Seoul Art Center, Seoul, KR.

[E.15] **SXSW 2025 XR Experience Exhibition**. *EchoVision*. Austin, US.

[E.16] **Chinese CHI 2025 Art Gallery**. *Body Oracle*. Shenzhen, China.

[E.17] **Chinese CHI 2025 Art Gallery**. *Cybroc*. Shenzhen, China.

[E.18] **IEEE Virtual Reality (VR) 2025 XR Gallery**. *City Of Sparkles*. Saint-Malo, France.

[E.19] **IEEE Virtual Reality (VR) 2025 XR Gallery**. *GravField*. Saint-Malo, France.

[E.20] **IEEE Virtual Reality (VR) 2025 XR Gallery**. *EchoVision*. Saint-Malo, France.

[E.21] **IEEE Virtual Reality (VR) 2025 XR Gallery**. *Cell Space*. Saint-Malo, France.

[E.22] **ACM Tangible and Embedded Interaction (TEI) 2025 Art & Performance.** *Body Oracle*. Bordeaux, France.

[E.23] **ACM Tangible and Embedded Interaction (TEI) 2025 Art & Performance.** *Cell Space*. Bordeaux, France.

[E.24] **DevCon 2024 Trusting the Unseen: Elements of the Infinite Garden**. *FungiSync*. Bangkok, Thailand.

[E.25] **ACM SIGGRAPH Asia 2024 XR**. *GravField: Live-Coding Bodies through Mixed Reality*. Tokyo, Japan.

[E.26] **ACM SIGGRAPH Asia 2024 XR**. *EchoVision: Experiencing Bat Echolocation via Mixed Reality*. Tokyo, Japan.

[E.27] **West Bund Art Festival 2024.** *EchoVision*. Shanghai, China.

[E.28] **TANK Art Festival 2024.** *EchoVision*. Shanghai, China.

[E.29] **IEEE Visualization (VIS) 2024 Arts Program**. *EchoVision*. St Pete Beach, Florida, US.

[E.30] **ACM International Symposium on Wearable Computers (Ubicomp-ISWC) 2024 Design Exhibition**. *EchoVision*. Melbourne, Australia.

[E.31] **ACM International Symposium on Wearable Computers (Ubicomp-ISWC) 2024 Demonstration**. *HoloKit*. Melbourne, Australia.

[E.32] **Vancouver International Film Festival 2024**. *Nocturnal Fugue*. Vancouver, Canada.

[E.33] **Ars Electronica 2024**. *Nocturnal Fugue - Becoming Bat with EchoVision*. Linz, Austria.

[E.34] **Sheffield DocFest 2024**. *Nocturnal Fugue*. Sheffield, UK.

[E.35] **Omotesando interactivité 2024.** *Nocturnal Fugue*. Tokyo, Japan.

[E.36] **The Contemporary Austin. Fusebox Program 2024**. *Nocturnal Fugue*. Austin, US.

[E.37] **ACM Symposium on Computer-Human Interaction in Play (CHI PLAY) 2024 Interactivity**. *MOFA the Ghost*. Tampere, Finland.

[E.38] **ACM SIGGRAPH 2024 Immersive Pavilion**. *Multiplayer Omnipresent Fighting Arena*. Denver, US.

[E.39] **The International Conference on Live Coding (ICLC) 2024 Live Performance**. *GravField*. Shanghai, China.

[E.40] **ACM SIGGRAPH 2024 Digital Arts Community**. The Future of Reality, Curated Online Exhibition. *Composable Life*.

[E.41] **ISMAR 2023 Demo**. *InstantCopresence*. Sydney, Australia.

[E.42] **ACM CHI 2023 Interactivity**. *MOFA*. Hamburg, Germany.

[E.43] **ACM SIGGRAPH 2019 Immersive Pavilion**. *City Of Sparkles*. Los Angeles, US.

[E.44] **New Media Film Festival 2019**. *City Of Sparkles*. Los Angeles, US.

[E.45] **DTLA Film Festival 2019**. *City Of Sparkles*. Los Angeles, US.

[E.46] **Future of Storytelling 2017**. *HoloKit 1*. New York City, US.

[E.47] **SIGGRAPH 2017**. *HoloKit 1*. Los Angeles, US.

[E.48] **Maker Faire New York 2017**. *HoloKit 1*. New York City, US.

PATENTS

[P.1] **Botao Hu**, Yuchen Zhang (2022). **Local multi-device fast spatial anchor point synchronization method for mixed reality and system**. United States, Patent No. US20240154711A1.

[P.2] Jenova Xinghan Chen, Amy Li Gussin, Peter Lee, Jeffrey Exterkate, Yang Liu, Kunal Lanjewar, **Botao Hu** (2021). **System, method, and smart device for authentication of products and interaction with a virtual environment**. United States, Patent No. US12131338B2.

[P.3] **Botao Hu** (2019). **Controller**. United States, Patent No. USD902927S1.

[P.4] **Botao Hu** (2019). **Headset**. United States, Patent No. USD889462S1.

[P.5] **Botao Hu** (2019). **Headset**. United States, Patent No. USD890170S1.

[P.6] **Botao Hu** (2017). **Imaging method for modular mixed reality (MR) device**. United States, Patent No. US11709360B2.

[P.7] **Botao Hu** (2017). **Headset**. United States, Patent No. USD889463S1.

[P.8] **Botao Hu** and Jiajie Zhang (2015). **Planning a flight path by identifying key frames**. United States, Patent No. US9947230B2.

[P.9] **Botao Hu**, Jiajie Zhang (2015). **System, method, and smart device for authentication of products and interaction with a virtual environment**. United States, Patent No. US9928649B2.

TALKS

[T.1] **AAAI'26 Workshop LLM-based Multi-Agent Systems: Towards Responsible, Reliable, and Scalable Agentic Systems (LaMAS 2026)**. Keynote Speaker. 2026. *"Some[body] Needs to Receive That Pain: A Position on Agentic Accountability"*. Singapore.

[T.2] **School of Design and Creative Technologies, University of Texas at Austin**. Guest lecture for Jiabao Li's AI Playground Course. 2025. *"Some[body] Needs to Receive That Pain: A Position on Agentic Accountability"*. Austin, US.

[T.3] **Agentic Economy Workshop: Benchmarking Multi-Agent Systems**. Invited Closing Keynote. 2025. *"Some[body] Needs to Receive That Pain: A Position on Agentic Accountability"*. University of Cambridge, UK.

[T.4] **Breaking DePIN**. Unconference. 2025. *"Spore in the Wild"*. Zurich, Switzerland.

[T.5] **EDCON 2025**. Invited Talk. 2025. *"More-than-human Out-of-the-loop In-the-wild"*. Osaka, Japan.

[T.6] **Human-Algorithm Interaction Workshop**. Invited Talk. 2025. *"Is Decentralized AI Governable?"*. Saïd Business School, University of Oxford, Oxford, UK.

[T.7] **International Symposium on Electronic Art (ISEA)**. Artist Talk. 2025. *"EverForest"*. Seoul, KR.

[T.8] **International Symposium on Electronic Art (ISEA)**. Artist Talk. 2025. *"EchoVision: What Is It Like to be a Bat?"* . Seoul, KR.

[T.9] **International Symposium on Electronic Art (ISEA)**. Artist Talk. 2025. *"Body Oracle: Speculative Hieroglyphs for Collective Bodily Awareness"* . Seoul, KR.

[T.10] **DWeb Camp**. Workshop. 2024. *"Merging Mixed Realities: Envisioning a Future with Prevalent Use of HMDs"* . Camp Navarro, CA, US.

[T.11] **Beijing Film Academy**. Seminar. 2024. *"Allow me into your dream"*. Beijing, China.

[T.12] **School of Design and Creative Technologies, University of Texas at Austin**. Guest lecture for Jiabao Li's Interaction Design Course. 2024. *"Introduction to Spatial Computing and Develop with Apple Vision Pro and HoloKit"*. Austin, US.

[T.13] **Computational Media and Arts, Hong Kong University of Science and Technology (Guangzhou)**. Seminar. 2024. *"Wizards vs Muggles!" - MOFA: A Gameplay Framework exploring the Design Space of Spontaneous Collocated Mixed Reality*. Guangzhou, China.

[T.14] **The Future Laboratory, Tsinghua University**. Invited Talk. 2024. *"Expanding Intercorporeality: Exploring Human-Human and Human-Robot Interactions in MR"*. Beijing, China.

[T.15] **China Academy of Art**. Seminar. 2023. *"Designing New Realities: Research Through Design for Collocated Mixed Reality Experiences"*. Hangzhou, China.

[T.16] **Zuzalu - The Pop-up City**. Hackathon Talk. 2023. *"Zuzaland: An Augmented Network State Pop-up in Physical Space"* . Tivat, Montenegro.

[T.17] **Harvard XR Forum**. Talk. 2023. *"Dream Together in New Realities: Unleash the Power of Copresence in Headworn AR"*. Harvard University, Boston, US.

[T.18] **Integrated Design & Media, New York University**. Talk. 2023. *"HoloKit: Open Source Mixed Reality Headset for Reality Designers"*. Brooklyn, US.

[T.19] **TEDx Beacon Street**. Talk. 2017. *"What you get is what you imagine"*. TEDx Beacon Street, Boston, US.

[T.20] **AR in Action**. Talk. 2017. *"HoloKit: Google Cardboard for AR"*. New York University, New York City, US.

Honors and Awards

- **AUREA Award** — *2025*
  Awarding Jiabao Li, Matt McCorkle, Botao Amber Hu for Nocturnal Fugue — "Creative" Award
- **SIGGRAPH 2024 Immersive Pavilion** — *2024*
  Awarding Botao Hu and Holo Interactive for MOFA — Best in Show
- **UbiComp/ISWC 2024** — *2024*
  Awarding Botao Hu and Holo Interactive for HoloKit X — Best Demo Award
- **Good Design Awards** — *2024*
  Awarding Botao Hu and Holo Interactive for HoloKit X — Good Design Award in Hardware
- **Core77 Design Awards** — *2024*
  Awarding Botao Hu and Fangting for Composable Life — Notable in Speculative Design
- **Design Intelligence Award** — *2024*
  Awarding Botao Hu and Holo Interactive for HoloKit X — Honorable Mention
- **A' Design Award** — *2024*
  Awarding Botao Hu and Holo Interactive for HoloKit X — Silver in Wearable Technologies Design
- **iF Design Award** — *2024*
  Awarding Botao Hu and Holo Interactive for HoloKit X — Winner in Product/Gaming Hardware/VR/AR
- **CHI 2023 Interactivity** — *2023*
  Awarding Botao Hu and Holo Interactive for MOFA — Jury's Best Demo Recognition
- **ISMAR 2023 Demonstration** — *2023*
  Awarding Botao Hu and Holo Interactive for HoloField — Honorable Mention
- **Red Dot Design Award** — *2023*
  Awarding Botao Hu and Holo Interactive for HoloKit X — Winner of Product Design
- **Core77 Design Award** — *2023*
  Awarding Botao Hu and Holo Interactive for HoloKit X — Notable in Consumer Technology & Runner up in Emerging Technology
- **Webby Awards** — *2023*
  Awarding Botao Hu and Holo Interactive for HoloKit X — Nominee in Technical Achievement / Metaverse, Immersive & Virtual
- **SXSW Innovation Award** — *2023*
  Awarding Botao Hu and Holo Interactive for HoloKit X — Nominee in Innovative Design

Teachings

- **Design for Extended Realities** — *Spring 2025*
  Led by Yicheng Sun. Serving as Advisor. — Stanford University
- **Extended Reality Somaesthetic Design** — *Spring 2025*
  Co-teaching with Tongzhou Yu, and Rem Rungu Lin — China Academy of Art
- **Speculative Spatial Computing Design** — *Fall 2024*
  Solo Teaching — China Academy of Art
- **PlayShop: Latent Spaces & Permissionless Dreams** — *Summer 2024*
  Co-teaching with Egor Kraft — China Academy of Art
- **Designing New Realities** — *Fall 2023*
  Co-teaching with Tongzhou Yu — China Academy of Art

Services

- **Reviewer for FDG 2026, SIGGRAPH 2026, CHI 2026, SIGGRAPH Asia 2025, SIGGRAPH 2025, IMX 2025, NIME 2025, ALIFE 2025, Interacting with Computers**
- **Jury for MIT Reality Hack 2025**
- **Advisor for Stanford Design for Extended Reality Course 2025**

Skills

- **Programming Languages:** Rust, C#, C++, Swift, Haskell, TypeScript, Python
- **Entrepreneur Experience in Hardware:** Experience scaling Mixed Reality headset development from concept to production, handling 1 to 10,000 units
- **Technical Art:** Shader and Visual Effect in Unity, WebXR, WebGL, and WebGPU
- **Specialized Area:** Mixed Reality Design, Speculative Design, Protocol Design
- **Mathematical & Statistical Tools:** Mathematica, NVivo
- **Research Skills:** Research Through Design, Research in the wild, Ethnographic Experiential Futures

Additional Information

Languages: Mandarin (proficiency: Native), English (proficiency: Master's degree from a U.S. university and 10 years of U.S. residency)
Interests: Climbing, Contemporary Art