

Hugh Xuechen LIU

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Last update: May 17, 2026

Biography Summary

Interdisciplinary researcher at the intersection of artificial intelligence and humanistic inquiry. My current work develops computational frameworks that bridge game studies, generative AI, and creative practice, with emphasis on human-centred design, computational creativity, and user-centred evaluation. Prior work spans blockchain games, game metrics, science visualization, and gamification for health promotion.

Education

- City University of Hong Kong, Ph.D. in Creative Media** 3 Oct 2022
- Dissertation Title: *How to achieve the sustainable success of geolocation-based augmented reality mobile games: a “complete game” strategy*
- University of Science and Technology of China (USTC), Master of Journalism and Communication** 21 Jun 2019
- Dissertation Title: *An empirical study on whether the application of science visualization improves the efficiency of learning and teaching senior high school chemistry - structure chemistry as an example*
- University of Science and Technology of China (USTC), Bachelor of Literature in Communication** 1 Jul 2016
- Dissertation Title: *Research on the effect of gamification in social media on health promotion, WeRun-WeChat as an example*
- University of Science and Technology of China (USTC), 47 credits towards Bachelor of Science** Sep 2012 - Jun 2013
- In Geophysics, School of Earth and Space Sciences

Teaching-Related Experience

- Co-teacher, *Gameplay Design***, 88 hours Nov 2026 – Jan 2027
- (Compulsory Master’s course in Game Design & Technology on game ideation, design iteration, prototyping, and team-based projects).
 - Supervise student groups in designing and iterating a board game using methods and tools such as Machinations.
 - Support assessment of milestone deliverables, presentations, and final exhibition, with emphasis on integrating design theory, technical implementation, and player-centered evaluation.
- Senior (instead of “assistant”), *Applied Machine Learning***, 90 hours Jan 2026 – Jun 2026
- (Compulsory course for the Applied Data Science Master’s Programme).
 - Develop course module for new syllabus pilot (Program Assignment (PA) featuring classification/regression/feature-selection etc. using for game domain tasks)
 - Graded/led labs for established modules: Python (scikit-learn, PyTorch), full pipeline (preprocessing, training/evaluation, CV), model tuning (trees/forests, SVM, regression, CNNs/RNNs, regularization/HPO), and responsible AI (imbalanced data, fairness/interpretability, PCA, t-SNE, clustering); completed PA1–PA5 plus take-home exam.
- Co-teacher, *Machine Learning and AI through Artistic Innovation***, 120 hours Jan 2026 – Mar 2026
- (The latest iteration of *Emerging Technologies Through Artistic Innovation*.)
 - Develop and Host “Workshop 3: Machine Learning and AI for Art”
 - (Other duties in prior iterations)
- Co-teacher, *Current Trends in Gaming***, 88 hours Nov 2025 – Jan 2026
- (An elective course for Game Design & Technology Master’s Programme).
 - Develop and give lectures titled “AI (beyond generative) in Games: Current Landscape & Strategic Insights” and “Computational Creativity in Games.” Each lecture lasts around 3 hrs with my lecturing, group discussion, and breaks.
 - Develop and host the workshop titled “TouchDesigner as a Prototyping Tool for Audio/Visual Effects and Interactions.” A 2-hour, self-directed, tutorial-driven session with tasks and instructions on Canvas; participants either joined live Q&A after prior attempts or worked through materials on site.

- Grading assignments and other services.

Co-teacher, *Machine Learning and AI through Artistic Innovation*, 120 hours Jan 2025 – May 2025

- (The 2nd iteration of *Emerging Technologies Through Artistic Innovation*.)
- Developed and hosted “Workshop 1 -TouchDesigner Tutorial”
- Hosted student artwork project oral presentations
- Supervised artwork projects of two student groups (seven postgraduate students); These artworks were exhibited publicly (May 15).
- Assisted in facilitating an “AI for audio-video synchronization in artistic practice” workshop **attended by rectors from several Nordic polytechnic universities** as part of a conference (May 17).

Course Coordinator, *Introduction to Data Science and AI*, 88 hours Nov 2024 – Jan 2025

- (2nd iteration of the course)
- Coordinated lab sessions, assignment rubric release, and assignment grading with Teaching Assistants and Lecturers
- Coordinated students’ queries regarding assignments, grading and lab sessions

Co-teacher, *Emerging Technologies Through Artistic Innovation*, 120 hours Jan 2024 – May 2024

- (A “tracks course” which is interdisciplinary, practice-based, project-based and not affiliated to a specific programme.)
- Tutored “Creative Coding” workshops for tutorials of coding languages including “p5j,” “Processing,” and “three.js”
- Supervised two student groups’ artwork project

Teaching Assistant, *Introduction to Data Science and AI*, 88 hours Mar 2024 – May 2024

- (A compulsory course for multiple postgraduate programmes.)
- Graded assignments allocated
- Assisted students during two lab sessions, answering questions and providing guidance on course material

Guest Lecturer, *Play and Game Studies*, 2 hours Mar 2023

- (An undergraduate-level elective course.)
- Shared my PhD research on geolocation-based augmented reality mobile games as part of the “Pervasive Game” lecture session
- Engaged students through a discussion on Pokémon GO’s early success and decline, prompting them to propose new gameplay features before comparing their ideas with research findings

Took the pedagogical course *Teaching Students: First Steps* Dec 2019

- (A compulsory course for all PhD candidates at City University of Hong Kong)
- Learned pedagogic methodologies such as “Outcomes-Based Teaching and Learning (OBTL)”
- Passed the course by proposing a trial lecture, making slides, and doing a 15-min trial lecture to the course examiner

Keynote Speaker, *How to Make Science Films*, December 2017 Mar 2023

- Invited by Anhui Association for Science and Technology, China

Publications

Published — Peer-Reviewed Journal Articles

Liu, Hugh Xuechen and Jussi P Holopainen (2025). “Calling for play-oriented research on blockchain video games: An overview study”. In: *Distributed Ledger Technologies: Research and Practice* 4.3, pp. 1–23.

Liu, Hugh Xuechen, Jussi Holopainen, and Christian Wagner (2023). “A design strategy for Geo AR mobile game sustainable success emphasizing game completeness”. In: *Entertainment Computing* 46, p. 100569.

Liu, Hugh Xuechen and Christian Wagner (2023). “Proxies to the monthly active user number of Geo AR Mobile games—online search volume as a proposal”. In: *Multimedia Tools and Applications* 82.16, pp. 25403–25425.

Liu, Hugh Xuechen and Christian Wagner (Jan. 2021). “Technology Disrupts Employment Relationships and Brings Chaotic Turbulence in High-tech: A Multiple Case Study Approach”. In: *International Journal of Economics and Management Systems* 6, pp. 419–439.

Xu, Qizhi, **Hugh Xuechen Liu**, and Rongting Zhou (2018). “Research on the strategies for choosing the technical solutions of producing AR publications”. In: *China Publishing Update*. CSSCI. In Chinese.

Published — Peer-Reviewed Conference Papers

Huang, Yuxuan, **Hugh Xuechen Liu**, and Jussi Holopainen (2024). ““Infinity Book”: Critical Speculation on How Generative AI Shapes the Socio-Material World.” In: *ICCC*, pp. 387–391.

Liu, Hugh Xuechen, Yuxuan Huang, and Jussi Holopainen (2023a). “Call for Critical and Speculative Design in Human-Computer Co-creativity: An Overview Study.” In: *ICCC*, pp. 102–111.

Liu, Hugh Xuechen (2022). “Building the “Complete Game”: an overview study of a development strategy for Geo AR mobile games”. In: *International Conference on Human-Computer Interaction*. Springer, pp. 604–622.

Published — Workshops

Huang, Yuxuan and **Hugh Xuechen Liu** (2023). “Humans Will Lose Proper Imagination Unconsciously”. In: *14th International Conference on Computational Creativity (ICCC'23)*.

Liu, Hugh Xuechen and Yuxuan Huang (2023). “Exploring the Use of Non-Fungible Tokens to Protect Copyright in AI-Generated Content: Benefits, Concerns, and Guidelines”. In.

Liu, Hugh Xuechen, Yuxuan Huang, and Jussi Holopainen (2023b). “How to use Generative AI as a design material for future human-computer (co-) creation?” In.

arXiv Preprints

Liu, Hugh Xuechen and Kivanc Tatar (2026a). *Diagnosing LLM Failures in Executable Game Scene Synthesis: A Structured Failure Taxonomy for Knowledge-Conditioned Code Generation in Unity*. In preparation; previously submitted to ICCG 2026; target: IEEE Transactions on Games. arXiv: [2603.07101 \[cs.AI\]](https://arxiv.org/abs/2603.07101). URL: <https://arxiv.org/abs/2603.07101>.

Liu, Hugh Xuechen and Kivanc Tatar (2026c). *Mage: Multi-Axis Evaluation of LLM-Generated Executable Game Scenes Beyond Compile-Pass Rate*. Under review at NeurIPS 2026. arXiv: [2605.07342 \[cs.LG\]](https://arxiv.org/abs/2605.07342). URL: <https://arxiv.org/abs/2605.07342>.

Liu, Hugh Xuechen and Kivanc Tatar (2025). *AEGIS: Authentic Edge Growth In Sparsity for Link Prediction in Edge-Sparse Bipartite Knowledge Graphs*. In preparation; previously submitted to KDD 2026; target: AAAI 2026 / AIIDE 2026. arXiv: [2509.22017 \[cs.LG\]](https://arxiv.org/abs/2509.22017). URL: <https://arxiv.org/abs/2509.22017>.

In Progress — Peer-Reviewed Journal Articles

Frid, Anton Strandroth, Filip Wramdemark, and **Hugh Xuechen Liu** (2026). “Data Access Control for RAG-Based Chatbots – Enhancing the Data Security in RAG-Based Chatbots and Investigating the Effect on Data Security and Response Quality by Fine-Tuning LLMs”. In preparation; previously submitted to ACM TKDD.

Liu, Hugh Xuechen, Kelsey Cotton, Staffan Bjork, and Kivanc Tatar (2026). “Towards Computationally Creative Game Design in Human-Computer Interaction: A Systematic Overview of Learning-based Artificial Intelligence in Game Design”. Under review, *ACM Games: Research and Practice*.

Liu, Hugh Xuechen, Kelsey Cotton, and Kivanc Tatar (2026). “An Artwork Performance Combining 2D Platformer Game, Speech-to-Text and Music Using ML”. In preparation; target venue: Leonardo (MIT Press).

Liu, Hugh Xuechen and Kivanc Tatar (2026a). *Diagnosing LLM Failures in Executable Game Scene Synthesis: A Structured Failure Taxonomy for Knowledge-Conditioned Code Generation in Unity*. In preparation; previously submitted to ICCG 2026; target: IEEE Transactions on Games. arXiv: [2603.07101 \[cs.AI\]](https://arxiv.org/abs/2603.07101). URL: <https://arxiv.org/abs/2603.07101>.

Liu, Hugh Xuechen and Kivanc Tatar (2026b). “From Intent to Playable Game: A Descriptive Framework for Analyzing LLM-Based Computational Game Creativity”. In preparation; target: Digital Creativity.

Liu, Hugh Xuechen, Kivanc Tatar, Michael Heron, and Natasha Bianca (2026). “TriP-GRE: A Threefold Pedagogy Framework for Game Research Education”. Under review; *ACM Games: Research and Practice*.

In Progress — Peer-Reviewed Conference Papers

Liu, Hugh Xuechen, Jussi Holopainen, and Kivanc Tatar (2026). “Understanding Human-LLM Co-Storytelling as Interactive Narrative Play: Evidence from AI Dungeon”. In preparation; previously submitted to *CHI PLAY 2026*.

Liu, Hugh Xuechen, Stefano Sarao Mannelli, and Kivanc Tatar (2026). “Exposing Bias in LLM-Generated Reviews on AI Conference Papers – A Topic Modeling Approach”. In preparation; target venue: ICLR 2026.

Liu, Hugh Xuechen and Kivanc Tatar (2026c). *Mage: Multi-Axis Evaluation of LLM-Generated Executable Game Scenes Beyond Compile-Pass Rate*. Under review at NeurIPS 2026. arXiv: [2605.07342](https://arxiv.org/abs/2605.07342) [cs.LG]. URL: <https://arxiv.org/abs/2605.07342>.

Liu, Hugh Xuechen, Kivanc Tatar, and Stefano Sarao Mannelli (2026). “Cross-Engine Multi-Axis Evaluation of LLM-Generated Game Scenes: An Exhaustive Study Across Engines, Models, and Intermediate Representations”. In preparation; target: AAAI 2026 / AIIDE 2026.

Liu, Hugh Xuechen and Kivanc Tatar (2025). *AEGIS: Authentic Edge Growth In Sparsity for Link Prediction in Edge-Sparse Bipartite Knowledge Graphs*. In preparation; previously submitted to KDD 2026; target: AAAI 2026 / AIIDE 2026. arXiv: [2509.22017](https://arxiv.org/abs/2509.22017) [cs.LG]. URL: <https://arxiv.org/abs/2509.22017>.

Master Thesis Supervision

Josefine Karlsson, Kasper Lundberg, *Personalized AI Driver Coaching in Heavy-Duty Trucks for Fuel-Efficient Driving* Dec 2025 - present

- Examiner - Kivanc Tatar
- External thesis with Volvo Group

Anton Strandroth Frid, Filip Wrandemark, *Data Access control for LLM-Powered Chatbots* Dec 2024 - May 2025

- Examiner - Kivanc Tatar
- External thesis with Ericsson
- <https://odr.chalmers.se/items/df156c69-e3a2-48d5-a11f-4412dfeaf4f4/full>

Scientific Focus Areas

Currently, I am building comprehensive AI/ML frameworks that bridge domain knowledge from game studies and digital culture with practical development tools, focusing on generative AI for accessible creative design.

- **Computationalizing Game Research Knowledge:** Constructing AI/ML-friendly game knowledge bases, evaluation protocols and benchmark datasets by integrating existing ontologies and datasets. Current focus is on game design. This involves transforming theoretical game research knowledge into machine-readable formats that enable automatic knowledge discovery, pattern completion, and semantic reasoning about game design relationships.
- **AI-Driven Integrated Game Development:** Building upon these knowledge bases to create a comprehensive generation pipeline that enables natural language gameplay descriptions generation and automated code generation in game engines (e.g., Unity and Godot). This represents a one-stop solution for translating design concepts into playable prototypes informed by game design knowledge.
- **Iterative Refinement through User-Centered Evaluation:** Deploying the generated content and development tools in educational and practical contexts, then leveraging user feedback, experience evaluation, and impact assessment to iteratively improve both the knowledge base and the generation tools. This creates a continuous learning loop that enhances the system’s understanding of effective game design and user needs.

Work Experience

WASP-HS Affiliated Post-doctoral Fellow, Chalmers University of Technology Jan 2024 - present

Research Associate, Perrett Laver Ltd (Hong Kong) Aug - Dec 2023

- Perrett Laver is a leading global executive search firm committed to organisations seeking positive outcomes in education, research, society, and the environment. Its Hong Kong office mostly works in the education sector.
- Daily work includes using academic metrics and information on the Internet to find candidates and coordinate the communication between candidates and the search committee.
- Because of my expertise in IT adoption, I was among the team of colleagues (called “task force”) who promoted the company’s adoption of MS Office 365 by teaching and supporting colleagues in my office.
- Searches projects participated
 - Head of Computational Media and Arts Thrust, Hong Kong University of Science and Technology (Guangzhou); principal researcher

- Head of School, ISA International Education Group; principal researcher
- Vice President of Academic Affairs, Hong Kong University of Science and Technology; supporting researcher

Postdoc, City University of Hong Kong Oct 2022 - Aug 2023

Research Assistant, City University of Hong Kong Sep 2021 - Jul 2022

Product Manager Internship, New Media Institute, the Institute of Advanced Technology, USTC Aug 2015 - Jun 2019

- Developed a MOOC named “How to make science film” for the China Association of Children’s Science Instructors, now live on Sciclass
- Assisted in developing a digital science textbook for primary school students. The digital textbook passed the project acceptance
- Assisted in developing a paired mobile app featuring augmented reality (AR) for the Chinese version of the picture book Gondwana. This AR picture book was published and is on sale on Taobao.

Grants

Co-I, Blockchain Video Games and Hong Kong: Game Design to Enhance Playability; Requested 4.3m HKD (~5.33m SEK); *CreateSmart Initiative Hong Kong* Revise and Resubmit; 2024 – present

Team: Jussi Holopainen (PI), Damien Charrieras (Co-I), Olli Tapio Leino (Co-I), **Hugh Xuechen Liu (Co-I)**, Haingo Mireille Rakotonirina (Co-I)

Proposal Writer, Research on the Development and Application of the Platform of the Integration and Publishing of Immersive Media Contents; 200k CNY (~272k SEK); *Key Laboratory of Culture Ministry of China Funds* approved; 2017

Proposal Writer, Research on How to Improve the Effect of Communication on the Base of VR Technology; 200k CNY (~272k SEK); *National Social Science Funds of China* approved; 2017

Professional Service & Activities

Programme Committee Member, *International Conference on Computational Creativity (ICCC)* '26; Conference Apr 2026 - present

Invited Member (Core Advisory Group, Informal), Hong Kong New Emerging Technology Education Association (HKNETEA) 2025 - present

Reviewer, *Scientific Report* (Nature Portfolio); Journal April 2026

Organizing Committee Member, *The Culture Code* Feb 2026

<https://aicomparts.com/projects/2026-culture-code/>; Workshop

Invited Guest Topic Editor, *Frontiers in Artificial Intelligence*; Journal 2025

Sub Reviewer, *The 34th International Joint Conference on Artificial Intelligence (IJCAI-25)*; Conference 2025

Sub Reviewer, *the 15th International Conference on Computational Creativity (ICCC'24)*; Conference 2024

Reviewer, *Multimedia Tools and Applications* (Springer Nature); SCIE journal 2023

Reviewer, *Information Technology & People* (Emerald Publishing); SSCI journal 2023

Reviewer, *2023 Pacific Asia Conference on Information Systems (PACIS)*; conference 2023

Judge (Appointed), China Youth Science Video Festival (Hong Kong SAR) 2021

Assistant, *Training session of E-learning system to faculties*; Invited by the former Chief Information Officer (CIO), City University of Hong Kong 2020

Judge (Appointed), China Youth Science Video Festival (Anhui) 2019

Workshop Participation

Fictional Abstracts: Ethics, Sustainability, and Creative-AI; the 14th International Conference on Computational Creativity (ICCC'23) Jun 2023

Future of GenAI design fiction; Gamelab, City University of Hong Kong May 2023

GenAICHI virtual workshop; CHI2023 April 2023

Gameplay Design Patterns workshop; DiGRA2022 June 2022

Honors, Awards, Scholarships

Postgraduate Studentship , City University of Hong Kong	Sep 2019 - Aug 2021
Institutional Research Tuition Grant , City University of Hong Kong	Sep 2019 - Aug 2021
Academic Scholarship , USTC	2016, 2017, 2018
Exemption from National Entrance Examination for Postgraduate , USTC	2016

Certificates

Certificate of Participation <i>7th International Summer School on Artificial Intelligence and Games</i>	Jul 2025
Course Certificate , AI Infrastructure and Operations Fundamentals; <i>NVIDIA</i>	Jul 2024
Training Certificate , Developing and Lecturing MOOC; <i>China Association of Children's Science Instructors</i>	May 2017

Languages

Chinese, Mandarin	Native
English	Professional working