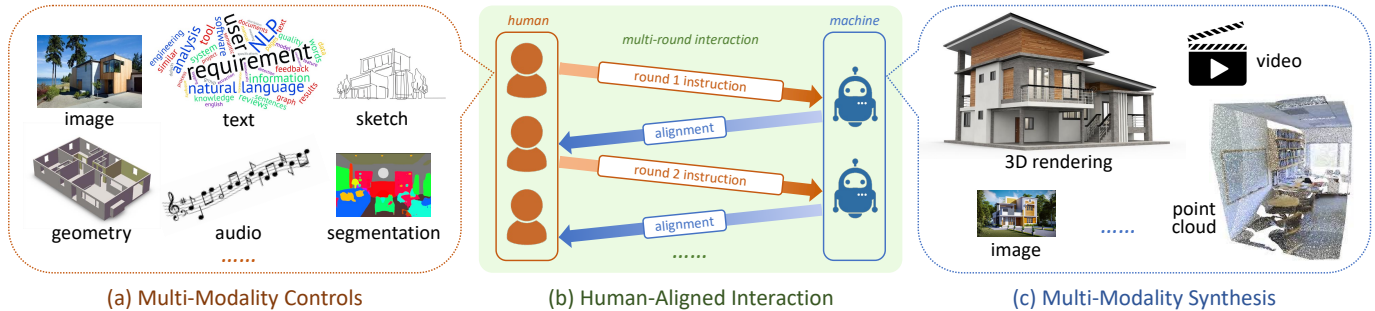


Human-Machine Collaborative Visual Synthesis - Research Statement -

Ph.D. Candidate: Ziqi Huang (<https://ziqihuangg.github.io>)



My doctoral research is dedicated to transforming generative models from isolated black boxes into interactive and trustworthy partners for human creators. While recent progress in large-scale video generation is remarkable, the field still faces significant challenges in terms of precise controllability, physical reasoning, and personalized alignment. My work bridges these gaps by building a closed-loop system of **Comprehensive Evaluation**, **Controllable Synthesis**, and **Interactive World Modeling**. As a final-year PhD candidate, I have developed a research vision that treats AI not just as a tool for image production, but as a collaborative engine that understands human intent and real-world dynamics.

A cornerstone of my research is leading the **VBench** project, which has established the field standard for evaluating video generation models. By decomposing video quality into 16 fine-grained, human-aligned dimensions, VBench provides the necessary roadmap for model alignment and has been adopted by 100+ industry-leading models, with 1,200+ citations. Beyond evaluation, my work on **VChain** (awarded the **ICCV 2025 Outstanding Paper Award**) focus on ensuring that generative models can faithfully execute human intent while respecting physical laws. These contributions pave the way for generative world models that can simulate dynamics and causality with high fidelity.

My research has been recognized through several prestigious honors in the field, including the **2023 Google PhD Fellowship**, the **2025 Apple Scholars in AI/ML PhD Fellowship**, and the **2026 Microsoft Research Fellowship**. These accolades reflect my potential to contribute significantly to the future of AI research and my ability to lead high-impact projects at the intersection of academia and industry. Beyond technical innovation, I am deeply committed to fostering an inclusive academic community. I served as the **General Chair and Organizer** for the **Women in Computer Vision (WiCV)** workshop at CVPR in 2023 and 2024. In this role, I led global initiatives to support underrepresented researchers and facilitated a platform for diverse voices in AI. Additionally, as the Director of **The AI Talks** seminar series, I have organized international exchanges that promote collaboration across borders and disciplines.

I am currently preparing to enter the **Fall 2026 academic and professional job market**. At this pivotal stage, the CVPR 2026 Doctoral Consortium offers an invaluable opportunity for high-level mentorship. I am particularly interested in discussing with mentors how to sustain innovative academic research in an era dominated by resource-intensive foundation models. Specifically, I seek guidance on how to lead a research lab that balances long-term world-modeling goals with the rapid pace of industrial AI development. By participating in the Doctoral Consortium, I hope to refine my transition from a student leader to an independent researcher, gaining insights into creating scalable, user-centric generative systems that empower human creativity across digital and physical mediums.