



Revolutionizing Interactive Art with GenAI and Motion Capture

Imagine stepping into a room where the walls come alive with breathtaking visuals that respond to your every movement. This is the world of MotionCanvas, a spatial art creation tool that seamlessly blends the magic of Generative AI with the precision of motion capture technology, redefining interactive art as we know it.

Popular Science Summary **Shuai Xu, Qinxin Shu**

Interactive experience technologies have significantly evolved, providing immersive and engaging environments. Some platforms, such as immersive cubes and interactive screens, allow users to stay in a virtual environment with digital content. However, these systems often lack the ability to respond to users' movements. Another limitation is that the interactive content is often predefined, which limits its variety.

In this thesis, we explored motion capture systems and generative AI (GenAI) to create interactive experiences driven by human movements. By leveraging the precision of motion capture technology and the creative potential of GenAI, we aimed to develop a system that responds fluidly, aesthetically, and diversely to user actions, advancing the possibilities of interactive art and ensuring an engaging user experience.

We began by examining how to combine GenAI with motion capture. Additionally, we emphasized

the importance of maintaining the desired style and visual aesthetic throughout the interactive experience. Finally, we addressed the challenge of minimizing potential latency within the interaction pipeline. As a result, we developed MotionCanvas, which translates user movements into floral artworks, offering real-time art creation experiences for individuals and groups in the same space. Feedback from 20 users was collected and analyzed to assess user-friendliness, ease of understanding, and usability. This feedback was gathered through quantitative and qualitative questionnaires and the System Usability Scale.

We found that our system performed satisfactorily, with most users expressing enjoyment and interest in the co-creation and interactive content features. However, further analysis indicated areas for improvement in reducing offset and latency. Overall, we believe it has contributed to a new form of art interaction and education.

Master Thesis MotionCanvas: Generative Motion-Driven Interactive Art Experience

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