Using AI to empower art therapy patients

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Researchers have created a new AI-assisted digital art tool designed to help art therapy patients better express themselves while maintaining the efficacy of the process.

The research, [DeepThInk: Designing and probing human-AI co-creation in digital art therapy](#), was published in the *International Journal of Human-Computer Studies.*

The [tool](#), dubbed DeepThInk, was designed by computer science researchers at the University of Waterloo and the Southern University of Science and Technology in collaboration with art therapists. DeepThInk grew out of the challenges the therapists faced when the COVID-19 pandemic forced them to conduct their work virtually.

"Not everyone has many art supplies at home," said Jian Zhao, assistant professor of computer science at the University of Waterloo. "Many of the existing digital art tools either don't offer enough options or are too complex and intimidating for people who don't know how to use them."

DeepThInk was developed to solve this problem: the program incorporates both traditional drawing and painting tools as well as an "AI brush," which transforms backgrounds or landscapes suggested by the user into complex AI-generated images.

"For example, you start with the AI brush, and draw a big color segment representing the ocean, then reiteratively generate ocean landscapes until you find one that matches your vision for the piece," said Xuejun Du, a computer science master's student at the University of Waterloo. "After that, you add your own stuff using the user brushes. For example, a boat on the ocean."

The team collaborated with five registered therapists from the Canadian Art Therapy Association in a reiterative process that lasted 10 months. Their work with the therapists taught them to focus not on using AI to generate complex and flashy images but rather to imagine how humans and AI could work to co-create art.

"DeepThInk treats AI as an art material for the client to use as creatively and easily as using normal paint, but with much greater expressiveness," Zhao said.

While DeepThInk is in its prototype phase, the team hopes to make it available as a free, open-source tablet app. This will be the latest technology created by Waterloo researchers for application in novel areas and industries.

The goal of the software is not to replace the human artist but rather to augment their existing abilities. "In art therapy, the result is not as important as the process," Zhao said. "We want to empower the user to engage in that process fully."

More information: Xuejun Du et al, DeepThInk: Designing and probing human-AI co-creation in digital art therapy, *International Journal of Human-Computer Studies* (2023). DOI: 10.1016/j.ijhcs.2023.103139

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