

## An AI-generated Semantic Communication Platform in HCI Course

**Authors :** Yi Yang, Jiasong Sun

**Abstract :** Almost every aspect of our daily lives is now intertwined with some degree of human-computer interaction (HCI). HCI courses draw on knowledge from disciplines as diverse as computer science, psychology, design principles, anthropology, and more. Our HCI courses, named the Media and Cognition course, are constantly updated to reflect state-of-the-art technological advancements such as virtual reality, augmented reality, and artificial intelligence-based interactions. For more than a decade, our course has used an interest-based approach to teaching, in which students proactively propose some research-based questions and collaborate with teachers, using course knowledge to explore potential solutions. Semantic communication plays a key role in facilitating understanding and interaction between users and computer systems, ultimately enhancing system usability and user experience. The advancements in AI-generated technology, which have gained significant attention from both academia and industry in recent years, are exemplified by language models like GPT-3 that generate human-like dialogues from given prompts. Our latest version of the Human-Computer Interaction course practices a semantic communication platform based on AI-generated techniques. The purpose of this semantic communication is twofold: to extract and transmit task-specific information while ensuring efficient end-to-end communication with minimal latency. An AI-generated semantic communication platform evaluates the retention of signal sources and converts low-retain ability visual signals into textual prompts. These data are transmitted through AI-generated techniques and reconstructed at the receiving end; on the other hand, visual signals with a high retain ability rate are compressed and transmitted according to their respective regions. The platform and associated research are a testament to our students' growing ability to independently investigate state-of-the-art technologies.

**Keywords :** human-computer interaction, media and cognition course, semantic communication, retainability, prompts

**Conference Title :** ICRAHCI 2023 : International Conference on Recent Advances in Human Computer Interaction

**Conference Location :** San Francisco, United States

**Conference Dates :** November 06-07, 2023