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ClassMeta: Designing Interactive Virtual Classmate to Promote VR Classroom Participation

LLM-powered virtual student avatars that drive classroom participation and enhance learning outcomes.

Researchers at Purdue University have developed a large language model, ClassMeta, to promote classroom participation. Peer influence plays a crucial role in promoting classroom participation, in which behaviors from active students can contribute to a collective classroom experience. However, an active student relies on many factors and is not always available. LLMs have demonstrated the ability to convincingly stimulate human behaviors.

Purdue researchers have developed ClassMeta, a LLM to promote classroom participation. ClassMeta plays an active role as a student by embodying 3D avatars in virtual reality. ClassMeta agents are capable of interacting with the students and instructors through both verbal and nonverbal communication. ClassMeta can digest lesson materials while capturing classroom conversations, allowing them to generate useful classroom participation. This technology demonstrated potential for increased engagement levels and learning, making it a useful tool to enhance the learning experience.

Technology Validation:

A virtual reality classroom was configured. Eye-tracking results gauged how often the students were paying attention to the instructor, lesson slides, and ClassMeta. Note-taking evaluation analyzed the quality of notes taken by students. Pre-post test evaluation examined the overall learning of the students.

Advantages:

-Engaging

-Increase learning

Technology ID

2024-RAMA-70603

Category

Artificial Intelligence & Machine Learning/Natural Language Processing & Generative AI

Education & EdTech/AI-Enhanced Learning Systems

Education & EdTech/Immersive & XR Learning Environments

Authors

Ziyi Liu

Karthik Ramani

Zhengzhe Zhu

Further information

Matt Halladay

MRHalladay@prf.org

View online

-Enhanced learning experience

Applications:

-Classroom learning

-Instructor training

-Student self-learning

Related Publications:

Journal article: Designing Interactive Virtual Classmate to Promote VR Classroom Participation. https://doi.org/10.1145/3613904.3642947

Video presentation: https://programs.sigchi.org/chi/2024/program/content/147941

News release: https://engineering.purdue.edu/ME/News/2024/ai-students-break-the-ice-in-virtual-classrooms

TRL: 6

Intellectual Property:

Provisional-Gov. Funding, 2024-04-23, United States

Utility-Gov. Funding, 2025-04-18, United States

Keywords: AI-powered virtual learning,Interactive classroom avatars,EdTech innovation,Virtual student engagement,Large language model for education,VR-based classroom tools,Intelligent tutoring systems,AI in education,Real-time student interaction,Immersive learning environments,Digital classroom assistants,AI-driven participation tools,Virtual reality learning aids,Adaptive learning technologies