VR Classroom for Interactive and Immersive Learning with Assessment of Students Comprehension

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Abstract The virtual classroom environment is created using virtual reality that enables multiple students to enter as if in a real class but with better learning environment. Conventional learning is currently limited in the current model of textbook teaching. An interactive and visual environment provided for learning enhances the rate at which the student grasps concepts. Even though many modern online teaching methods are available today, it is not possible to check whether a student is paying attention or not. Technology is evolving at a very fast rate, and this research is an apt integration of two modern technologies: machine learning and virtual reality, so as to increase the quality of education for students. A shared VR environment, optimised for learning, will be created. Students can wear a head-mounted display and select an avatar for themselves, which will be seen by other students and teachers. The VR environment is created using Unity3D software. Students will also have to wear an EEG scanner on their heads. The output of this scanner will be fed to the machine learning subpart. Neural networks are used to identify whether the student is paying attention or not. If a student is not paying attention, the teacher will be informed about it, with a message near the student's avatar. It has many advantages over traditional learning techniques, like usage of multiple senses and inclusivity for differently abled students.

Keywords Virtual reality · Machine learning · Recurrent neural network

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