MANIPULATING MOLECULES: USING KINECT FOR IMMERSIVE LEARNING IN CHEMISTRY

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ABSTRACT

An element of "play" is an essential condition for deep learning to occur. Play is more than simply having a good time; it is about working out rules, understanding constraints, being absorbed by novelty, using imagination and innovating. It is also about extending, modifying and augmenting learning activities. This project brings an overt element of play to the representation of fundamental chemical concepts and thus engages students more strongly in the learning process. The Microsoft Kinect™ gesture recognition video game device enable users to control and interact with the "game" through a "natural user interface" by using hand and whole body movement and through spoken commands. This project brings together the play element of the Kinect technology with the virtual reality immersive environment of molecular structure by constructing a molecular manipulation "game" for use in tutorials, lectures and the home. The project will focus on developing the human gesture interface (HGI) for the manipulation of molecular structures, initially using the standard JMOL/PDB format, which will result in a system that can be used with monitors, data projectors and smart whiteboards. It may be used in lectures, tutorials and by students at home.