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Literature Review

The Implementation and Validation of a Virtual Environment for Training Powered Wheelchair Manoeuvres.

They hypothesize that a serious game that utilizes affordable modern interface technologies can provide a safe environment in which a new user of a powered wheelchair can quickly learn how to operate it, and navigate it, in a variety of different scenarios. There are also many examples of where VR has been used to train the motor skills required to carry out specific medical and surgical procedures. Many researchers have investigated the potential of VR for training and transfer of motor skills. Able bodied, experienced, and inexperienced powered wheelchair users took part in experiments where they were required to complete various manoeuvres: drive the virtual wheelchair forward in a straight line for ten meters; reverse the wheelchair in a straight line for two meters; drive the wheelchair into and out of an enclosed space; complete a 180 turn around a stationary object; completing a slalom; and stop the wheelchair suddenly to command. However, the experience was again non-immersive, using a computer monitor to display the virtual environment with user control through a games joystick, or in some cases, the actual wheelchair joystick. Using a sophisticated platform with embedded electromechanical components, they were able to use data from the virtual environment on the surface properties and gradient beneath the wheels to deliver controlled torque to the wheelchair rims and so enable the appropriate haptic feedback. They found through experience that a reaction time of over one second was a strong indicator that the client would not be able to control a wheelchair with any proficiency. Their results indicate that: a) the learning done in the HMD-based VR environment was transferred to the physical world; and b) there is a benefit in using a VR-HMD simulator for training wheelchair users, in terms of navigation performance improvement. Their findings support their hypothesis that a serious game (virtual environment) utilizing the Oculus Rift HMD can provide a safe environment in which a new user of a powered wheelchair can quickly learn driving skills.

Driving Self - Learning System Based on the Virtual Reality

Virtual reality driving learning system uses Oculus head device, and immersion, a high degree of reduction, greatly enables the students to practice driving in any place at any time, it can also bring an immersive feeling and solve the current difficulty of the traditional driving school. The proposed system provides a training environment that allows the user to develop a driving habit for slowing the wear of consumables, helping to reduce maintenance costs and in the future, the system is expected to alleviate problems such as environmental issues and high gasoline prices until pollution-free vehicles replace conventional automobiles. It designed four different simulated driving scenes, used to enable the driver to simulate driving learning This system can increase the driving skills of the student to a certain extent, however, as the simulated driving scene is too single, and it does not consider the reality of the scene to build, many driving rules are not strictly abided by. Hardware components of the system's architecture include a mid-range desktop PC, a force feedback steering wheel with pedals and the Oculus Rift. Software The system of the scene model is designed by Shanghai Longquan driving school two simulation test site. To help drivers enhance the driving skills better, the Oculus Rift, a virtual reality headset, is developed and manufactured by Oculus VR, a division of Facebook Inc., released on March 28, 2016. Future Work This paper proposes a self-learning driving simulation system based on VR, which can solve many driving problems. Such as the time conflicting, the time of learning driving, disordering charge, and so on. The Scenario model is constructed according to the real environment, which can enable students to practice with a realistic driving simulation and drive better.

Both of papers I read were interesting. In this both article, they are talking about two different uses of Virtual Reality. On first article, they are showing implantation The Implementation and Validation of a Virtual Environment for Training Powered Wheelchair Manoeuvres. Meanwhile, on the other article, they are talking about driving self-car on virtual reality. Both article showing us that how much virtual reality is going to help human being in future. he self learning driving system is very efficient, by which we can learn driving conveniently. Not only it can help solve the time conflict, but also can improve the efficiency of learning driving. there is a benefit in using a VR-HMD simulator for training wheelchair users, in terms of navigation performance improvement.

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