Paper 217 – Technology

A PROPOSED COMBINATION OF VIRTUAL REALITY, PHOTOGRAMMETRY, AND ACCELEROMETER SENSOR FOR EXPLORABLE 3D ENVIRONMENT USING SMARTPHONE

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ABSTRACT

Virtual Reality(VR) can visualize the real world environment into a simulated virtual space. Most of the VR visualization in a smartphone is limited to 360 degrees view to observe the virtual environment. Generaly an additional controlling device were used to control movement of VR such as a Bluetooth remote control or magnetic VR button on the typical VR headset. In this study we show that VR can be controlled in a way that is more realistic. This paper implements a VR simulation that allows user to control their movement by simply moving their legs. These movements will be captured by the accelerometer through detecting coordinate changes and translate it as a forward movement or jump. In these experiments we used photogrammetry 3D scanning for designing the environment for a realistic look, VR headset for visualization devices, and accelerometer for motion detection. The result is a new inovation that can improve significant experience in the virtual world Exploration.

Keywords: Virtual Reality, Photogrammetry, Accelerometer, VR headset