ABSTRACT

Using the Microsoft Kinect for Diagnosing
Parkinson's and Voice Tremors

Shellyann Sharda Sooklal

Motion-based gaming technologies such as the PlayStation Move, PlayStation EyeToy, Nintendo Wii and the Xbox Kinect introduced innovative and exciting ways of incorporating physical activity into gameplay. These platforms move away from the traditional hand-held controllers and allow players to use the movements of their bodies to interact with games. In addition to gameplay, the technologies provided by these motion-based gaming platforms also have the potential for stimulating physical activity, guiding physical therapy and can even be used for diagnosis of movement disorders. The research focusses on using the technologies provided by the Kinect for diagnosis, measurement and monitoring of both Parkinson's and voice tremors. A system was built and tested for its ability to use the data from the Kinect to accurately identify, quantify and rate tremors in real patients both on and off therapy. The system was tested with Parkinson's and voice tremor patients and has shown to provide accurate ratings for mild to very severe Parkinson's tremors and accurate frequency analysis of voice tremors. The system is the first of its kind to use the Kinect to provide a home and clinical solution for quantifying, rating and monitoring Parkinson's tremors and voice tremors.

Keywords: Shellyann Sharda Sooklal; Kinect; Parkinson's; Tremors; Voice Tremors; Diagnosis.