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Performing Human Movement Assessments using Video Game Technology

This software application uses the Microsoft Kinect to provide a portable, affordable, and easy-to-use tool for comprehensive movement measurement and longitudinal progress monitoring.

Commercial motion capture systems now offer systems that require no instrumentation and allow movement tracking without having to use markers or tracking suits. However, these systems are prohibitively expensive, require technical expertise, take up a large volume of space, and often require the analysis of movements by users before outcome measures are available. In general, this technology is not widely adopted in the clinical field despite some advantages over commercial motion capture systems that require instrumentation. The high cost, low portability, and required expertise associated with commercial motion capture systems frequently used in human movement research, does not afford its use in clinical settings.

In general, physical and occupational therapists use visual inspection of posture or movement or handheld goniometers to assess patients in a clinical environment. Unfortunately, this limits a clinician's ability to incorporate more comprehensive examinations of posture and gait that may reveal subtle alterations to the underlying health and functional status of the neuromuscular system.

Researchers at Purdue University have developed a software application that will serve as a tool for clinicians to measure and monitor body movements using an affordable, portable device, the Microsoft Kinect*. The application's design allows physical and occupational therapists to supplement movement assessments with more comprehensive metrics than currently available. In addition, features, such as longitudinal tracking of patient progress, will provide clinicians the opportunity to view how their patients are progressing under their current regimen. The proposed technology will provide an affordable interface for clinicians to carry out rigorous examinations of a patient's movement without adding significant time to their visit or diverting time away from their rehabilitation regimen.

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Robotics & Automation/Perception & Sensing

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Advantages:

-Uses existing technology

-Affordable

-Portable

-Easy to use

-Simultaneous evaluations

Potential Applications:

-Physical and occupational therapists

-Clinical evaluations

-Therapy progression

*Trademark

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Intellectual Property:

Trademark, N/A, United States

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Keywords: physical therapy movement assessment, occupational therapy movement monitoring, Microsoft Kinect clinical application, affordable motion capture system, portable movement tracking, comprehensive movement metrics, patient progress tracking software, clinical gait analysis, movement assessment tools, neuromuscular system examination, Computer Technology, Medical/Health, Monitor, Motion Capture, Software, Therapy

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