Abstract

Range and patterns of movement estimation is a crucial concern for clinicians in the diagnostic and functional assessment of patients with musculoskeletal disorder. To obtain a record of the degree of permanent impairment of an individual, Range-Of-Motion (ROM) measures are used. Currently, clinicians use all or any of numerous assessment instruments, a universal goniometer, an inclinometer or a tape measure to make these estimations. However, such tools appear to have major drawbacks in measuring ROM. Markerless vision-based human motion analysis can provide an inexpensive, non-obtrusive solution for range of joint motion measurement. This paper outlines the problem of measuring human joints movements using a computer vision system that supports the physiotherapist as a diagnosis tool to aid rehabilitation of joint movement disorders and its treatment plan.

References

- AnkurAgarwal, Bill Triggs, "Tracking articulated motion using a mixture of autoregressive models", in: Proceedings of the European Conference on Computer Vision


Park, W. , "Data-Based Human Motion Simulation", in Handbook of Digital Human Modelling, Taylor & Francis Group, LLC, 2009, p. 9.


Computer aided kinematics and dynamics of mechanical systems, by E. J. Haug, Allyn and Bacon, Boston, 1989.


Ausejo, S., and Wang, X. (2009), "Motion Capture and Human Motion Reconstruction", in Handbook of Digital Human Modeling, ed. V. Duffy.


Silva, M., Abe, Y., and Popovic, J., "Simulation of Human Motion Data Using Short-Horizon Model Predictive Control", ACM Transactions on Graphics (TOG) -

Analyzing and Measuring Human Joints Movements using a Computer Vision System

313-336.
- Emily Horn, "Optimization-Based Dynamic Human Motion Prediction", University of Iowa, December 2005, (MS Thesis).
- Hyun-joon Chung, "Optimization-based dynamic prediction of 3D human running", Theses and Dissertations(2009), University of Iowa.

Index Terms

Computer Science  Pattern Recognition

Keywords

Motion Analysis  Range Of Motion  Joint Motion  Joint Movement Disorders  Computer Vision