Gait analysis using a single depth camera

Publisher: IEEE

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Abstract:
Gait analysis is often used as part of the rehabilitation program for post-stoke recovery assessment. Since current optical diagnostic and patient assessment tools tend to be expensive and not portable, this paper proposes a novel marker-based tracking system using a single depth camera which provides a cost-effective solution suitable for home and clinic use. The proposed system can simultaneously generate motion patterns even within a complex background using the proposed geometric model-based algorithm and autonomously provide gait analysis results. The processed rehabilitation data can be accessed by cross-platform mobile devices using cloud-based services enabling emerging tele-rehabilitation practices. Experimental validation shows a good agreement with state-of-the-art non-portable and expensive industrial standards.

Published in: 2015 IEEE Global Conference on Signal and Information Processing (GlobalSIP)

Date of Conference: 14-16 Dec. 2015

Date Added to IEEE *Xplore*: 25 February 2016

ISBN Information:

INSPEC Accession Number: 15807746

DOI: 10.1109/GlobalSIP.2015.7418202

Publisher: IEEE

Conference Location: Orlando, FL, USA