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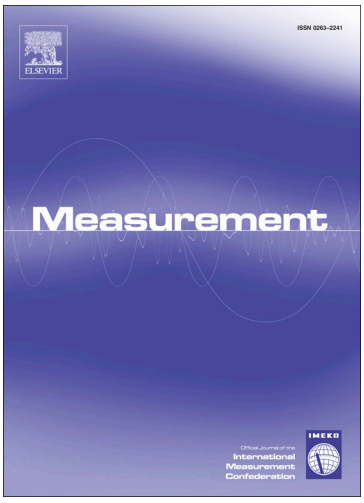

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SMARTPHONE-BASED VIDEO FOR 3D MODELLING: APPLICATION TO INFANT'S CRANIAL DEFORMATION ANALYSIS

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Abstract

The use of smartphones cameras for photogrammetric purposes is increasing. However, the suitability of smartphones for 3D modelling for medical purposes in general, and for cranial deformation in particular, is still to be analysed. This paper investigates the suitability of smartphone video cameras to create 3D models for cranial deformation analysis compared to the digital single-lens reflex (SLR) cameras traditionally used in close-range photogrammetry. Two models are obtained, the first one from a slow-motion video recorded with a smartphone, and the second one from SLR camera imagery. The models are compared to evaluate the differences not only between themselves but also through the best fitting ellipsoid that allow the determination of the cranial deformations. The average distance between models is 0.5 mm, and below 1 mm for 86% of the model points. The maximum difference between the two fitted ellipsoid semiaxes is 1 mm. It can be stated that smartphones are a low-cost solution that can provide 3D

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