

Calculating the 2D Motion of Lumbar Vertebrae using Splines

Brendan McCane

Dept. of Computer Science
University of Otago, Dunedin, New Zealand
Email: mccane@cs.otago.ac.nz

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ABSTRACT

We present a new method for calculating the transformation parameters for a rigid body undergoing planar motion parallel to the image plane. The method utilises splines to represent the outline of the rigid shape rather than landmarks as is often used in other studies. The use of splines gives greater noise robustness and the technique can be applied to a wide class of problems. We demonstrate the efficacy of our method by estimating the finite centre of rotation and angle of rotation from lateral radiographs of the lumbar spine for patients in full flexion and full extension.