



RESEARCH ARTICLE

Intraoperative Organ Deformation and 3D Visualization during MIS Using Spherical Harmonics

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Abstract— This paper is based on recent experiments on real time 3D visualization of intraoperative organ deformations. Restricted visualization is major challenge in minimal invasive surgery (MIS). For MIS procedures to be safe clear visualization of the surgical scene is required. This can be done based on limited field-of-view and a pre-operative image. Based on these patches we use spherical harmonics and obtain training sets. Such a structured dictionary is made and guides to the 3D visualization. This paper shows how the technique is implemented usefully. The experimental results provide significant improvements.

Key Terms: - Deformations; minimal invasive surgery (MIS); surface reconstruction

Full Text: <http://www.ijcsmc.com/docs/papers/June2013/V2I6201399.pdf>