

Do We Really Need a New Navigation-Noninvasive “on the Fly” Gesture-Controlled Incisionless Surgery?

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ABSTRACT

Objectives: This study presents the use of our original contactless interface as a plug-in application for OsiriX-DICOM-viewer platform using a hardware sensor device-controller that supports hand/finger motions as input, with no hand contact, touching, or voice navigation. It would be possible to modify standard surgical parameters in the fly gesture-controlled incisionless surgical interventions.

Methods: The accuracy of computer-generated models was analyzed according to T. Galeta/2017. Our original special plug-in-application provided different types of gestures for three-dimensional-virtual reality navigation. Our hardware sensor device controlling the system without touching any other device served as an interface for camera positioning in three-dimensional virtual endoscopy-views. The impression of panoramic three-dimensional volume rendering-viewing was given by pivoting the camera around a focus fixed on the object.

Results: This novel technique enables surgeons to get complete and aware orientation in the operative field, where ‘overlapping’ of the real and virtual anatomic models is inevitable. Our human mind and understanding of this new surgery work by creating completely new models of human behavior and understanding spatial relationships, along with devising assessment that will provide an insight into our human nature. Any model and/or virtual model of the surgical field is defined as it actually exists in its natural surroundings.

Conclusion: We offer an alternative to closed software systems for visual tracking, with an initiative for developing the software framework that will interface with depth cameras, with a set of standardized methods for medical applications such as hand gestures and tracking, face recognition, navigation, etc. This software should be an