

Literature Survey:

Mewes, A., Hensen, B., Wacker, F., & Hansen, C. (2016). Touchless interaction with software in interventional radiology and surgery: a systematic literature review. International Journal of Computer Assisted Radiology and Surgery, 12(2), 291–305.

- Systematic analysis on 55 scientific papers and 33 journal publications that focus on touchless human–computer interaction in operating rooms and interventional radiology suites was performed.
- Most of the identified literature (62 %) deals with the control of medical image viewers.
- The others present interaction techniques for laparoscopic assistance, telerobotic assistance and operating room control as well as for robotic operating room assistance and intraoperative registration.

Introducing a brain-computer interface to facilitate intraoperative medical imaging control – a feasibility study

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- This paper proposes a new medical image control concept based on a Brain Computer Interface (BCI) that allows for hands-free and direct image manipulation without relying on gesture recognition methods or voice commands.
- This yielded promising results, and showed its potential for future intraoperative applications.

Gesture-Controlled Image Management for Operating Room: A Randomized Crossover Study to Compare Interaction Using Gestures, Mouse, and Third Person Relaying
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- In this work, three different interaction modes for image manipulation that are usable in a surgery setting:
 1. A gesture-controlled approach using Kinect ;
 2. oral instructions to a third part dedicated to manipulate the images; and
 3. direct manipulation using a mouse.
- The study shows with formal evaluation that the use of gestures is advantageous over instructions to a third person.
- The given gestures could be learned easily and reliability of the tested gesture-control system is good.