**LITERATURE SURVEY ON GESTURE-BASED TOOL FOR STERILE BROWSING OF RADIOLOGY IMAGES**

It Use of doctor-computer interaction devices in the operation room (OR) requires new modalities that support medical imaging manipulation while allowing doctors' hands to remain sterile, supporting their focus of attention, and providing fast response times. This paper presents “Gestix,” a vision-based hand gesture capture and recognition system that interprets in real-time the user's gestures for navigation and manipulation of images in an electronic medical record (EMR) database. Navigation and other gestures are translated to commands based on their temporal trajectories, us of attention, and providing fast response times. This paper presents “Gestix,” a vision-based hand gesture capture and recognition system that interprets in real-time the user's gestures for navigation and manipulation of images in an electronic medical record (EMR) database.

Computer information technology is increasingly penetrating into the hospital domain. A major challenge involved in this process is to provide doctors with efficient, intuitive, accurate and safe means of interaction without affecting the quality of their work. Keyboards and pointing devices, such as a mouse, are today's principal method of human—computer interaction. However, the use of computer keyboards and mice by doctors and nurses in intensive care units (ICUs) is a common method for spreading infections.[1](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2410001/#bib1)In this paper, we suggest the use of hand gestures as an alternative to existing interface techniques, offering the major advantage of sterility. Even though voice control also provides sterility, the noise level in the operating room (OR) deems it problematic.

In this work we refer to gestures as a basic form of non-verbal communication made with the hands. Psychological studies showed that young children use gestures to communicate before they learn to talk. Manipulation, as a form of gesticulation, is often used when people speak to each other about some object.

Naturalness of expression, non-encumbered interaction, intuitiveness and high sterility are all good reasons to replace the current interface technology (e.g., keyboard, mouse, and joystick) with more natural interfaces.

Many of these deficiencies may be overcome by introducing a more natural human-computer interaction mode into the hospital environment. The bases of human-human communication are speech, hand and body gestures, facial expression, and eye gaze. Some of these concepts have been exploited in systems for improving medical procedures. In Face mask, a surgeon can control the motion of the laparoscope by simply making the appropriate face gesture, without hand or foot switches or voice input. Current research to incorporate hand gestures into doctor-computer interfaces appeared in Gretel et al.[4](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2410001/#bib4)They developed a computer vision system that enables surgeons to perform standard mouse functions (pointer movement and button presses) with hand gestures. Another aspect of gestures is their capability to aid handicapped people by offering a natural alternative form of interface and serving as a diagnostic tool.Wheelchairs, as mobility aids, have been enhanced as robotic vehicles able to recognize the user's commands through hand gestures.

In two brain surgeries at the Neurosurgery OR at the Washington Hospital Center, procedures were observed by the authors to gain insights about the use of current technologies and how they affect the quality of the surgeon's performance. We found that: (a) surgeons kept their focus of attention between the patient and the surgical point of interest on the touch-screen navigation system; (b) a short distance between the surgeon and the patient was maintained during most of the surgery; (c) the surgeon had to move close to the main control wall to discuss and browse through the patient's MRI images.

The sterile gesture interface consists of a Canon VC-C4 camera, whose pan/tilt/zoom can be initially set using an infrared (IR) remote. This camera is placed just over a large flat screen monitor. Additionally, an Intel Pentium IV, (600MHz, OS: Windows XP) with a Matrox Standard II video-capturing device is used.

We are now considering the addition of a body posture recognition system to increase the functionality of the system, as well as visual tracking of both hands to provide a richer set of gesture commands. For example, pinching the corners of a virtual image with both hands and stretching the arms would represent an image zoom-in action. In addition, we wish to assess whether a stereo camera will increase the gesture recognition accuracy of the system. A more exhaustive comparative experiment between our system and other human–machine interfaces, such as voice, is also left for future work.

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