LITERATURE SURVEY

A Gesture-based Tool for Sterile Browsing of Radiology Images

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This paper's primary goal was to enhance the sterile browsing of radiology images. To avoid difficulties a gesture interface is developed for users, such as doctors/surgeons, to browse medical images in a sterile medical environment. A vision-based gesture capture system interprets user's gestures in real-time to manipulate objects in an image visualization environment. The gesture system relies on real-time robust tracking of the user's hand based in a motion fusion model.

Dynamic navigation gestures are translated to commands based on their relative positions on the screen. A state machine switches between other gestures such as zoom, blurred and rotate, as well as a sleep state. Performance evaluation included gesture recognition accuracy, task learning, and rotation accuracy. Fast task learning rates were found with convergence after ten trials. A beta test of a system prototype was conducted during a live brain biopsy operation, where neurosurgeons were able to browse through MRI images of the patient's brain using the sterile hand gesture interface. The surgeons indicated the system was easy to use and fast with high overall satisfaction.

Medical Gesture Interface:

For any system the first step is to collect the necessary data to accomplish a specific task. For hand posture and gesture recognition system different technologies are used for acquiring input data. By tracking the motion or the movement of hand this project can fulfill the critetia of the user's need. The operation of the gesture interface was tested at the Washington Hospital Center in Washington, DC. Two operations were observed in the hospital's neurosurgery department and insights regarding the suitability of a hand gesture system was obtained. To our knowledge, this is the first time that a hand gesture recognition system was successfully implemented in an "in vivo" neurosurgical biopsy. A sterile human—machine interface is of supreme importance because it is the means by which the surgeon controls medical information avoiding contamination of the patient, the OR and the surgeon.

Conclussion:

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. This system serves as an aid for the patients and the doctors in carrying out certain primary functions without any physical contact which is the main reason for the transmission of any kind of microbes. The system mentioned in the paper would bring about a huge change in maintaining hygiene and safety in the premises of the hospital.