A GESTURE-BASED TOOL FOR STERILE BROWSING OF RADIOLOGY IMAGES

LITERATURE SURVEY:

1) Professor. Juan P. Wachs,

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.

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.

2) Professor. Benjamin Fritsch,

Patients are older and more people get cancer. Especially older and multi-morbid patients often cannot be cured with invasive surgery, i.e., by resection of the lesion. With the help of imaging devices, such as CT scanners, the radiologist brings energy applicators into the tumour region with high precision percutaneously. However, most CT systems were developed as diagnostic devices and thus lack assistance and interaction concepts essential for the interventional workflow.

Especially for flat panel CTs to acquire images to visualize the instrument and risk structure locations, the radiologist must position the X-Ray tube and the detector to the dedicated angle for the radiography. Observations revealed that the current workflow is not optimal, due to sterility issues that arise with the use of haptic buttons or touchscreens covered with a sterile drape

Reference Link:

1. https://www.degruyter.com/document/doi/10.1515/cdbme-2021-2068/pdf
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2410001/