GESTURE-BASED TOOL FOR STERILE BROWSING OF RADIOLOGY IMAGES

Literature Survey.

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Paper	Work	Tools or Algorithm	Advantage	Limitation
Benjamin Fritsch*, Thomas Hoffmann, André Mewes and Georg Rose ”Gesture-controlled image system positioning for minimally invasive interventions”	This work examines how a touchless interaction concept contributes to an efficient, direct, and sterile interaction workflow during CT-guided interventions.	To tackle the challenges of image-guided interventions a hand gesture interaction concept was designed. Additionally, a GUI was developed to get live feedback of the current and the configured angle. The gestures were detected with a stereo infrared optical tracking system, the LMC.	A touchless, direct, and sterile gesture interaction control for the manipulation of the CT scanner rotation angle was developed and evaluated	Different interaction concepts need to be optimized and evaluated to be suited for other controllable devices in the intervention room

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Muneer Al-Hammadi,Wadood Abdul " Deep learning based approach for sign language gesture recognition with efficient hand gesture representation"	Hand gesture recognition is an attractive research field with a wide range of applications including video games and telesurgery techniques.	Multiple deep learning architectures for hand segmentation, local and global feature representations, and sequence feature globalization and recognition.	However developing an efficient recognition system needs to overcome the challenges of hand segmentation, local hand shape representation, global body configuration representation and gesture sequence modeling.	Another important application of hand gesture recognition is the translation of sign language, which is a complicated structured form of hand gestures

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Mallika Garg,Pyari Mohan Pradhan "Multiview hand gesture recognition using deep learning"	Gesture recognition is a challenging research topic since different gestures have different sizes,poses,and sometimes face occlusion.	Multiview gestures in a convolutional neural network(convnet)	Utilizing multiview gestures for recognition. Evaluations are performed based on the system accuracy and found that as the number of views increases, the system more accurately recognizes the gestures.	Extensive experiments are performed on isolated gestures for different possible combinations of multiview training and testing sets

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Justin H. Tan, MD. Cherng Chao, MD, JD. Mazen Zawaideh, BS. Anne C.Roberts, MD. Thomas B. Kinney, MD " Developing a Touchless User Interface for Intraoperative Image Control during Interventional Radiology Procedures "	The authors investigated a potential solution with a low-cost, touch-free motion-tracking device that was originally designed as a video game controller.	Kinect-based image manipulation system. Kinect-device (Microsoft, Redmond, Wash).	It demonstrated that touchless control of medical imaging is possible with readily available technology.	One aspect of the system that contributed to the difficulty of performing a task was forcing certain body gestures to conform to predefined mouse and keyboard commands.

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Juan P. Wachs, PhD, Helman I. Stern, PhD, Yael Edan, PhD, Michael Gillam, MD, Jon Handler, MD, Craig Feied, MD, PhD, and Mark Smith, MD "A Gesture-based Tool for Sterile Browsing of Radiology Images" "	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, through video capture.	The "*Gestix*" system. The "*Gibson*" image browser is a 3D visualization medical tool that enables examination of images, such as: MRIs, CT scans and X-rays.	Ease of use—the system allows the surgeon to use his/her hands, their natural work tool. Rapid reaction - nonverbal instructions by hand gesture commands are intuitive and fast. Distance control—the hand gestures can be performed up to 5 meters from the camera and still be recognized accurately.	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. A more exhaustive comparative experiment between our system and other human–machine interfaces, such as voice, is also left for future work.