LITERATURE SURVEY: -

A Gesture-based Tool for Sterile Browsing of Radiology Images - research paper by national library of medicine -
The hand gesture control system "Gestix" developed by the authors helped the doctor to remain in place during the entire operation, without any need to move to the main control wall since all the commands were performed using hand gestures.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.

The "Gibson" image browser is a 3D visualization medical tool that enables examination of images, such as: MRIs, CT scans and X-rays. The images are arranged over a multiple layer 3D cylinder. The image of interest is found through rotating the cylinder in the four cardinal directions. To interface the gesture recognition routines with the "Gibson" system, information such as the centroid of the hand, its size, and orientation are used to enable screen operations in the "Gibson" graphical user interface.

IDEATION: -

The CNN or convolutional neural networks are the most commonly used algorithms for image classification problems. An image classifier takes a photograph or video as an input and classifies it into one of the possible categories that it was trained to identify.

We will develop and GUI to get live feedback of the current and the configured angle. In each phase we will see Activation, Continuation and Confirmation. Activating the gesture system prevents the user from performing unwanted commands. Especially during interventions, the system must not execute unintended commands.

The next set is to prepare our training images for each of these categories. To gather our training data set (images), we will use our webcam. To make things easy, We have made sure to use images with plain uncluttered background.

EMPATHY MAP: -

We found that many hospitals rely on mouse and keyboard to browse the images that are obtained during different surgeries, scans, etc. This can contaminate the environment with various infections thus compromising the sterility.
Various technologies have been developed to overcome this issue and one such technology was called 'Gestix'.

In addition to allowing sterile interaction with EMRs, the "Gestix" hand gesture interface provides:
1. ease of use—the system allows the surgeon to use his/her hands, their natural work tool;
2. rapid reaction—nonverbal instructions by hand gesture commands are intuitive and fast
3. an unencumbered interface—the proposed system does not require the surgeon to attach a microphone, use head-mounted (body-contact) sensing devices or to use foot pedals

4. distance control—the hand gestures can be performed up to 5 meters from the camera and still be recognized accurately.