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Real-Time Gesture Recognition System Using Microsoft Kinect

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Abstract : Gesture is any body movement that expresses some attitude or any sentiment. Gestures as a sign language are used by deaf people for conveying messages which helps in eliminating the communication barrier between deaf people and normal persons. Nowadays, everybody is using mobile phone and computer as a very important gadget in their life. But there are some physically challenged people who are blind/deaf and the use of mobile phone or computer like device is very difficult for them. So, there is an immense need of a system which works on body gesture or sign language as input. In this research, Microsoft Kinect Sensor, SDK V2 and Hidden Markov Toolkit (HTK) are used to recognize the object, motion of object and human body joints through Touch less NUI (Natural User Interface) in real-time. The depth data collected from Microsoft Kinect has been used to recognize gestures of Indian Sign Language (ISL). The recorded clips are analyzed using depth, IR and skeletal data at different angles and positions. The proposed system has an average accuracy of 85%. The developed Touch less NUI provides an interface to recognize gestures and controls the cursor and click operation in computer just by waving hand gesture. This research will help deaf people to make use of mobile phones, computers and socialize among other persons in the society.

Keywords : gesture recognition, Indian sign language, Microsoft Kinect, natural user interface, sign language
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