A Novel Combined Finger Counting and Finite State Machine Technique for ASL Translation Using Kinect

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Abstract : This paper presents a brief survey of the techniques used for sign language recognition along with the types of sensors used to perform the task. It presents a modified method for identification of an isolated sign language gesture using Microsoft Kinect with the OpenNI framework. It presents the way of extracting robust features from the depth image provided by Microsoft Kinect and the OpenNI interface and to use them in creating a robust and accurate gesture recognition system, for the purpose of ASL translation. The Prime Sense's Natural Interaction Technology for End-user - NITE™ - was also used in the C++ implementation of the system. The algorithm presents a simple finger counting algorithm for static signs as well as directional Finite State Machine (FSM) description of the hand motion in order to help in translating a sign language gesture. This includes both letters and numbers performed by a user, which in-turn may be used as an input for voice pronunciation systems.
Keywords : American sign language, finger counting, hand tracking, Microsoft Kinect
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