REVIEW ON NATURAL INTERFACES TECHNOLOGIES FOR DESIGNING ALBANIAN SIGN LANGUAGE RECOGNITION SYSTEM

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Abstract

Sign Language is very important for the inclusion of the hearing impaired persons in the society. Their natural way of communication is done using sign language. Every country has a unique sign language and Albanian sign language is relatively new. The presence of a sign language interpreter is needed in all the situations requiring full participation in the hearing world which is very uncomfortable and impossible for the hearing impaired persons.
Some other conventional methods but not natural for them, such as translation of the voice to text, has resulted in a non-effective method because it requires time, resources and can lead to misunderstanding of the written text. An Albanian sign language recognition system would make possible the communication between hearing impaired persons and the hearing ones. Use of technology for catching and processing sign language using natural interfaces provides faster integration of hearing impaired people in society. Natural interfaces allows to captures the signs and understand their meaning by using body position, hand's trajectory and head movements. The paper includes a review of existing technologies used to capture and process sign language including web cameras, colored gloves and Microsoft Kinect, comparing the advantages and disadvantages of each technology related to sign language recognition systems. It has been concluded that due to low quality of images capture and inability to capture other body parts, web cameras are not suitable to be used as a sign language translator. It is also hard to generalize the algorithms due to many different shapes and colors of hands. Gloves can be uses to overcome the problems of shape and color of hands but do not provide a proper way to human-computer interaction perspective. They are also limited to capture only sign produced with hands excluding other body parts. Microsoft Kinect is a flexible technology, consists of hardware sensors which provide the captures of movements. The software packages allow the processing of sign language by building the specific models from the set of Albanian sign language. A kinect-based system can be used to design an Albanian sign recognition system, reduce cost, ease the deployment and improve the robustness of the system.

Keywords: *sign language, natural interface, web camera, microsoft kinect*