

Abstract

In today's modern society a lot of research has been done in the field of Automatic Speech Recognition (ASR) using auditory input which is used from high end enterprise applications to small applications in smartphones. The problem with current ASR systems is that people with speech impairments are unlikely to be able to use these kinds of systems and may resort to other forms of communication with other methods which may not be properly understood. By capturing muscle movement using Surface Electromyography (EMG), ASRs are improved to cater for these people and also improving current ASRs used in high noise environments with a greater work success rate. With introduction of K-Nearest Neighbour (KNN) a further improvement can be achieved over Hidden Markov Model (HMM) which is the standard approach in current ASR applications.

The improvements have shown that EMG base ASRs can improve communications by capturing Sub-Vocal speech without the need of Auditory Input improving life for people with speech impairments. Also showing that such systems can be used in high noise environments such as fire rescue, construction and other similar due to EMG based ASRs are not influenced by any form of auditory noise.