



# T.J.S ENGINEERING COLLEGE

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# Collaborative Research Publications

# Raspberry Pi Processor-based i-Gloves for Mute Community and Home Automation System

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**Abstract** – Communications plays the major role for sharing our thoughts and make others to understand our point of view. But the major difficulty faced by the deaf and dumb people is speaking and hearing illness. Dumb people use sign language to convey their thoughts but most of the people aren't know about the sign language which make them more difficult in sharing their thoughts. This research helps the deaf and dumb people to convey their thoughts without any difficulties. The aim of the research is to develop a cost efficient system to help the dumb people. In this project the sign language is converted into a text and voice over mechanism. The sign language gesture is analyzed using the flex sensor and then it gets converted into a text and voice. The output is displayed using the speaker. The data processing will be done using the processor. The gesture recognition will follow the principle of Hall Effect. This system helps the deaf and dumb people to get a chance to grow in their respective carrier and extended to home automation system.

**Keywords**—Gesture recognition, i-gloves, flex sensor, Raspberry Pi, Home Automation.

## I. INTRODUCTION

India has 2.4 million dumb and deaf people, accounting for 20 percent of the world's dumb and deaf population. This individual lacks the basic necessities that a normal person should have. The main reason for this is a lack of communication, as deaf people can't hear and dumb people can't communicate. This declining ratio of literate and employed dumb and deaf people is due to physical hearing impairment in deaf people and speech impairment in dumb people, resulting in a lack of communication between normal people and dumb and deaf people. It's the same difficulty as when two people speak two different languages and neither of them speaks the other's native tongue. It's difficult for them to communicate with each other, and they need a translation, which isn't always easy to get. To address this issue, one-of-a-kind applications were developed. This application model is a

desired Interpreter that converts natural English sentences as text input for a deaf person and sign language in the form of a dumb person's gesture to synthesized English words with a corresponding meaning in sign language as an audio output for a normal person. By bridging the communication gap, this will help both normal and deaf and dumb civilizations.

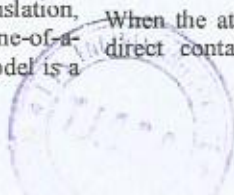
The major goal of the proposed work is to create a cost-effective system that uses i-Gloves to provide voice to the silent. It means that when a deaf person uses i-Glove, they are able to communicate with others, bridging the gap between disabled and non-disabled people. This strategy can be used to solve problems that deaf people have in the workplace. As a result, an intelligent microcontroller-based system employing Flex sensors was built in the proposed study.

## II. REVIEW ON SMART GLOVE

[1]Have proposed a smart glove for physically challenged people to use for remote control. The creation of a smart glove that allows a physically challenged person to execute simple tasks such as turning on a light, turning on a fan, ringing an emergency alert, and so on. These actions can be carried out by making a basic gesture such as folding a finger and mapping the movements to the appropriate action. The device is simple to use and can be adopted by anyone to assist patients. Because of the RF transmission employed, the range of functioning is currently limited. The transmission range can be extended by using Zigbee.

[2] Described a Wrist Ambulatory Monitoring System and Smart Glove for Real-Time Emotional, Sensorial, and Physiological Analysis. The Modular Autonomous Recorder Device for Autonomic Nervous System Measurement is a wrist-worn ambulatory monitoring and recording system that incorporates a smart glove with sensors for autonomic nervous system activity detection. The system consists of a "smart tee shirt," a "smart glove," a wrist device, and a data-capturing PC. The smart glove is one of Modular Autonomous Recorder Device most crucial features.

When the athlete's hands and the workout environment are in direct contact,[3] have introduced a smart glove that can



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