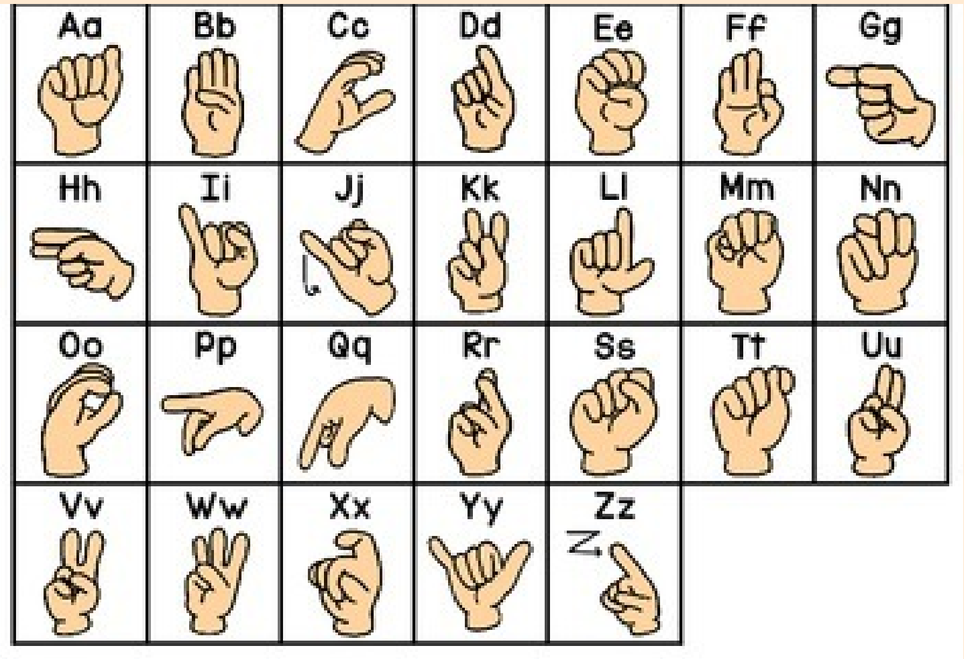
Sign Language Recognizer using SVM



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AGENDA

1. Introduction
2. Abstract
3. Existing work
4. Algorithm
5. Result

Introduction

- Communication is very crucial to human beings, as it enables us to express ourselves. We communicate through speech, gestures, body language, reading, writing or through visual aids, speech being one of the most commonly used among them.

- However, unfortunately, for the speaking and hearing impaired minority, there is a communication gap. Visual aids, or an interpreter, are used for communicating with them. These methods are expensive, and can't be used in an emergency.

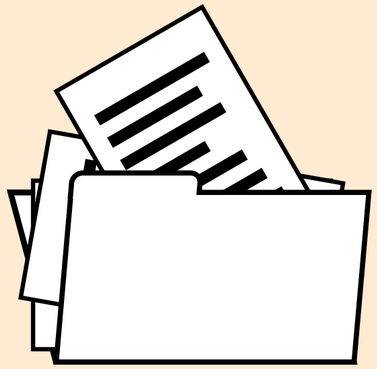
- Sign Language mainly uses manual communication to convey meaning. This involves simultaneously combining hand shapes, orientations and movement of the hands.

Abstract

1. Sign Language is mainly used by deaf (hard hearing) to exchange information between their own community and with other people.

2. It is a language where people use their hand gestures to communicate as they can't speak or hear. Sign Language Recognition (SLR) deals with recognizing the hand gestures acquisition and continues till text or speech is generated for corresponding hand gestures.

Existing Work

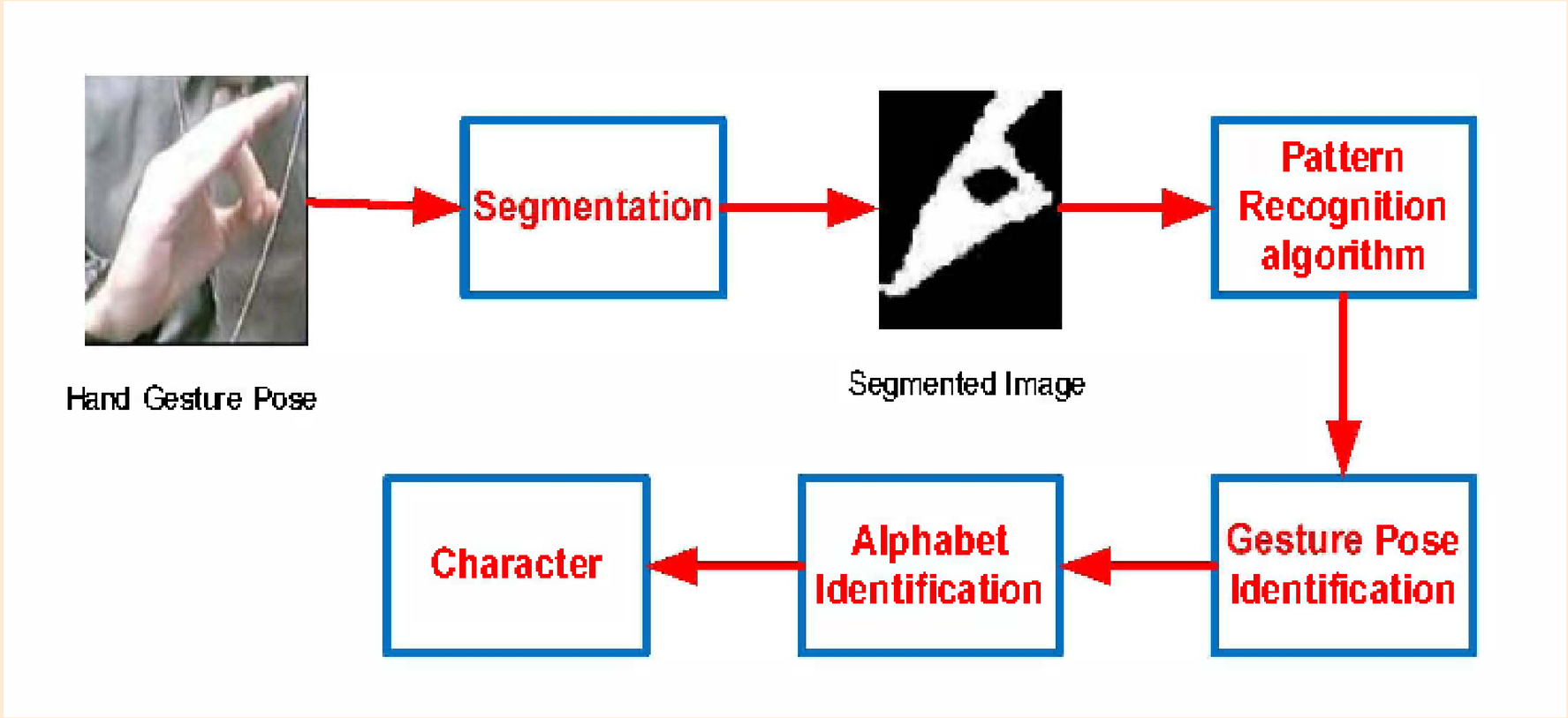


The existing system of Sign Language recognition has following **disadvantages**.

1. Glove-based method in which the signer has to wear a hardware glove, while the hand movements are getting captured.
2. BSL uses a two-handed finger.

Architecture

Of our System



Software & Hardware Requirements

Software Requirements Specification

- Python: Python 3.6 and higher version
- Libraries : Numpy, Scipy , Playsound, Dlib, Imutils, opencv, etc.
- Operating System :Windows or Ubuntu

Hardware Requirements Specification

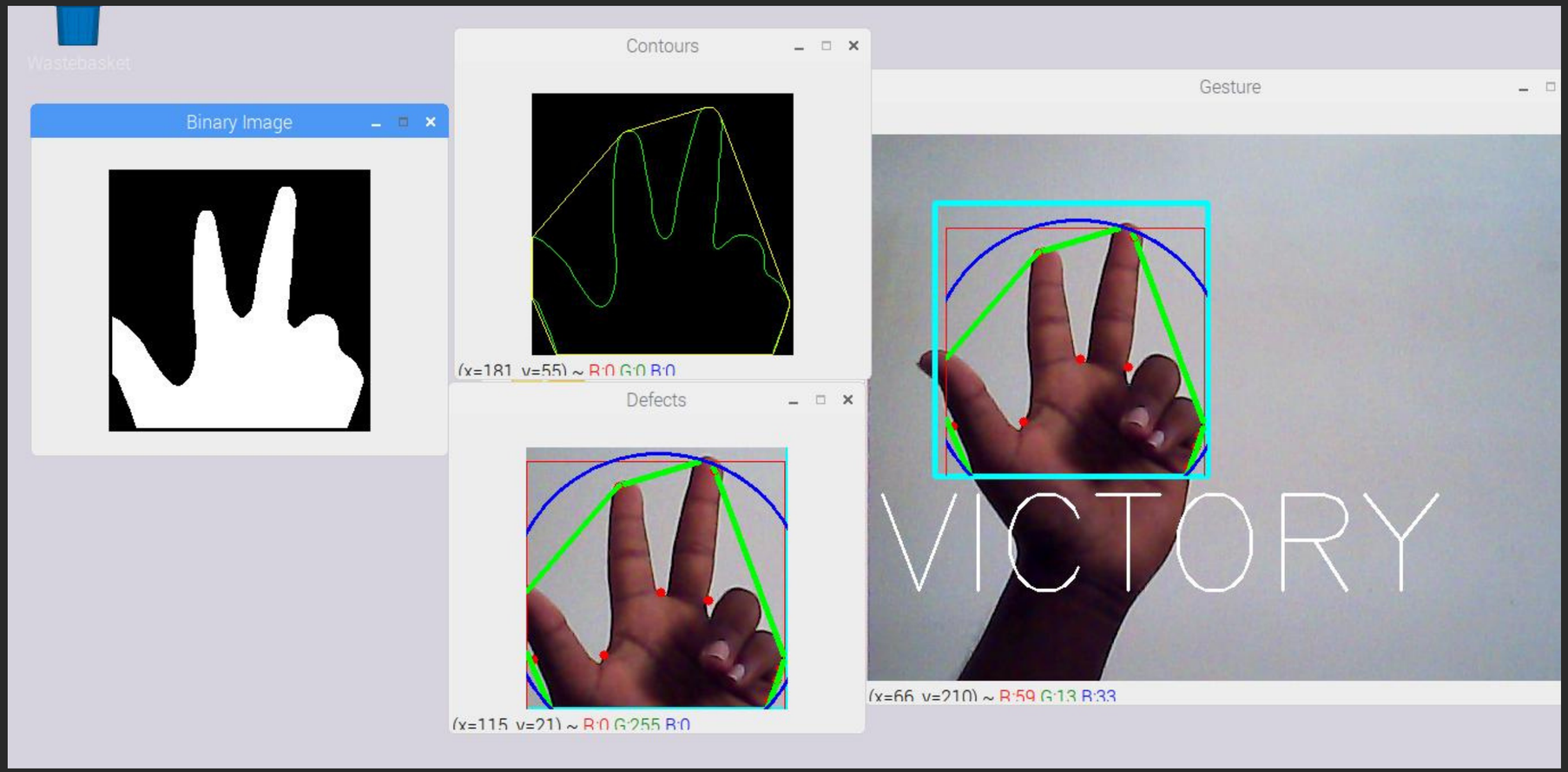
- Processor: 64 bit, quad-core, 2.5 GHz minimum per core
- RAM: 4 GB or more.
- HDD: 20 GB of available space or more.
- Display: Dual XGA (1024 x 768) or higher resolution monitors.
- Camera: A detachable webcam.
- Keyboard: A standard keyboard

Algoritm of Proposing System

- We are using SVM Algorithm in our project. SVM means **Support Vector Machine** one of the most popular Supervised Learning algorithms, which is used for Classification as well as Regression problems.

- SVM is used for classifying hand gestures into different categories.

Output


Wastebasket
Binary Image
Contours
(x=181, y=55) ~ R:0 G:0 B:0
Defects
(x=115, y=21) ~ R:0 G:255 B:0
Gesture
VICTORY
(x=66, y=210) ~ R:59 G:13 B:33

References

- R. Akmeliawati , M. P. L. Ooi and Y. C. Kuang, “Real-Time Malaysian Sign Language Translation using Colour Segmentation and Neural Network,” Instrumentation and Measurement Technology Conference Proceedings, 2007.

- S. C. Agrawal, A. S. Jalal and C. Bhatnagar, “Recognition of Indian Sign Language using Feature Fusion,” 4th International Conference on Intelligent Human Computer Interaction (IHCI), 2012.

- A. Chaudhary, J. L. Raheja and S. Raheja, “A Vision based Geometrical Method to find Fingers Positions in Real Time Hand Gesture Recognition,” JSW, pp. 861-869, 2012.

Thank you

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