

PROJECT DEVELOPMENT PHASE

DELIVERY OF SPRINT-1

DATE:	29 OCT 2022
TEAM ID:	PNT2022TMID39878
PROJECT:	A GESTURE BASED TOOL FOR STERILE BROWSING OF RADIOLOGY IMAGES
MAXIMUM MARKS:	

IDENTIFYING THE PROBLEM STATEMENT:

It is necessary to identify the problem for any problem. In our project the problem we are trying to overcome is using hand gestures to perform actions on the radiology images, this is useful in the medical field.

UNDERSTANDING THE PROJECT OBJECTIVES:

Identifying the method to solve the problem. Selecting the best the algorithms, software and technology to develop an application that enables hand gesture recognition.

FINDING BASE PAPERS FOR REFERENCE:

Look for base papers that were previously published that aimed at solving similar problems.

Try to take adaptations from it and makes modifications for the drawbacks of the previous papers.

Image Processing Techniques for Hand Gesture and Sign Recognition

Divyashree BA¹, Manjushree K²

¹Professor, Department of Computer Science and Engineering, BNMIT

²M.Tech Student, Department of Computer Science and Engineering, BNMIT, Bangalore, India

Abstract - Gesture is a distinct form of sign language which involves movement of body such as hands or face to express the meaning. Hand gesture has received a greater importance over the last few years because to remove the barrier of communication between mute people and normal people. It is an object consists of distinct features to extract and recognize the gestures or signs exactly, therefore gesture recognition presents a most difficult and challenging tasks in the fields of image processing, computer vision and image analysis. The images are subjected to image processing steps. The processing steps consist of image acquisition, pre-processing, segmentation, feature extraction and classifiers. In order to achieve a better accuracy the image processing and machine learning techniques and algorithms are used.

Key Words: Hand Gesture Recognition, Static Images, Image Pre-processing Methodology and OpenCV.

1. INTRODUCTION

Sign language is the basic communication method for those who suffer from hearing impairment. The primary component of a sign language is hand gestures. Gesturing is an instinctive way of communication to present a specific meaning. Sign language is the visual manual modality to convey meaning which is quite similar to the hand gestures [7]. Language is expressed via the manual sign-stream in combination with non-manual elements. Sign languages are full-fledged natural languages with their own grammar and lexicon. In India over 21 millions of people are suffering some form of disability out of that about 7.5% people are dumb and 5.8% people are both dumb and deaf [9]. Gesture involves the hands, head or face to communicate and sign involves only the hands to communicate. Humans express the idea or meaning by using the sign or gesture in order to convey the message to the mute people. A computer can detect and reconstruct the message addressed by the human gestures and translate approximately. Regionally different

single or double handed reduces the number of signs in each subcategory. Indian sign language is most commonly used language among the mute people in India. There are almost 615 languages used in India based on the region and culture as the result to analyze the sign recognition is difficult, due to the involvement of both hands along with fingers with results in overlapping the hands [5]. Sign language recognition (SLR) is an auxiliary tool or a translator for deaf and dumb people to communicate without any barriers in society. Various methods of pre-processing, segmentation, feature extraction and classification are experimented in order to recognize the gesture correctly and achieve the better accuracy.

2. MOTIVATION TO DEVELOP SIGN LANGUAGE RECOGNITION MODEL

A deaf person exists all over the world, when the communities of deaf people abide automatically the sign language is generated to communicate, therefore the sign language recognition model is essential. The first aspect is to develop the assistive system for the deaf person, create some document of gestures or words of signs that are in readable form and also the system is designed to translate the sign language into spoken language which would be of great help for deaf as well as for hearing people. A second aspect is that sign language recognition serves as a good basis for the development of gestural human-machine interfaces [1].

3. APPLICATIONS

Sign language is used in most of the hearing impaired schools to help the children's to learn sign language using human-system interfaces. Android phone consist more number of applications such as talking hands, spread the signs and hand talk translator etc, which helps to easily communicate with the society. There are basically two approaches for decoding the hand gestures [8]:

LITERATURE SURVEY:

Collecting as many related papers to our project. Trying to understand the algorithm and method they used, searching for alternate methods to implement our project.

EMPATHY MAP:

Analyze the problem properly and the categories the aim of the project into;

1. What we see?
2. What we think and feel?
3. What we hear?
4. What we say and do?
5. Pain and gain

