CHAPTER -9

CONCLUSION AND FUTURE WORK

9.1 Conclusion

Simple hand gesture recognition algorithm is implemented using various steps like pre-processing, image converted into RGB, so that varying lightening conditions will not cause any problem. Then smudge elimination is done in order to get the finest image. These pre-processing steps are as important as any other step. After performing the pre-processing on the image, the second step is to determine the orientation of the image, only horizontal and vertical orientation is considered here and images with uniform background is taken. The strength of this approach includes its simplicity, ease of implementation, and it does not required any significant amount of training or post processing as rule based learning is used. It provides the higher recognition rate with minimum computational time. The weakness of this method is that certain parameters and threshold values are taken experimentally that is it does not follow any systematic approach for gesture recognition, and many parameters taken in this algorithm are based on assumption made after testing number of images. In this system we have only considered the static gesture, but in real time we need to extract the gesture form the video or moving scene. To realize the ultimate goal of humans interfacing with machines on their own natural terms gestures are expressive, meaningful body motions involving physical movements of the fingers, hands, arms, head, face, or body with the intent of:

1) Conveying meaningful information interacting with the environment

2) Gesture recognition is an extensively developed technology available designed to identify human position, action, and manipulation. Gestures are used to facilitate communication with digital applications.

3)Among the various ways of gesture recognition like Hand, Face and Body Gesture Recognition, Hand Gesture Recognition is efficient technique to o recognize human gestures due to its simple and greater accuracy features.

Hand gestures provide an interesting interaction paradigm in a variety of computer applications. The importance of gesture recognition lies in building efficient human machine interaction. The issues related with these recognition techniques are what technology to use for collecting raw data from the bodily motions. Generally, two types of technologies are available for collecting this raw data. The first one is a glove input device, which measures a number of joint angles in the hand. Accuracy of a glove input

device depends on the type of bend sensor technology used; usually, the more accurate the glove is, the more expensive it is. The second way of collecting raw data is to use computer vision. In a vision-based solution, one or more camera's placed in the environment record hand movement. By using a hand posture or gesture-based interface, the user does not want to wear the device and be physically attached to the computer. If vision-based solutions can overcome some of their difficulties and disadvantages, they appear to be the best choice for raw data collection. A number of recognition techniques are available such as template matching, feature extraction ,active shape models.

9.2 Future work

The future scope lies in making this algorithm applicable for various orientations of hand gestures, also different classification scheme can be applied some of which are as follows:-

- The system can be advanced to enable speechless people to communicate verbally by directly converting the sign language to speech using gesture recognition.

- To enable the system to recognize and classify more complex static gesture as well as video gesture.

- To make the system more efficient so that it responds to varying background conditions as well as skin condition of the user, thus enhancing human computer interaction.

- Instead of webcam, a better and more accurate acquisition device can be used which even used Infrared for accuracy, eg. Kinect