

# **CHAPTER FIVE**

## **CONCLUSION**

### **5.1 Conclusion**

We developed a system to control the mouse cursor using a real-time camera. We implemented all mouse tasks such as left and right clicking, double clicking, and controlling. This system is based on computer vision algorithm. Most vision algorithms have illumination issues. From the results, we can expect that if the vision algorithms can work in all environments then our system will work more efficiently. However, it is difficult to get stable results because of the variety of lighting and skin colors of human races.

Our system is based on computer vision algorithm. Most vision algorithms have illumination issues. From the results, we can expect that if the vision algorithms can work in all environments then our system will work more efficiently. However, it is difficult to get stable results because of the variety of lighting and skin colors of human races. Sometimes it is a great problem to collect high level image to accurately detect face, since face is the most important part in our system. If we can't detect face accurately then mouse cursor control is not have a better performance.

The HCI (Human Computer Interface) is an evolving area of research interest nowadays. This project aims to be a convenient process for helping out the disabled to operate computers. These systems can also be used in other application like robotics efforts, in process to make the device cost effective and more complex thereby reducing the size. Thus we have developed a real hand free mouse. This project will be very effective and accurate using of both MEMS and eye blink sensors as a wireless mouse for future.

This technology has wide applications in the fields of augmented reality, computer graphics, computer gaming, prosthetics, and biomedical instrumentation. Our motive was to create this technology in the cheapest possible way and also to create it under a standardized operating system.

## 5.2 Limitation of our system

- Sometimes face aren't shown fully, then face detector classified consider as a non-face object.
- Many face is reported as non-face images, because those face has unacceptable variation of pose.
- The color representation of a face obtained by a camera is influenced by many factor (for examples ambient light, motion etc.)
- Sometimes facial expression is a big factor in detecting face.
- Sometimes there are more than one face in our frame, then which face is consider to control the mouse that also a big reason.

## 5.3 Future Work

- Improve accuracy of detecting face.
- Improve speed of the system.
- We will work on 3D face detection and GUI controlling.
- We will work on different pattern for different application.
- We will try to work with side view of body or face.
- We will try to detect eye and control with it.
- Artificial Intelligence (AI) will be major part of our future work.
- Adding more features such shrinking or resizing window.
- Recognizing face and use in different purpose.