CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

This system deals with the enhancement of human interaction with the digital world. Miniaturization of computing devices allows us to be in continuous touch with the digital world. Restriction of information on traditional platforms like paper, digital screen etc. is overcome with the help of this technology. Dependency on traditional hardware input devices like keyboard, mouse etc. will be reduced considerably, thereby allowing portability. It makes use of face movements or gestures to feed input to a computer or any other digital device.

Face detection and tracking are important in video content analysis since the most important objects in most video are human beings. Research on face tracking and animation techniques has been improved due to its wide range of applications in security, entertainment industry, gaming, psychological facial expression analysis and human computer interaction. Recent advances in face video processing and compression have made face-to-face communication be practical in real world applications.

A virtual mouse is develop to perform like the traditional mouse. It works on a similar principle of face movement or gesture control to perform simple functions like right click, left click, double click and cursor control etc. which would otherwise have to be performed with the help of a mouse. Image processing technique is an important basis for the implementation of this technology.

1.2 Aims and objectives

- This system is developed to help people with disabilities who can use the mouse cursor with their body movement via a webcam. We can say that this system uses face or head as a wireless mouse.
- We want to create a virtual mouse system using web camera to interact with the computer in a more user-friendly manner that can be an alternative approach for the touch screen or traditional mouse.
- The goal is to manipulate the computer with body gestures rather than pointing and clicking a mouse or touching a display directly.
- Try to reduce cost of different hardware
- Control and perform mouse operation without touching any device.
- We also try to enhancement of human computer interaction in the digital world.

1.3 Overview of the system

- The system capture video frames from webcam.
- Those video frames are taken as a still image.
- Python script used to analysis this video by face detection using OpenCV, a library used for computer vision processes.
- Then face is track on every image and figure out by a rectangle.
- The system will perform different activity like cursor movement control depending on different kind of face movement.
- There will be many other option rather than just controlling mouse, like left clicking, right clicking and double clicking.
- Face is most important part in this system.
- Mouse controlling and clicking operation is all are depended on various kind of face movement.

1.4 Limitation of the existing system

- Some method is very sensitive to scale, therefore, a low-level preprocessing is still necessary for scale normalization.
- In some system, algorithm learning or system learning is very time-consuming, which makes it difficult to evaluate on the face.
- Many system is reported a face as non-face images, because those face has unacceptable variation of pose.
- Many system take only the fontal part of a face. Face in different angle and different pose is not considered as a standard image input.
- In some system, preprocessing and detecting a face is more complex than our system.
- Most of the existing system have poor accuracy level.

1.5 Project schedule

We divided our project schedule in some parts. They are mention and listed below:

Feasibility Study	7 Days
Requirements Collection	8 Days
Analysis	10 Days
Design	10 Days
Implementation	10 Days
Documentation	5 Days
Total	50 Days

Table 1.1: Project schedule

1.6 Chapter summary

In this chapter we discuss about overall overview of our system. We also pointed out our aim and objective. Our main object is noted as helping physical disable people to interact with computer by GUI controlling with their head gesture. We also listed our project schedule in step by step with days.