SOFTWARE REQUIREMENT SPECIFICATION

FOR

VIRTUAL MOUSE

Introduction

In today's world we see lots of development happened in the field of Technology. Today's technology is combined with the technique called Artificial Intelligence. This project is also based on small part of AI. This project presents finger movement gesture detection on our computer's window using camera & handling the whole system by just moving your one finger.

Using finger detection methods for instant camera access and user-friendly user interface makes it more easily accessible. The system is used to implement motion tracking mouse, a signature input device and an application selector. This system reduces the use of any physical mouse which saves time and also reduces effort.

Purpose of Application

Motion Tracker Application is the application software where after clicking on TRACK option which is given after just opening of application, instead of using physical mouse user can use their finger as a mouse & whatever the direction we give to our finger according to that cursor on the system move & user can do their work.

How application works

This application is a combination of UI & AI. First of all, the user open the application which is .exe file. After opening of file, user interface appears after that user have option of TRACK, after clicking on that button our backend program gets executed where that code contains accessing of camera to finger tracking motions.

Functional Requirement

After developing this application user should be able to access their system through Motion Tracker Application. Calculations required for this application is all related to motion detect operations & Data processing is done by using different python libraries like NumPy & media-pipe.

Interface Requirements

This application communicates with UI & Python code with the help of TKINTER of python. Tkinter is a Python binding to the Tk GUI toolkit. It is the standard Python interface to the Tk GUI toolkit and is Python's de-facto standard GUI. Tkinter is included with standard Linux, Microsoft Windows and Mac OS X installs of Python.

Overview

We are developing such application which is combination of AI & Web. Implement such code where camera can recognize each and every finger movement & responds according to it. After completing this project user can access their system with the help of their finger by using

Goals And Scope

Virtual Mouse that will soon to be introduced to replace the physical computer mouse to promote convenience while still able to accurately interact and control the computer system. To do that, the software requires to be fast enough to capture and process every image, in order to successfully track the user's gesture.

The scope of the project is as below

- Real time application.
- User friendly application.
- Removes the requirement of having a physical mouse.

Platform

It can be used on any system containing known OS and have a webcam.

Deliverables

We will deliver the following during the course of development

- Feature specification
- Product design
- Test plan
- Development document
- Source code

TESTING MODEL

For this project we'll be using the agile software development methodology approach in developing the application. the stated approach is an alternative to the traditional waterfall model that helps the project team respond to unpredictability through incremental and iterative work. it promotes adaptive planning, evolutionary development, early delivery, continuous improvement, and encourages rapid and flexible respond to change.

When to use this model??

1)Requirement clear and fix and may not change

2)There are no ambiguous requirements and confusion.

3)It’s a good to use this model when technology is well Understood

4)Project is short and cost is low

5) Risk is minimum.

Fig. Agile Model

EXPLAINATION -

PLANNING

Thorough planning will be conducted in this phase where the existing Systems/product, for this case, physical computer mouse will be reviewed and Studied to identify the problems that existed, a comparison of problems will be Made to compare which problems are more crucial and requires improvement. An outline objective and the scope will be identified to provide an alternative solution to the problem.

REQUIREMENT ANALYSIS

The phase that gathers and interpreting the facts, diagnosing problems and recommending improvements to the system. In this phase, the collected problem statements will be extensively studied in order to find a proper solution or at least an improvements to the proposed system..

DESIGNING

The requirement specification from the previous phase will be studied and prioritized to determine which requirements are more important where the requirement with the highest priority will be delivered first. after the study, the system design will be prepared as it helps in defining the overall system architecture and specifying the hardware and the software requirements.

BUILDING

The phase where the actual coding implementation takes place. by referring to the inputs from the system design, the system will be developed based on the prioritized requirements. however, due to we're using the agile Methodology approach, the developed system will be considered as a Prototype system where it will be integrated and tested by the users.

TESTING

The phase where the prototype system goes through a series of tests. The Prototype system will first undergo integration where the features from the Previous iteration cycle are added to the latest cycle. After the integration, the Prototype system will be thoroughly tested by the users to determine whether They are satisfied with the latest deliverables, the completion of the project depends on whether they've accepted it or otherwise. If the users require Additional features or modifications, feedback gathering will be conducted, which resulted in further modification of the requirements and features where It will be recorded and documented for the requirement analysis phase on the next iteration.

Technical Process

Following would be the languages I would use to develop my application within the stipulated period:

1) Python

2) Open – CV

3) Vs - code