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Virtual Mouse Based On AI

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ABSTRACT: Hand recognition plays an important role in human interaction with computers. As we see that there are so many technological advances happening as biometric confirmations that we can often see on our smart phones, similarly recognizing hand touch is a modern way of interacting with computers that is, we can control our system by displaying our hands in front of the web camera and hand recognition Based on this perspective this paper is presented. This paper provides a detailed description of the algorithms and methods for acquisition and visual mouse.

1.INTRODUCTION

Computer Mouse is an input tool that helps to identify and interact with any identifier. There are many types of mouse in the current trend, there is a mechanical mouse that combines a single rubber ball that can rotate in any direction and the movement of the mouse is determined by the movement of that rubber ball. Later the mechanical mouse was replaced by the Optical Mouse. The Optical Mouse contains a lead sensor to detect movement of the cursor. Years later a laser mouse was introduced to improve precision and to overcome Optical Mouse obstacles. Later as Technology has greatly expanded wireless mouse was introduced to enable free mouse movement and improve accuracy.

No matter how much the accuracy of the mouse increases but there will always be mouse limitations as the mouse is a hardware input device and there may be some problems like mouse click malfunction and so on, as mouse is a hardware device like any other visual even mouse . As technology grows everything becomes virtualized like speech recognition. Speech recognition is used for attention and to translate spoken language into text. Thus, Speech Recognition can change keyboards in the future, Similar to Eye Tracking which is used to control the mouse pointer with the help of our eye. Eye tracking can replace a mouse in the future.

1.1. Scope:

Eye tracking used to control the mouse pointer with the help of our eye. Eye tracking can replace a mouse in the future. Touch can be of any kind such as a hand-held image or a pixel image and any given shape that requires a little computer complexity or the ability to make the necessary tools for visual acuity. Various strategies are proposed by companies to obtain the information / data needed to recognize hand-held touch models. Some models work with special devices such as data gloves devices and color caps to develop complex information about the touch provided by the user / person.

1.2 Objective:

Manual Activity plays an important role in human interaction with computers. As we see that there are so many technological advances happening as biometric confirmations that we can often see on our smart phones, similarly recognizing hand touch is a modern way of interacting with computers that is, we can control our system by displaying our hands in front of the web camera and hand recognition Based on this perspective this paper is presented. This paper provides a detailed description of the algorithms and methods for color acquisition and visual mouse

1.3 Purpose:

As technology grows everything becomes virtualized like speech recognition. Speech recognition is used for attention and to translate spoken language into text. Thus, Speech Recognition can change keyboards in the future, Similar to Eye Tracking which is used to control the mouse pointer with the help of our eye. Eye tracking can replace a mouse in the future.

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companies to obtain the information / data needed to recognize hand-held touch models. Some models work with specialized devices such as data gloves devices and color caps to create complex information about the touch provided by the user / person.

II.LITERATURE SURVEY

Multi-point Interactive Whiteboards are available using Wiimote [4]. Features IR pen, computer with Windows XP (installed with Microsoft .NET framework, Wiimote Connect system and Wiimote Whiteboard software), wiimote control, beamer with adjustable 1024 x 786 pixels Here the wiimote controls track the infra-red source on the white board and send the information to the PC via Bluetooth. The tutorial comprises a Wii-motebased multi-touch instructional station, a white Wii-mote-based interactive board and a Wii-mote-based input modification tool [5]. According to a literature study, most people use Wii-mote to configure it as a visual tag.

Many visible tags are available in the market, but can only be used as markers. A high-level processor is used to process data and is used as a visual marker, but can perform additional functions such as mouse functions. Its power is not fully utilized in its operating capacity and that is why the product is less crowded and more expensive in terms of market price compared to labor.

III.METHODOLOGIES

In this project we will be using the Agile Software Development methodology to build a system. The said method is one of the most common waterfall models that helps the project team respond non-predictably with increasing and repetitive work. It promotes flexible planning, evolutionary development, early delivery, continuous development, and promotes rapid and flexible response to change. The following describes the principles of the Agile Software Development methodology:

- Satisfy customer satisfaction with the timely and continuous delivery of effective software, Encourage necessary changes.
- Active software is regularly delivered.
- Ongoing interaction between stakeholders and developers
- The project is developed by willing people.
- Encourage informal meetings.
- Performance software is a key measure of progress.
- Continuous development, capable of maintaining a steady pace.
- Continued attention to technological efficiency and good design
- Simplicity
- Organized groups

- Constantly adapting to changing circumstances

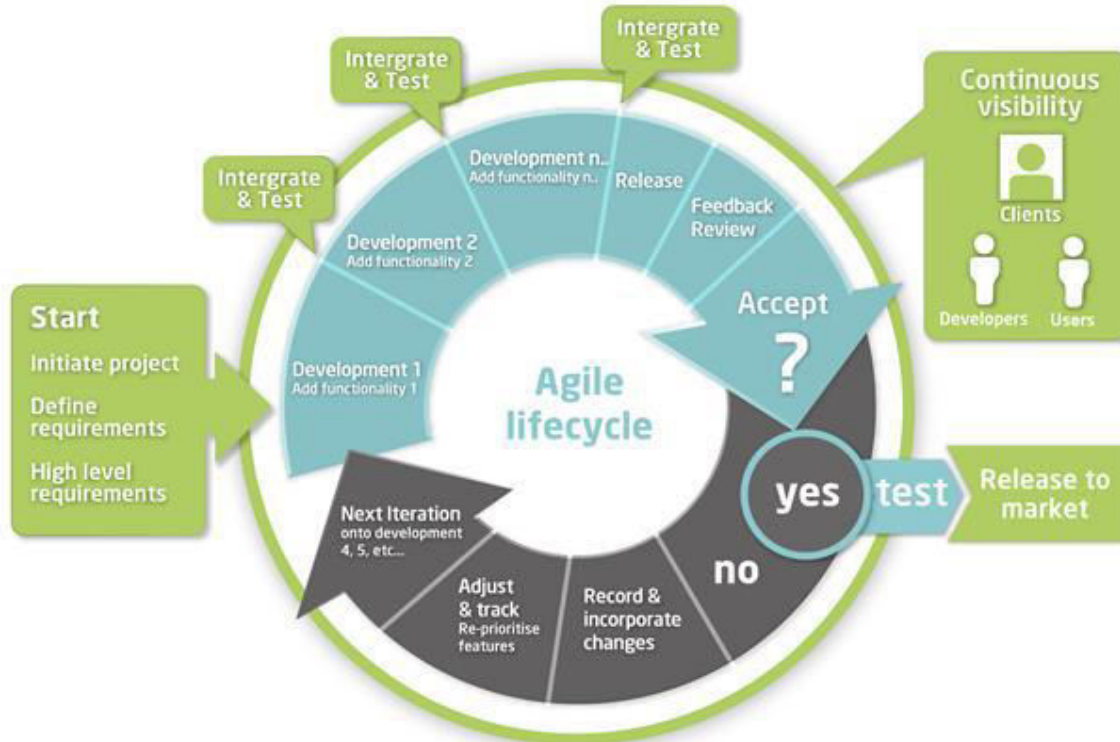


Figure: Agile method

The reason for choosing this method is because Virtual Mouse is still considered in the launch phase, which means it still needs a lot of research and development before it can enter the market. Therefore, this project requires a complete yet repetitive planning and collected needs where the life cycle will be constantly reviewed in order to re-evaluate the project direction and eliminate the ambiguity of the development process, and at the same time accept the change in needs. , which improves flexibility and flexibility. In addition, due to the fact that the Virtual Mouse app is highly functional for users, this project requires ongoing customer cooperation, as it is important in gathering relevant requirements in all aspects. This is why a flexible approach is the best way to improve a project.

The following describes the phases within the agile methodology approach:

- **Planning**
Complete planning will be done at this stage where existing programs / product, in this case, the physical computer mouse will be reviewed and studied to identify existing problems, comparisons of problems will be made to compare which problems are most important and need better. The purpose of the framework and scope will be identified in order to provide an alternative solution to the problem.
- **Needs Analysis**
A section that collects and interprets facts, diagnoses problems and recommends system development. At this stage, the collected problem statements will be analyzed in detail to find the right solution or at least improve the proposed system. All proposed solutions will be converted into requirements where they will be documented in terms of requirements..
- **Design**
The specification of the requirements of the previous section will be considered and prioritized to determine which is the most important requirement where the most important requirement will be prioritized. After the study, the system configuration will be adjusted as it helps to define the overall structure of the system and to determine the hardware and software requirements.

- Structure

The stage where the actual coding occurs. With reference to inputs from system configuration, the system will be upgraded based on prioritization requirements. However, because we use an agile approach, the advanced system will be considered a prototype system where it will be integrated and tested by users.

- Testing

The stage at which a prototype system passes through a test series. The prototype system will start with integration when the features of the previous repetition cycle are added to the most recent cycle. After integration, the prototype system will be carefully evaluated by users to determine if they are satisfied with the latest delivery, project completion depends on whether they receive it or not. If users require additional features or modifications, a feedback loop will be created, which will lead to further adjustment of requirements and features which will be recorded and documented in the requirement analysis section in the next iterations.

IV. CONCLUSION

This model can end up using computer vision topics such as open CV, can create color masks using color-changing techniques and improve mouse movement through specific 'mouse-like' packages that will be used to move the mouse using links linked to the detected color. This can provide easy access to many other systems and applications. An open CV therefore helps users with a variety of accessible models that will make life easier.

Touch recognition provides the best interaction between human and machine. Touch recognition is also important in developing other forms of communication. It enables one to communicate with the machine in a natural way. Touch recognition can be used in many applications such as sign language recognition for the deaf and hard of hearing, robot control etc.

This technology is widely used in the fields of Augmented reality, computer graphics, computer games, prosthetics, and biomedical instruments. Digital Canvas is an extension of our system that is gaining popularity among artists, where the artist can create 2D or 3D images using Virtual Mouse technology using a hand as a brush and a Virtual Reality kit or monitor as a display set. This technology can be used to help patients who have difficulty controlling their organs. In the case of computer graphics and gaming this technology has been applied to modern gaming consoles to create interactive games where human movement is tracked and interpreted as commands. A key feature in modern e-learning is the development of teaching methods using dependent technology smart products to have better communication too communication between teacher and student. By harvest this, people have proposed a virtual mark; but proposed the product is more intended than brand and can be used equally like a mouse. Therefore test HID functions for high end microcontroller also increase its use by increasing its volume operation is performed and the desired results are available.

V. FUTURE SCOPE

The development of these methods and models is really great. The color detection model can be improved if we want to identify a particular color in a color image. And the mouse movement can be improved in such a way that it acts like a real mouse that will help us run the system without touching the system keyboard or mouse. The development could be in the form that it could be training at CNN that would help a better model.

Models can be developed in a variety of ways using the latest packages such as 'pyautoGUI' which will help us provide instructions that will identify the input and perform a specific function in the system. So if any different color is detected you can do a special task or if an input from the user will open any specific folder easily without performing any actions, a simple touch can do the job.

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