PROJECT SYNOPSIS ON

MOVEMATE

A Synopsis Submitted in Partial Fulfilment of the

Requirements for the

Second Year B.Tech. of CSE (AIML)

Under the **Mini Project**

By

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SEM IV, AY: - 2022-23

SYNOPSIS

INTRODUCTION

The conventional human-machine interaction has evolved as a result of virtualization and shift towards immersive technologies like the metaverse. With the advancement of technology, devices are becoming smaller and smaller. Some devices have gone wireless, while others have gone unnoticed. This study offers a method that could render some devices latent, which is the future of HCI (Human-Computer Interaction). The proposal is to create a virtual mouse that recognises gestures. The goal is to use a simple camera instead of regular mouse to control mouse cursor functions. The Virtual Mouse works as a medium of the user and the machine only using a camera. It helps the user to interact with a machine without any mechanical or physical devices and control mouse functions. The Hand Gesture recognition is moving at tremendous speed for the futuristic products and services and major companies are developing a technology based on the hand gesture system for applications such as:

1. Laptop, Hand held devices,

2. Professional and LED lights.

3. Entertainment

4. Education

5. Medicine

6. Automation

LITERATURE SURVEY

1. Angel, Neethu.P.S: The hand tracking has to be specifically adapted for each user. This system was implemented only in a restricted to the indoor environment. This system is prone to noise and sensitive to the change of the illumination.
2. J.L. Raheja, A. Chaudhary, K. Singal: Proposed using HSV algorithm but this uses special sensor Kinect to capture image and processes it. User has to spend more money for the sensor.
3. Abhik Banerjee, Abhirup Ghosh: The presence of other coloured objects in the background might cause the system to give an erroneous response. If the resolution of the camera is too high then the system might run slow.

PROPOSED SYSTEM

Machine Learning for Image Scene Recognition:

Artificial Intelligence and Machine Learning based approaches have predominantly been used for the purpose and hence an understanding of the same is mandatory. The relation between artificial intelligence, machine learning and deep learning is important to be understood. While artificial intelligence comprises of all the methodologies for emulating human intelligence on machines, yet they comprise of the fundamental sub-categories:

1. Machine Learning

2. Deep Learning

3. Neural Networks

The machine learning approach needs features to be computed prior to training while deep learning doesn't require the same. Neural networks are mathematical models which need to be trained so as to be able to perform the classification or recognition task.

PROBLEM STATEMENT

With the development of ubiquitous computing, current user interaction approaches with keyboard, mouse and pen are not sufficient. Due to the limitation of these devices the useable command set is also limited. Direct use of hands can be used as an input device for providing natural interaction.

SYSTEM MODEL

Hardware Requirements:
- System: Pentium IV 2.4 Ghz
- Webcam: Peripheral of at least 30 frames/second
- Resolution: 640x480
- Monitor: 15 VGA Colour.

Software Requirements:
- Operating System: Windows 8 and Above
- Coding Language: Python
- Tool Kit: Image Acquisition and Image Processing
- IDE: VScode and Anaconda

METHODOLOGY SYSTEM

In the proposed method we are acquiring the real time images and videos from web camera through which will be converting the videos into images and will be processing them. The converted images will consist of different colours so the next step is to extract the colour from the images. After the extraction process is done it will detect the points using the desired colour mentioned that red, blue, yellow. This process is called the calibration mode and detecting the points. After the detection of points, it will track the motion of the pointer moving on the screen. We can then perform the action of the mouse and this process will be done using the mapping colour pointer for each action. It will perform actions like up, down, right, left, drag, click.

FLOWCHART
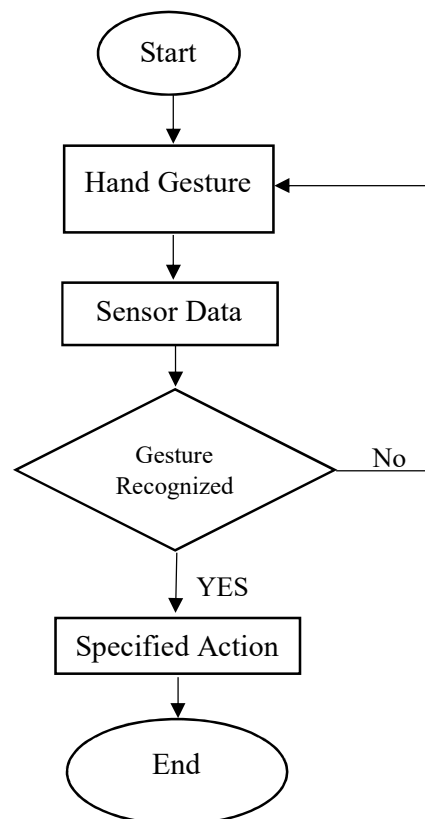
PLAN OF WORK

Sr. No.	Task to be planned	Expected Duration
1	Code	5 weeks
2	GUI	2 weeks

REFERENCES

1. Chien-Cheng Lee, Cheng-Yuan Shih, and Bor-ShennJeng,"Fingertip-writing alphanumeric Character Recognition for Vision-based Human Computer Interaction" ,International Conference on Broadband, Wireless Computing, Communication and Applications 978-0-7695- 4,2010.
2. T. Suganya Thevi, C. Chitra, "Cursor Movement in Real Time using Hand Gesture Recognition", International Journal of Engineering Sciences & Research Technology, ISSN:2277-9655, March 2014.
3. Shany Jophin, Sheethal M.S, Priya Philip, T M Bhruguram, "Gesture Based Interface Using Motion and Image Comparison", International Journal of Advanced Information Technology (IJAIT) Vol. 2, No. 3, June 2012.
4. Abhik Banerjee, Abhirup Ghosh, Koustuvmoni Bharadwaj, Hemanta Saik, Mouse Control using a Web Camera based on Colour Detection", International Journal of Computer Trends and Technology (IJCTT) – volume 9 number 1, ISSN:2231-2803, March2014.
5. Rong Chang, Feng Wang and Pengfei You IEEE, "A Survey on the Development of Multi-touch Technology", 978-0-7695-4003-0/10, DOI 10.1109/APWCS.2010.120,2010.