Parshvanath Charitable Trust's
A. P. SHAH INSTITUTE OF TECHNOLOGY
(Approved by AICTE New Delhi & Govt. of Maharashtra, Affiliated to University of Mumbai)
(Religious Jain Minority)

Gesture Recognition for Immersive Gaming

Group No.13

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Project Guide

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Abstract

The ability to interact with computerized equipment without need for special external equipment is attractive. With efficient use of available resources, it is possible to track motion of human hand and fingers in real time using a simple web camera. The aim of this project is to enhance the level of immersion in computer games by creating an application that will allow users to interact with the game only using their hands. The proposed application will enable the user to play computer games without the need of either a keyboard or a mouse or any other expensive input devices. The users can play games through various gestures done using only their hands. This is the main background of the project. Therefore, the project aims in replacing the traditional mouse and touch pads with human hand (fingers) to interact with games.

Introduction

- Games are primarily played on computer system using various input devices of which keyboard and mouse are the most often used. While using these devices, it is just tapping the keys which make changes in the game accordingly.
- There also exist other input devices which actually translate a user's body movement in to actions in the game (Example Kinect). This makes the playing experience better and makes the user connected to the game. But these devices are expensive and not every gamer can afford it.
- An alternative to playing games through traditional input devices is using gestures that system can understand. Hence this topic, "Gesture Recognition for Immersive Gaming" comprises of using Gestures for playing games.

Literature Review

Title:-Real Time Hand Gesture Recognition for Human Computer Interaction.
Publish Year:- 2016 1
Author:- Rishabh Agrawal, Nikita Gupta
Finding:- In this paper, a novel method based on computer vision is proposed for the automatic and precisely detection of a hand, accurately detect its contours and give a complete analysis for it using a set of algorithms to detect fingers, arm, and gestures without using any kind of markers or training data. It is also invariant to rotation and lighting. All this is done in real time at 30 frames per second.
Advantages:-

- Speed and sufficient reliable for recognition system.Good performance system with complex background

Disadvantages:-

- Irrelevant object might overlap with the hand.

Literature Review:-

- **Title:-**Gesture Recognition Based Car Gaming using kinect sensor.
- **Publish Year:-**2017
- **Author:-**Dr. Parameshachari , Rubeena Muheeb ,Nagashree
- **Finding-** This paper proposed a gesture recognition based car gaming proposed. This project developed based on the five skeleton gestures which will help to interact with the computer to play car game using kinect sensor. The five gestures namely Forward, Right, Left, Normal and Close. It will perform the operation with a slight delay. The kinect can be defined as a Natural Interaction device, which operates in the context of Natural User interface.NI refers to a concept where by the interaction with devices is based on human senses.

Advantages-

- Gesture is stored in the databases.

Disadvantages-

- performance decreases when the distance is greater than 1.5 meters between the user and the sensor

Literature Review

- **Title**:- Hand Gesture Recognition Using Deep Learning.
- **Publish**:-2017
- **Author**:- Soeb Hussain and Rupal Saxena
- **Finding:-** In This Paper hand gesture recognition method using transfer learning. The method was made robust by avoiding skin color segmentation, blob detection, skin area cropping and centroid extraction for unidirectional dynamic gestures. Prototype was tested successfully on seven different volunteers at different backgrounds and light conditions with an accuracy of 93.09%.
- **Advantages-**
- Fast and powerful results from the proposed algorithm.
- **Disadvantages-**
- The proposed method is susceptible to errors, especially in shapes like square and circular.

Objective

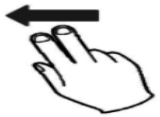
The Aim of this project is to make a low-cost alternative to the existing systems that users can use on their computers without any hassle. The project will cover games that can be played by mouse or keyboard on any computer system.

Care Based Game Gesture

1.Right

Swipe right

2.left



3.speed

4.Speed Boost

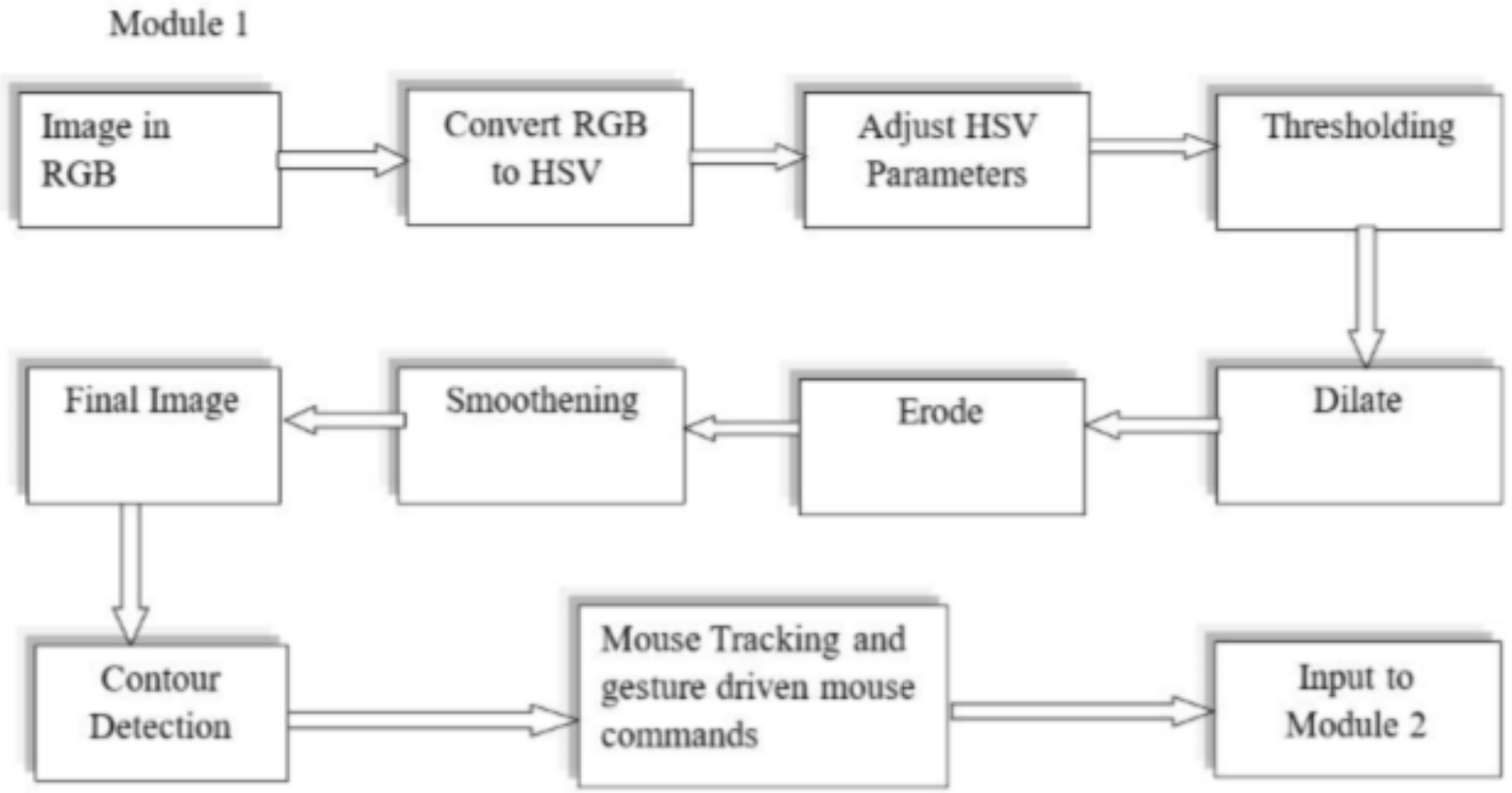
5.Jump

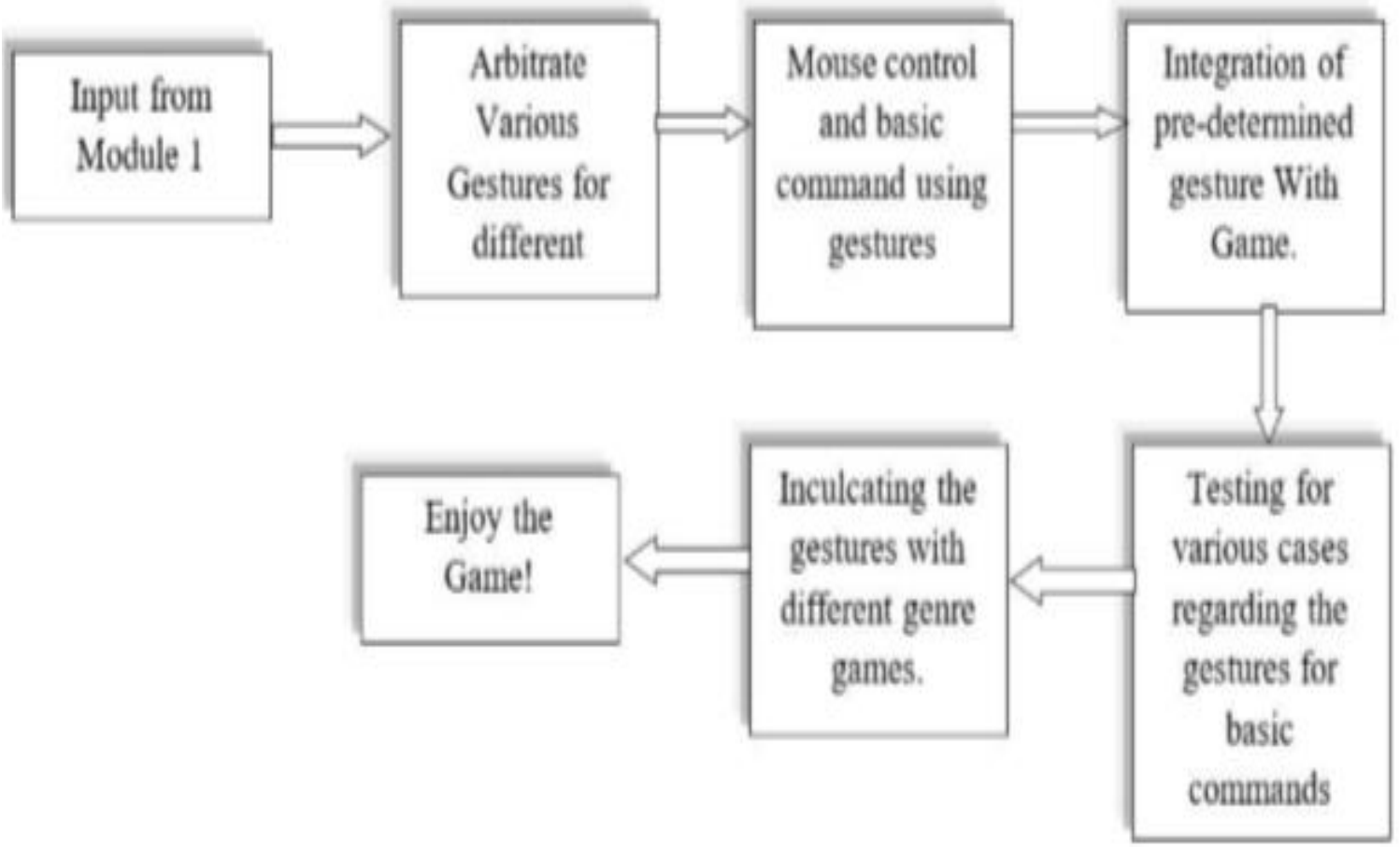
6.Break

Problem definition

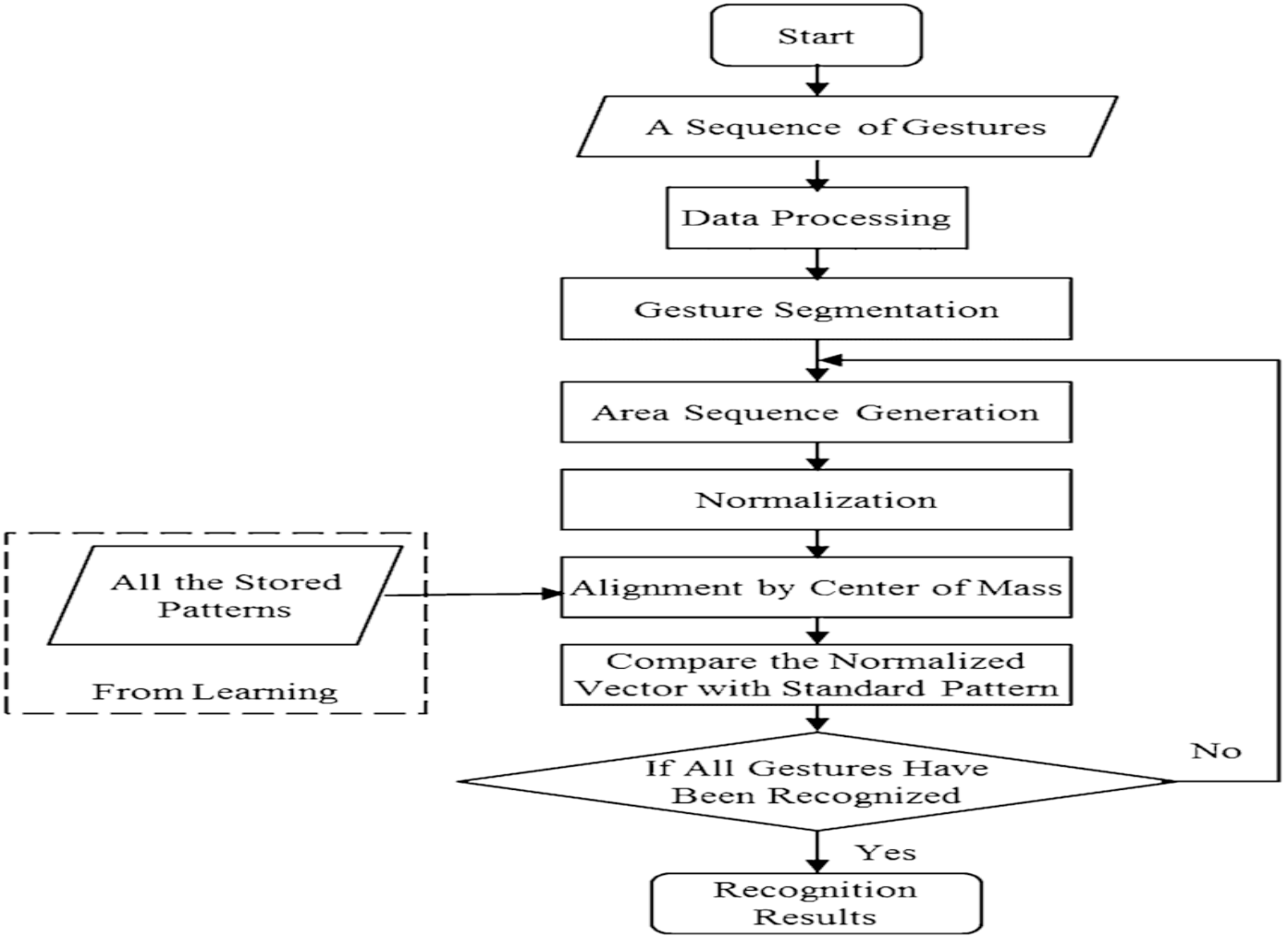
- Presently, majority of games are played using mouse and keyboard controls which don’t provide much depth.
- Gesture recognition hardware presently available in the market are very costly and hence can’t be experienced by everyone. Also, these controllers comes with special set of drivers and software which require regular updating and failing to do so will make things complicated for users as they could no longer support latest games.
- These controllers also require games specially made for them and can’t be used to play all the games. For Example Xbox-Kinect can only be played on Xbox device with specific games like tennis, cricket, boxing etc.
- Games with genre racing requires joystick for its efficient controlling and playing racing games with Kinect or Wii Motion sensor is kind of a task itself.

Proposed System




Input from Module 1
Arbitrate Various Gestures for different
Mouse control and basic command using gestures
Integration of pre-determined gesture With Game.
Testing for various cases regarding the gestures for basic commands
Inculcating the gestures with different genre games.
Enjoy the Game!

Existing System



Conclusion

Hand tracking is the main idea behind the implementation of gesture recognition using webcam. In this project, we have proposed a vision based hand gesture recognition using a simple system connected with a web camera. Minimum hardware is required to detect hand and counting number of fingers and translate the gestures into commands.

Reference

[1] Rishabh Agrawal, Nikita Gupta” Real Time Hand Gesture Recognition for Human Computer Interaction 2017”.

[2] Dr. Parameshachari , Rubeena Muheeb ,Nagashree “Gesture Recognition Based Car Gaming using kinect sensor.-2017”

[3] Soeb Hussain and Rupal Saxena” Hand Gesture Recognition Using Deep Learning. 2017”.

THANK YOU