PRESENTATION ON

GestureGo

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Outline

Introduction to GestureGo

Exploring the Evolution and Significance of Hand Gesture Media Control

What is Gesture ?

A gesture is an action that has to be seen by someone else and has to convey some piece of information.

How it Work ?

The technology behind hand gesture control involves several key components: sensors, cameras, and software algorithms.

Examples of Common Gestures

Common gestures for media control include Smartphones and Tablets, Gaming Console (Kinect for Xbox) etc.

Motivation Behind GestureGo

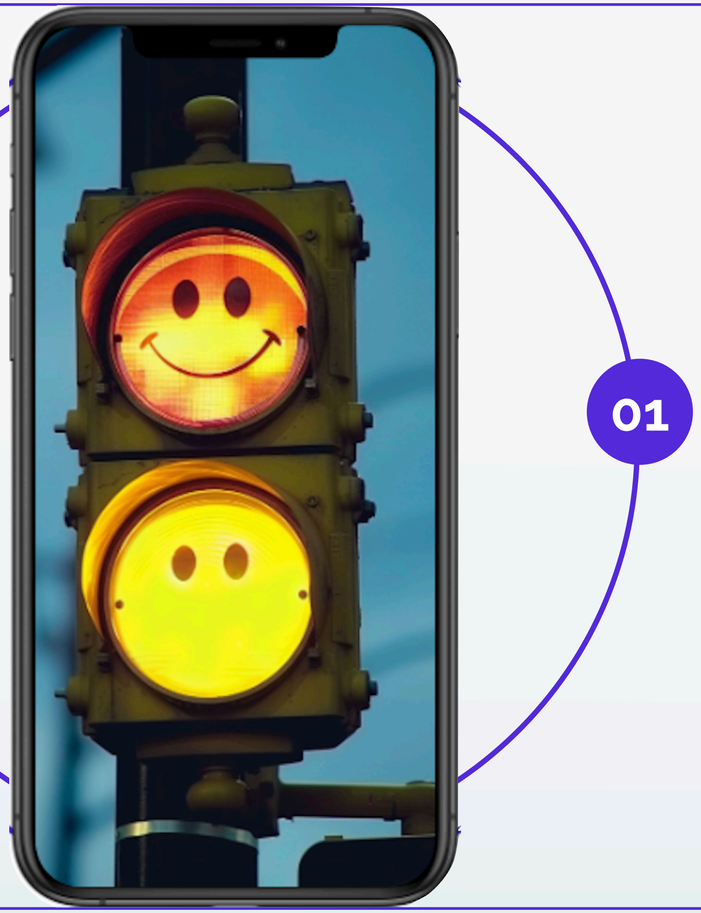
Enhancing User Experience and Technological Integration

Hands-free Operation

Hand gestures enable users to control media without physically interacting with the device, offering a convenient and intuitive experience.

Accessibility for Differently-Abled Users

The use of hand gestures provides an alternative input method, enhancing accessibility for users with physical disabilities.



Shape-based computer interaction

The motivation behind this project is to make an interaction between human and computer using various applications running on computer by aiming basic shapes made by hand.

Aim & Objectives of GestureGo

Enhancing Media Control Through Intuitive User

Primary Goal

We are going to create systems, which can identify specific gestures and use them to convey information or to control a device.

Hands-Free Approach

This application can run in the background while the user runs other programs and applications. This is very useful for a hands-free approach.

Objectives

The objective of this project is to recognise the static hand gesture images based on shapes and orientations of the hand.

Enhance Media Control Features.

Enhance the features of media control operations by seamlessly integrating hand gesture recognition technology.

Applications for GestureGo

Enhancing User Experience Through Hand Gesture Control

Film and TV

Hand gesture controls enable users to navigate menus, play, pause, and interact with content, also use for volume up or down.

Gaming

It can be used in entertainment settings such as video games and virtual reality. Enhancing user interaction with virtual environment

Music

Hand gestures enable users to create interactive musical experiences, manage music playback.

Presentation Control

Tools like Microsoft PowerPoint and Google Slides can be controlled with hand gestures to advance or go back through slides, enhancing the flow of presentations.

Some Hand Sign

By using this type of sign you give command to your computer to do some specific work.

Sign language is a structured form of hand gestures , which are used as a communication system.

Index Finge Up

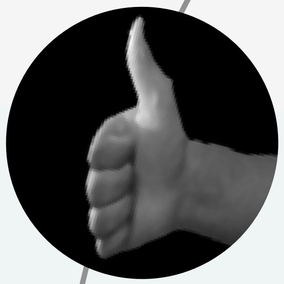
We are using this sign for the play next video

Index & Middle Fingers Up

Move to the previous slides in power point presentation

Thumbs Up Only

We are using this sign for the video backward



All Fingers Up

We are using this sign for the play or Pause

Literature Survey

Gesture-based system for user interface control

Publication and Year	Author Name	Methodology	Advantages	Limitations
International Research Journal of Engineering And Technology 2021	Georgi Kristen , Ivan Ralev	The authors developed a console application in **Java** to operate the camera and perform hand recognition	natural and intuitive way for the user to control and interact with the software, enhancing user experience.	It may be sensitive to environmental factors such as **lighting conditions, background clutter, and occlusions.**

Literature Survey

Cursor Control Using Hand Gestures

Publication and Year	Author Name	Methodology	Advantages	Limitations
International Research Journal of Engineering And Technology 2023	Twinkle Shukla , Pradip Mahajan , Ayush Mandlik	HCI using hand gestures is very interesting technique for one-to-one interaction with computers and it provides a Natural User Interface (NUI).	easy to use command because you have to perform using only 2-3 finger & colour .	In this virtual curser there is some limitation comes because You have to use predefined colour to perform specific tasks.

Literature Survey

Volume Control Using Hand Gestures

Publication and Year	Author Name	Methodology	Advantages	Limitations
International Research Journal of Engineering And Technology 2023	Mr.V.Balu, Elamarthy Venkata Vyshnavi, Dondapati Devi Priyanka	In this article, the project displayed a program that allowed users to easily operate software by hand.	Advantage in this model you can use fingers to control the volume using finger movements	But in this case limitation is that you only control volume. you can not able to do other functions.

MEDIA CONTROL METHODOLOGY

Methodology for GestureGo

The methodology involves designing a gesture recognition system using computer vision or sensor technology

Define Objectives and Requirements

Determine what kind of media you want to control (e.g. video, presentations). List specific functions you want to control, such as play/pause, volume adjustment, forward/reverse, etc.

A

Deployment and Maintenance

Install and deploy the system in the intended environment.Regularly update the system to improve performance and address any issues.

B

D

Testing and Refinement

Conduct tests with real users to ensure the gestures are intuitive and the system responds accurately. Make adjustments based on feedback and test results to improve accuracy and user experience.

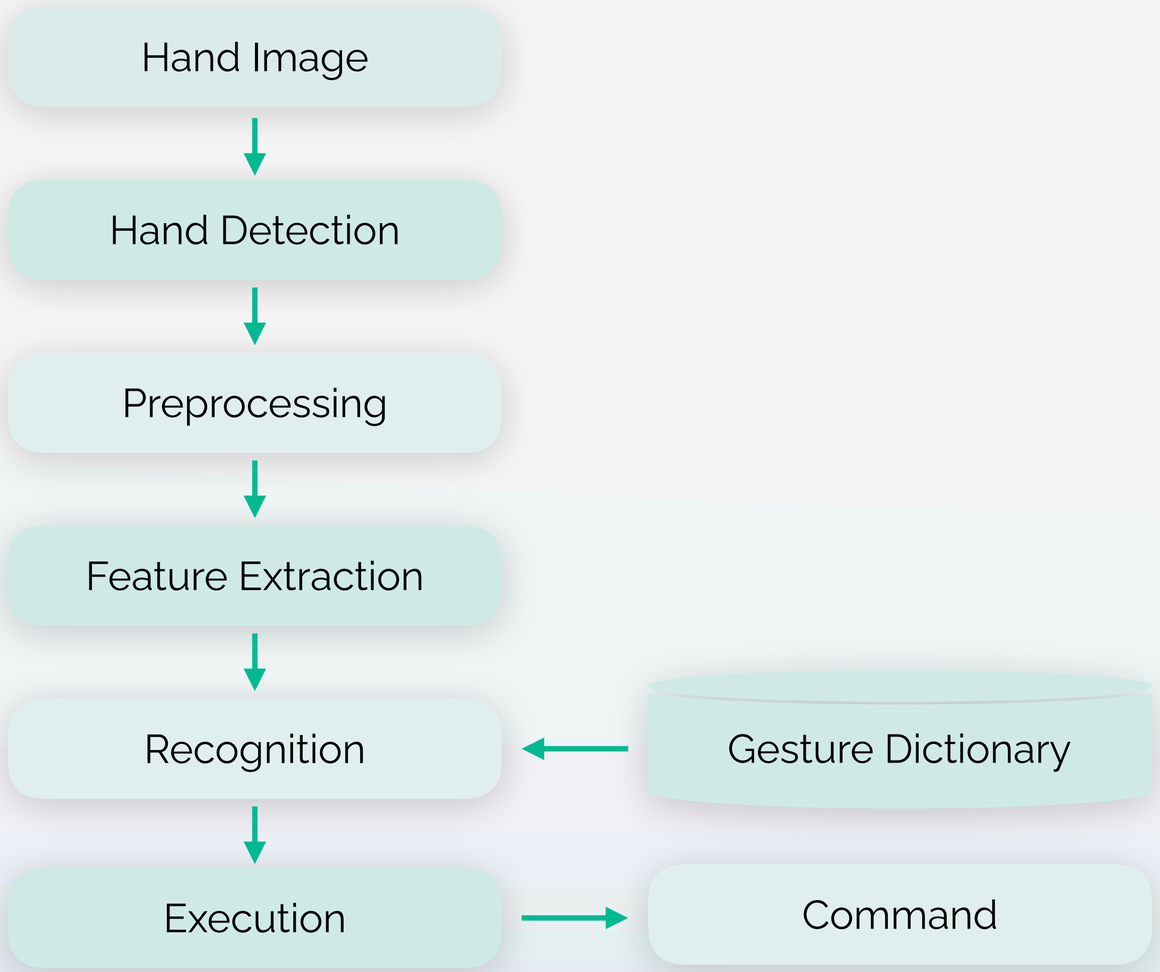
C

Research and Technology Selection

Existing technologies for gesture recognition,such as: Computer Vision, Infrared Sensors Choose the appropriate sensors or devices (e.g., cameras, sensors, controllers).

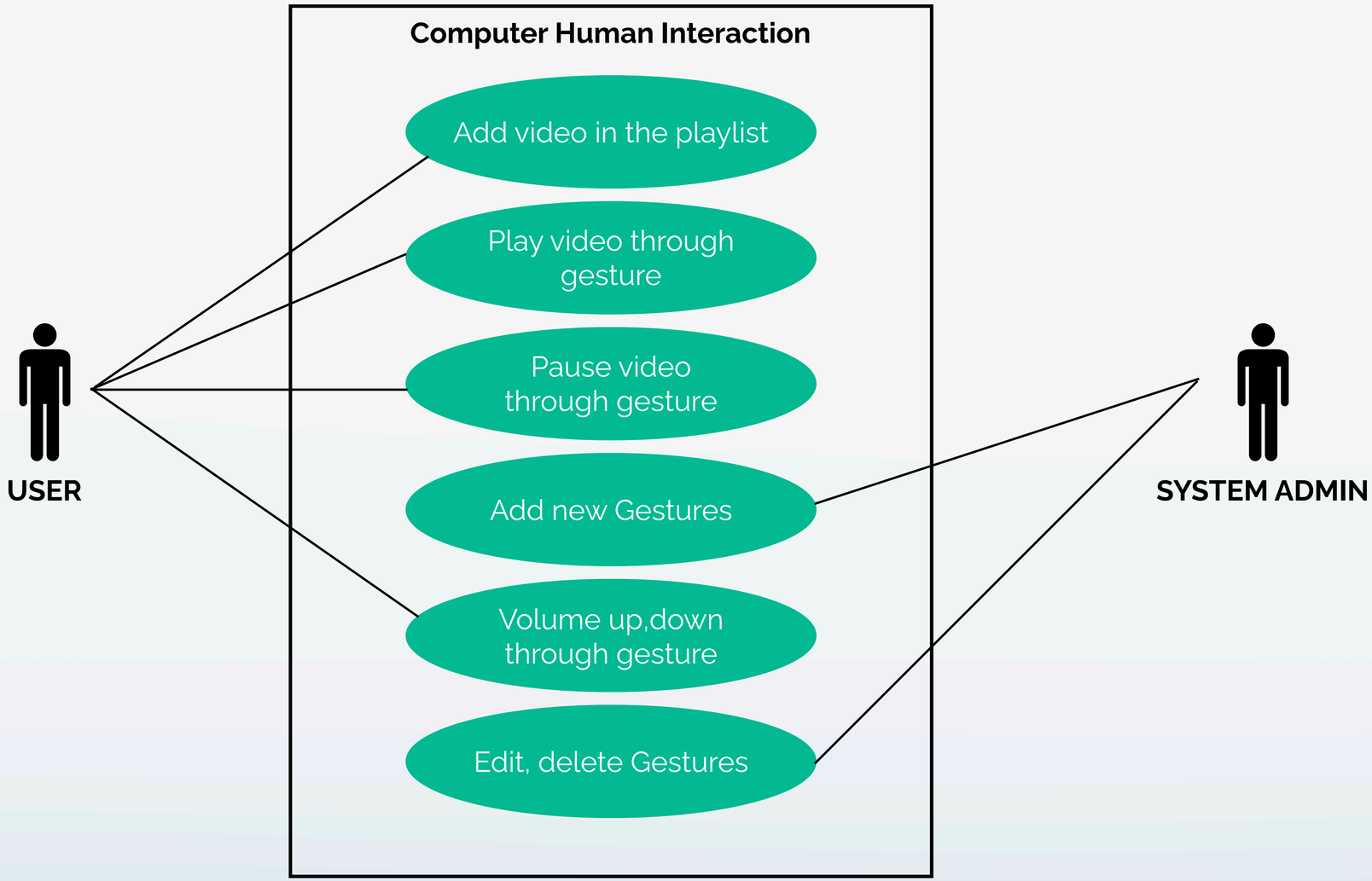
Graphical Represntations of Workflows

ACTIVITY DIAGRAM



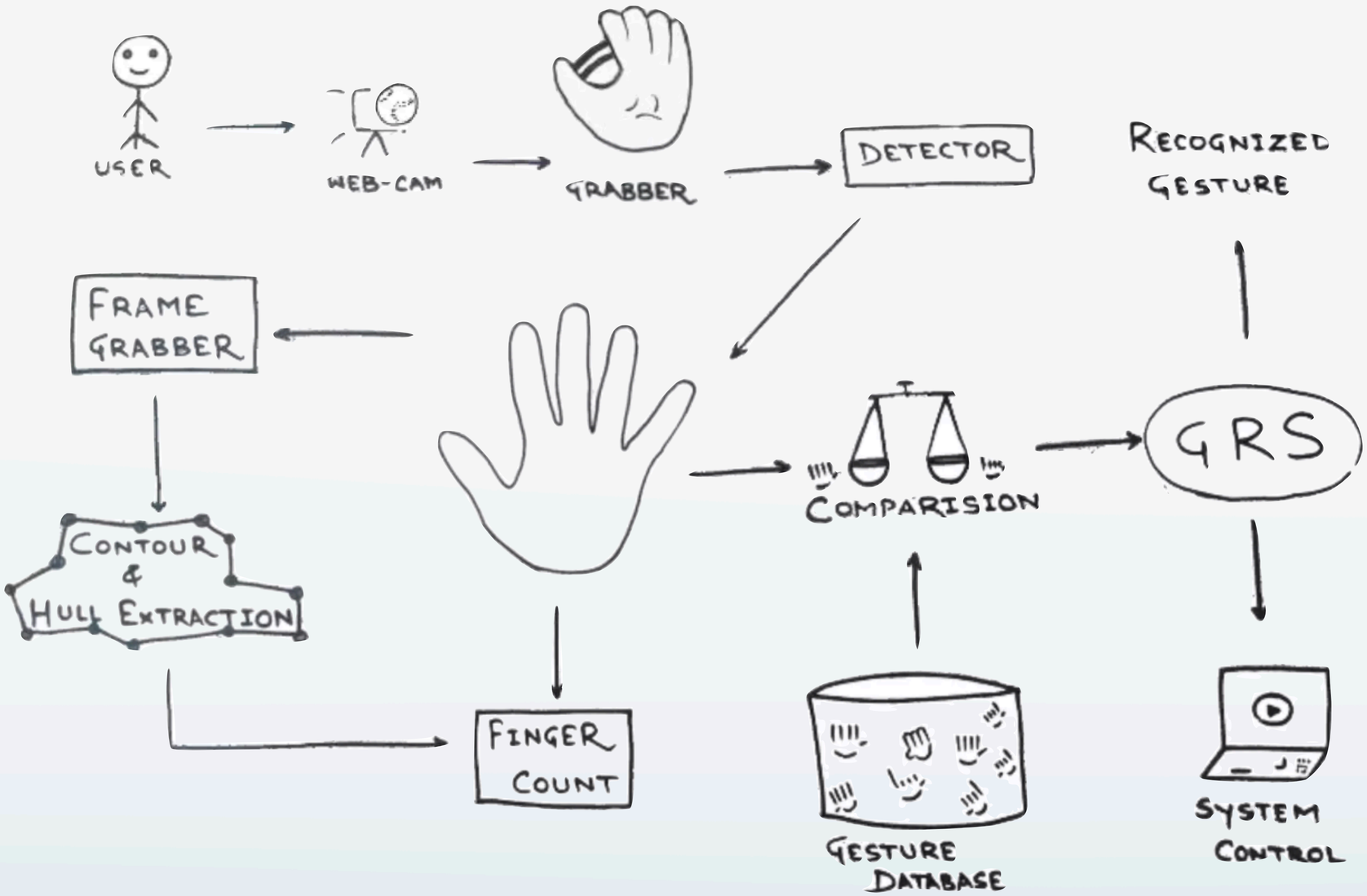
Graphical Represntations of Workflows

USE CASE DIAGRAM



Proposed Work Flow

hand gesture recognition work flow diagram



IMPLEMENTATION STRATEGIES

Implementation for GestureGo

A hand gesture-based media control system typically involves these core components:

01 **Video Capture :** Acquiring real-time video input from a camera.
Library : OpenCV(Open Source Computer Vision Library)

02 **Hand Detection:** Identifying the location and shape of the hand in the video frame.
Library: MediaPipe (for efficient hand landmark detection)

03 **Gesture Recognition:** Determining the specific gesture performed by the user.
Libraries: TensorFlow, Keras, Scikit-learn

04 **Media Control:** Translating recognized gestures into media player commands.
Library: PyAutoGUI (for simulating keyboard/mouse input)

MEDIA REVOLUTION

Conclusion and Summary

Highlighting the Future Implications of Gesture-Based Media Control

In this project, we have done with a controlled Mouse, Media player and PowerPoint using hand gestures with a good amount of accuracy. It performs a pause operation when Thumb-up only is detected in the camera and will resume the media player once 4 fingers are detected in the camera. It also performs other operations of VLC and It also performs PowerPoint operations using finger count. It is performing well with the default camera as there is no need for any specified camera. We did this project on a system that has limited configuration, so if we want more accuracy with good speed then we can go with the GPU and enhance our project. CNN provides more accuracy in the form of time and computation also.

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Thanks

Thank you all for taking the time to view my presentation! I appreciate your attention and feedback. Your engagement means a lot to me. Thank you!