Hand Gesture Recognizer Based on Artificial Intelligence Algorithms

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Abstract: As there is a significant barrier between the user and the machine, using a physical device for human-computer interaction. In this paper one of the Hand Gesture Recognizer Media Players is developed. It was initially built using machine learning. The Ai algorithms are used in our project to find gestures. It uses computer vision to count the number of fingers and executes the pre-defined actions. By saving time and energy, the major goal of completing this project is to simplify life.

Keywords: Ai Algorithm, Controller, Programming

Introduction

Nature's elements have always been used by mankind for a variety of reasons. Water is utilized for irrigation and energy generation (Hydro Electric Power), wind is used for windmills, and the sun is used for drying, heating, and cooking especially when brought into focus as well as for rotating turbines that produce electricity. Sun drying is a practice that has been utilized by people for numerous items from the beginning of time. For a variety of reasons, sun drying is used in farms, homes, workplaces, laboratories, hospitals, and other institutions. These reasons range from outright drying objects like clothing, some farm produce, during construction work, and sculpture to exposing specific electronic materials or components to the sun directly so that the sun's ultraviolet rays can affect the object. Other examples include the pharmaceutical and chemical industries, where specific plants used for pharmaceutical purposes or chemicals are exposed to direct sunlight for a period of time. All the benefits of sun drying listed above will be hindered by rain, especially if the goods being dried in the sun are not soon retrieved. Therefore, it is not only appropriate but also very necessary to develop and build a gadget that gives one a heads-up the moment it starts to rain, giving you time to gather the items that have been sun dried, close your windows, and bring in possession. Additionally, since it can rain at any time without any notice, clothing that are almost dry on a laundry line outside the home risk getting wet if we do not notice it is raining in time. In this project, the media players' functions are controlled by hand gestures, as is illustrated below. Our goal is to create a media player that uses hand recognition to control AI with the use of five fingers. This project includes the identification of fingers with various functions:

- 1st Finger Denotes: Volume Up
- 2nd Finger Denotes: Volume Down
- 3rd Finger Denotes: Forward
- 4th Finger Denotes: Backward
- 5th Finger Denotes: Mute

The project's goal is to facilitate communication between the user and Our project is built on the Python programming language, which is highly well-liked all over the world. We use a Python library called OpneCV, which has many AI algorithms, to carry out all of the tasks in our project.

The methodology

Since this project is centred around software, it's critical to ensure that the programme runs smoothly through each stage and produces the desired results.

Requirements:

By reading through the current literature on Image Processing Techniques, the fundamental requirements of the system were examined. Consequently, be able to create the necessary algorithm to carry out fundamental image processing, such as gesture detection and contour detection.

Design:

The proposed system design will begin to be implemented.

- The use of an algorithm to capture images from cameras or other image sources.

- The application of an algorithm that examines image processing.

Computer language:

The most widely utilised programming language worldwide, Python, is used. The programming interface utilised is called VS-Code, which is regarded as the most well-liked and well-known ide on the world.

Open Source Libraries:

I. *Open CV* is an open-source library created by Intel.inc that primarily focuses on real-time computer vision.

II. Pip install opencv.python is the installation command.

III. *NumPy* is a library that is frequently used to work with arrays and matrices.

IV. Numerical Python is what it stands for. pip install numpy is the installation command.

V. *PyAutoGUI* is a GUI automation Python module that enables people to operate devices using gestures, such as the mouse and keyboard with x, y coordinates. Only the primary monitor can use it.

Testing: The result of everyone's labour of love will now be put to the test.

Evaluation: The application/model will then be assessed in relation to the desired outcome or goal.

Results and discussion

The project develops over time because it is based on machine learning. I gained a lot of knowledge from this project, but one thing I'd like to mention is that AI and machine learning will govern the future. The best piece of advice I can offer is to get to work on ML & AI. No one could have predicted that technology would advance to this level nearly two decades ago, but it has advanced ten times more recently.

Conclusion

Everyone wants to save time and energy in today's technologically advanced world. As is well known, most people were not even aware of face lock five years ago, despite the fact that it is a crucial function for smartphones and laptops. We may use the phenomenal success of Tesla vehicles as an example. Because of this, the potential for AI and ML models is enormous. Our algorithm for identifying hands is likewise based

on machine learning and has a bright future. We can complete whatever task we desire to with hand gestures and movements. Our staff considers that saving time is the most significant benefit. The model can be altered to suit our needs. Every industrialist is investing in this sector since artificial intelligence and machine learning are the future, as we all know.

References

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