Python-based Raspberry Pi for Hand Gesture Recognition

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Abstract

In this paper, a real time vision based system is proposed to monitor objects (hand fingers). It is built based on the Raspberry Pi with camera module and programmed with Python programming Language supported by Open Source Computer Vision (OpenCV) library. It also contains a 5 inch 800*480 Resistive HDMI Touch screen for I/O data. The Raspberry Pi embeds with an image-processing algorithm called hand gesture, which monitors an object (hand fingers) with its extracted features. The essential aim of hand gesture recognition system is to establish a communication between human and computerized systems for the sake of control. The recognized gestures are used to control the motion of a mobile robot in real-time. The mobile robot is built and tested to prove the effectiveness of the proposed algorithm. The robot motion and navigation satisfied with different directions: Forward, Backward, Right, Left and Stop. The recognition rate of the robotic system reached about 98.

References
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**Index Terms**

Computer Science  Pattern Recognition

**Keywords**

Raspberry Pi; Mobile Robot; Hand Gesture; Feature Extraction, Python, OpenCV.