

Embedded Video Processing on Raspberry Pi

ABSTRACT

The paper presents a study of existing methods for motion and face detection algorithms and their application to the on-board miniature Raspberry Pi computer. The algorithms realized by OpenCV functions were modified to optimize their operation on the mentioned platform, which could be used as an embedded surveillance system. The paper also mentions the training of a custom classifier for hand detection.

EXISTING SYSTEM

In existing system, there are no methods for detecting the human face. In case of any confidential matters the authorities must know the person. For example any person who is trying to harm the nation ,then compulsory authorities need to know that person's face and his movement. But there are no specific technologies to know all these.

DRAWBACKS

- We cannot know the person.
- We are not able to get the movement of the person.

PROPOSED SYSTEM

The paper deals with the design of an embedded surveillance system realized on a Raspberry Pi 3 B minicomputer. The work's main part focuses on the study of selected functions used by modern surveillance systems, like motion detection methods and issues and algorithms used for detecting human faces. After selecting the proper methods, they are developed in the programming language C/C++ in way to exploit the computational power of the embedded minicomputer. An external web-camera captures static scenes which are used as input data for the image processing algorithms. These algorithms analyze the images in real time, yielding information about the moving objects and saving the video sequence if a motion has occurred.

To automatize these tasks, basic Computer Vision approaches are modified and applied to the real-time camera feed. The functions are provided by OpenCV (Open Source Computer Vision), what is an open source library containing over 500 optimized algorithms for image and video analysis and manipulation. The functions are completely designed with the help of OpenCV libraries and are optimized to operate effectively on the Raspberry Pi platform.

ADVANTAGES

- We can detect the person/object easily.
- Movement of person/object can be known.

SYSTEM REQUIREMENTS

H/W System Configuration:-

- Processor - Pentium –IV
- RAM - 4 GB (min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

S/W System Configuration:-

- Operating System : Windows 7 or 8 32 bit
- Application Server : Tomcat5.0/6.X
- Programming Language : Java
- Java Version : JDK 1.6 and above