People Detection and Counting System

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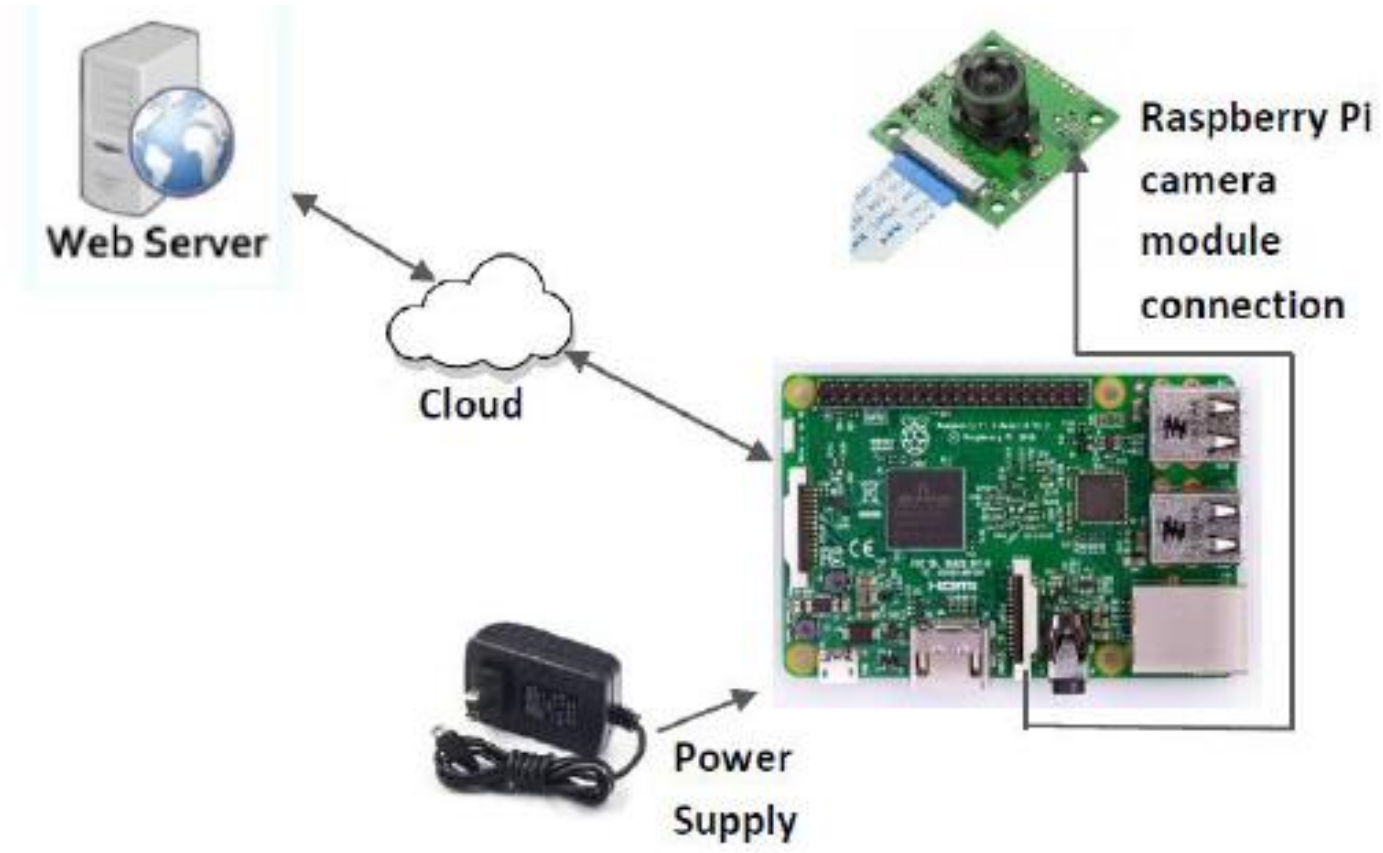
Introduction

- In present days, people detection and counting is an important aspect in the video investigation and subjective demand in computer vision systems.
- The system is designed to be able to calculate the number of people entering and exiting a room.
- The system is implemented using a raspberry pi camera to capture images, laptop to train a model based on deep transfer learning technique for specific dataset and raspberry pi 3 model B to deploy the model, track and count detected person.
- The number of people going in and out of a room is sent to the web server.

Objectives

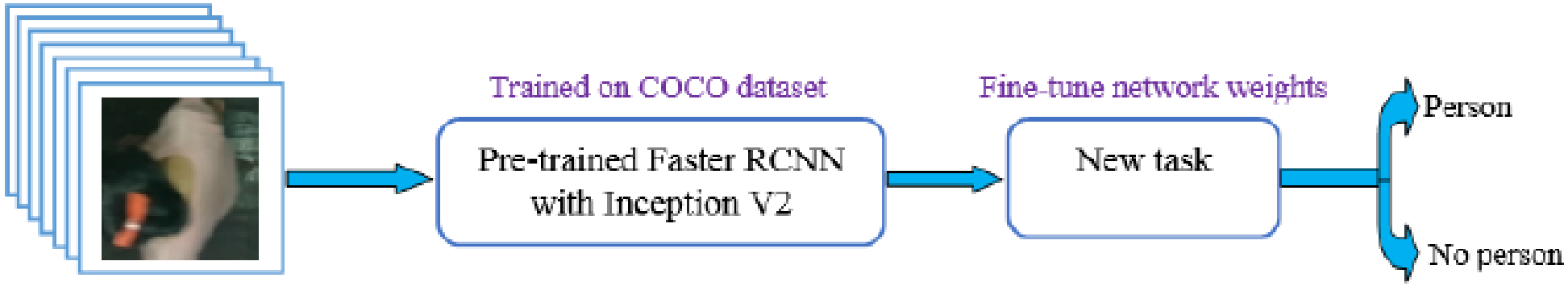
- To support the retail shops to analyze customer visit patterns
- To give useful information in the implementation of internet of things for smart rooms or smart buildings such as automation of room lights
- To develop a cost effective system that will perform a smart visual analysis

Scheme of the System

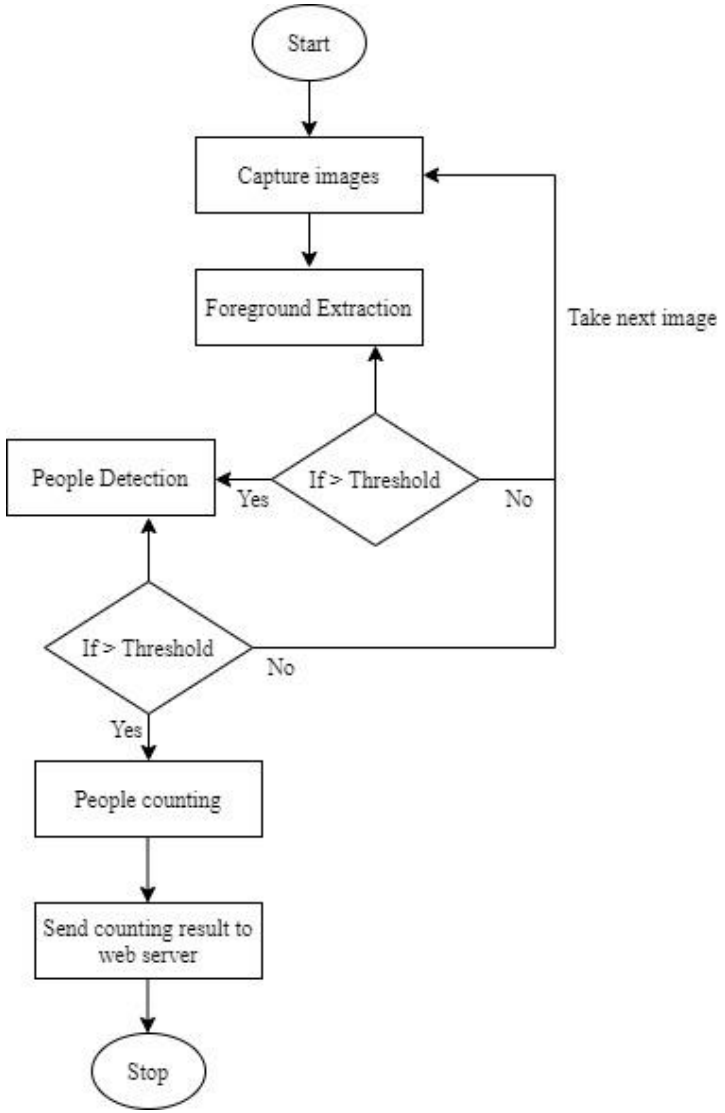


Fine-tuning strategy

- The deep transfer learning technique is used to train the dataset by using the pre-trained Faster RCNN with Inception V2 model.
- The fine-tuning strategy is applied based on the weights of the pre-trained models as shown in the following figure.



Flowchart of the System



Experimental Results

(a)

(b)

(c)

(d)

Conclusion

- People detection and counting system is implemented by using Tensorflow object detection API, OpenCV library and python programming language.
- Fine-tuning strategy is used to detect and classify whether a moving object is person or not.
- So, it makes us to save training time and free from requiring a very large amount of data set.
- The counting result of this system can be accessed from the internet.

Thank You