Real-time Multiple Face detection using Raspberry Pi with Intel Movidius Stick 2

# **Introduction**

Real-time face detection is usual, but to detect multiple faces at the same time, it is a little difficult since you need more computational power to detect every face in the crowd. This project works on Raspberry pi, but performance is accelerated using Intel Movidius Neural Compute Stick 2 with the help of OpenVino running on the backend.

# Abstract

This project uses Raspberry Pi as the core, it doesn’t have enough computational power to process the frame at real-time and to recognize the face. SO to accelerate the frame rate with high computational power, Intel Movidius neural compute stick is used, which makes the application more efficient by processing every process from NCS instead of processing in Raspberry Pi. It leads to detect the face from the real-time video at 40 to 60 Frame per second.

# Existing system

In the existing system, face detection is done by using “Haar cascade Frontal face “ algorithm in the format of the XML file. It cannot detect the multiple faces at with high frame rate, the system process will have a slow frame rate.

# Proposed System

In this proposed system, this project uses Intel Movidius Neural compute stick takes the whole computational process makes the application to be real-time with more efficient with the high frame rate.

# Connection Description

Raspberry Pi is the core of this project, USB camera is interfaced with the Raspberry Pi. Neural Compute Stick is also USB Interfaceable. It also plugged in the Raspberry Pi USB port before running the program.

# Project Description

This project is capable of performing the real-time application, even in the 50 people as the crowd, this system is capable of detecting the face and forms the boundary boxes to represent that is face with its accuracy. Its frame rate is very high. It uses Neural Compute Stick 2, which has high performance than NCS initial model. NCS can be interfaced with windows 10 or Linux operating system, by running OpenVino as backend. In the Raspberry, Pi OpenVino is installed and runs at the background to interface and share the computational process in the name of MYRIAD device.

# **Hardware Required**

* Raspberry Pi
* Intel Movidius Neural Compute Stick 2
* USB Camera

# **Software Required**

* + Raspbian OS with libraries installed
  + OpenView library
  + SD Card Formatter
  + Etcher

# Result

Results are remarkable since its frame rate is more than 50 fps. Its detection accuracy is also high for multiple faces.