**Cloud-Enabled Image or Video Capture System**

**in Accident Situations**

***#NOTE:*** *Accidental Situations detected would be of kind of any violence related activities.*

**STEP 01:**

Stablish a seamless connection with the camera module in the Raspberry pi hardware in order to capture the images and record the live footage, so that it can be used for detection tasks.

**STEP 02:**

Make a connection with the cloud architecture (AWS in use), Every simple capture and video will be directly uploaded into the cloud and will form a large database of real-world activities in the multimedia format.

**STEP 03:**

* Use the CNN model, and train it on a large dataset (kaggle dataset) to detect the new multimedia data, so that it classifies it to the violence related activity or a normal activity.
* A pretrained model like, vgg16, resnet50, inception, or any other algorithm trained on the ImageNet dataset can also be used for classification of the image data.
* Comparison among the several models on the basis of accuracy, and precision will better gives us the best model to classify.

**STEP 04:**

Any form or arming or alerting system can be further implemented after any suspicious or violence related activity has been detected by the model.

**HARDWARE SETUP:**

* **Raspberry Pi Configs:**

Raspberry Pi 3 Model B V1.2, Raspberry Pi 2015

* **Camera Module:**
* **Step 01:**

Arrange SD Card or around 32, or 64 GB, so that after loading the OS furthermore software can also be loaded in the Raspberry Pi.

* **Step 02:** 
  + Install the Raspberry Pi OS Installer (known as **imager**).

Use Edit option while selecting the OS version, and give details for username and password, and for Wi-Fi connection.

* + Install **Putty**, so stablish a connection every time with Raspberry Pi hardware.
  + Install **VNC-Viewer**, in order the GUI of Raspberry Pi OS, however every task can also be performed from the command line or the terminal itself, but for an ease it is recommended.
  + Install **WinSCP**, this will allow to alter or access the file system of the Raspberry Pi hardware. Make it convenient to copy and paste data, files or codes to or from the Raspberry PI OS.
* **Step 03:** 
  + Create an empty ssh file with no extension and save in the booted SC Card.
  + Inject the SD Card into the Raspberry Pi hardware.
* **Step 04:** 
  + Connect Raspberry Pi hardware to your computer, using the LAN or Ethernet cable.
  + Give power to the Raspberry Pi hardware using the B-Type charger.
* **Step 05:** 
  + Open Putty software, type *raspberrypi.local* and hit connect.
  + Give same username and password, as provided earlier for the authentication and logging into the Raspberry Pi OS.
* **Commands used:**
* **sudo vncserver-virtual**: To connect with the VNC Server (GUI).
* **sudo apt-get install idle**: To install Python Idle into the Raspberry OS (For coding purpose).
* **sudo apt-get update && sudo apt-get upgrade**: To update and upgrade the required dependencies.
* **sudo raspi-config**: To get the configuration dialog box, enable the camera module from the interfacing options.
* **sudo raspistill -o ‘filename’.jpg**: To capture an image and save in the current directory.
* **vcgencmd get\_camera**: To check whether camera module is detected or NOT.
* **sudo modprobe bcm2835-v412**: If camera module is NOT detected.

**MODEL TRAINING:**

* **CNN Model:**

­­Model is trained using the kaggle dataset.

Dataset Link: <https://www.kaggle.com/datasets/rifakhan22/suspicious>

Model Link:

<https://colab.research.google.com/drive/1i_4RuETmK1bQ6-SG976jysHdbxk0nZsr?usp=sharing>

* **VGG Model:**