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User manual

Researchproject

MCT AI ENGINEER
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HOWEST

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2 AUTOMATIC DETECTION

If the Raspberry Pi was set up correctly according to the instructions in the installation manual, the only task remaining is to plug it in.

3 MANUAL DETECTION

If you wish to run the model manually, you will need to connect to your Raspberry Pi using SSH or VNC Viewer for the desktop. The static IP you set up should be used for this purpose. To stop the automatic running of the model when the Raspberry Pi boots, you can open the terminal and enter the command:

```
sudo systemctl stop detect.service
```

Then navigate to the directory where the detect script is located by using the command:

```
cd <dir>
```

If you are using a virtual environment, you will need to activate it by running the command:

```
source <venvname>/bin/activate
```

Once the virtual environment is activated, you can run the script manually.

3.1 RUNNING DETECT

The default command to run the script is

```
python3 detect.py
```

The detect script takes a few different arguments, below is a list of what they do and their default values.

3.1.1 Threshold

The first argument for the script is the threshold value. The threshold represents the level of confidence required for the model to detect a face. This is used by the initial model that detects the faces of dogs. the face will only be used for recognition when the models confidence in detecting a face is higher than the threshold value. The default threshold value is 0.9 or 90% confidence. This means that by default, the model will only consider a face as detected if it is 90% confident that it is a face.

3.1.2 Distance

The second argument for the script is the distance value. This value is used by the second model to determine if it recognizes the dog or if it is an unknown face. This model compares the detected face to all the faces in the database for each dog, and calculates the minimum distance (closest face) and the dog it belongs to. It will only consider the face to belong to that dog if the distance is smaller than this value. The default distance value is 0.1, which means that by default, the model will consider a face as belonging to a specific dog only if the minimum distance between the detected face and the faces in the database for that dog is less than 0.1.

3.1.3 Resolution

The third argument for the script is the resolution value. It takes a resolution in the format of "widthxheight" and uses this resolution to stream the live video on the desktop. The default resolution is set to 576x432, which is a relatively low resolution. If you use an HDMI cable, you can increase this resolution to a higher value, such as 720x480 or 1080x720 for example. This will allow you to view the live video in a higher quality, but it will also require more processing power and bandwidth. You can adjust the resolution according to your needs and the capabilities of your Raspberry Pi and monitor.

3.1.4 View

The fourth argument for the script is view. This argument determines whether the camera will be streamed or not. If this argument is not set, no video will be streamed and the detection will happen in the background. This means that the script will run without displaying a live video feed. This can be useful if you want to save resources on the Raspberry Pi or if you don't need to see the live video.

Unlike the other arguments this does not take a value, simply add –view to the command to show video.

3.1.5 Allowed

The fifth argument for the script is the list of dogs that the recognition model will detect. This argument takes a list of one or more dog names separated by commas. The recognition model is trained on my personal dogs named Marley, Muchu and Ellie, so by default these dogs are in the allowed list. If you want the model to detect only specific dogs, you can provide the names of those dogs as the argument. For example, if you only want the model to detect Marley and Muchu, you can provide the argument "Marley,Muchu".

3.1.6 Opentime

The sixth and last argument for the script is the time that the door must be open after the allowed dog is detected. This argument takes a value in seconds, and the default value is set to 10 seconds for testing purposes. In a real-world use case, you might want to set this value higher to allow the dog plenty of time to enter the home.

Below is an example of how u could change these arguments in the command.

In the example I call all arguments but u can leave out any u like, also keep in mind to type 2 dashes before each argument.

python3 detect.py –threshold=0.8 –distance=0.5 –resolution=720x480 –view –allowed=muchu,elllie –opentime=50