Basic usage and installation from disk image for VespAI on Raspberry Pi 4

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1 Requirements

- Raspberry Pi 4 with at least 2GB of RAM.
- Micro SD card with at least 16GB of storage.
- SD card reader and a separate computer to flash the OS to the SD card.

2 Flash SD Card

With an SD card in you computer, you can wipe it and 'flash' a new disk image to it, thus creating a carbon copy of the VespAI operating system for raspberry pi. One piece of software which executes this for you is Etcher: https://www.balena.io/etcher/.

3 Connect remotely via Secure Shell

1. Using a keyboard, mouse and monitor, turn on Raspberry Pi, log in, and connect to local WiFi.
2. Open terminal and execute `ip a` to print IP status. In the printout, under `eth0` look for the number next to `inet` excluding the slash and what follows. For example, the output of the `ip a` command may contain

   ```
   2: eth0: ...
   inet: 192.168.1.225/10 brd...
   ```

   In this case the IP address to connect to the server is `192.168.1.225`.

3. Shut down the Pi with `sudo halt` and disconnect from the power. You are now ready to reattach the Raspberry Pi in the field within range of this WiFi network. Plug into a power pack to turn on.

4. On a remote device, connect to the server on the Pi via the `ssh` (Secure Shell) command. On macOS or linux this is completed via

   ```
   $ ssh detector@192.168.1.225
   ```

   followed by typing `yes` and enter (on the first connection). The password for `detector` is `alert`.

5. On Windows one can download PuTTY; https://www.putty.org. Open this application and enter the IP address in the relevant box and click 'OK'. Log in with

   ```
   User name: detector
   Password: alert
   ```

4 Run experiment

Now accessing the server by the remote device, move to the repo directory:

```
$ cd vespai
```

and run an experiment

```
$ sudo python3 monitor/monitor_run.py -c=0.8 -s -p \
-sd=monitor/detections/exp_name
```

The slash is omitted and indicates a continuous line here. The flags give the option `-c` for the confidence threshold, `-s` for saving outputs, `-p` for printing on screen reports, `-sd` sets the save directory–change `exp_name` to a specific experiment name.

5 Export results

Use the `scp` command (installed automatically with PuTTY) in terminal to save images onto the remote device:

```
$ scp -r detector@192.168.1.225:/home/detector/vespai/monitor/detections \
<choose/a/local/file/path>
```

Change the IP address to that of the server.