Octoprint

https://community.octoprint.org/t/setting-up-octoprint-on-a-raspberry-pi-running-raspbian-or-raspberry-pi-os/2337

```
cd ~
sudo apt update
sudo apt install python3-pip python3-dev python3-setuptools python3-venv git
libyaml-dev build-essential
mkdir OctoPrint && cd OctoPrint
python3 -m venv venv
source venv/bin/activate
```

In the virtual environment do:

```
pip install pip --upgrade
pip install octoprint
```

Add user to tty and dialout group to allow access to serial port:

```
sudo usermod -a -G tty $USER
sudo usermod -a -G dialout $USER

#reboot required for the new group to take effect. For temporary access:
sudo chown $USER /dev/ttyUSB0
sudo chmod a+rw /dev/ttyUSB0
```

Allow octoprint to restart itself, replace USER with username:

/etc/sudoers.d/octoprint

```
USER ALL=NOPASSWD: /usr/bin/systemctl start
octoprint,/usr/bin/systemctl stop octoprint,/usr/bin/systemctl restart
octoprint
USER ALL=NOPASSWD: /usr/sbin/service octoprint
restart,/usr/sbin/service octoprint stop,/usr/sbin/service octoprint
stop
```

Start service:

```
~/OctoPrint/venv/bin/octoprint serve
```

Access it via http://localhost:5000

Autostart service:

```
wget
```

```
https://github.com/OctoPrint/OctoPrint/raw/master/scripts/octoprint.service
sudo mv octoprint.service /etc/systemd/system/octoprint.service
sudo sed -i 's/pi/'"$USER"'/g' /etc/systemd/system/octoprint.service
sudo systemctl enable octoprint.service
```

Update:

```
cd ~/OctoPrint
python3 -m venv venv
source venv/bin/activate
pip install pip --upgrade
pip install setuptools --upgrade
pip install octoprint --upgrade
```

Nexus AI

Free local plugin to detect print failures from webcam images
https://plugins.octoprint.org/plugins/nexus_ai/

OctoLapse

Better TimeLapse, independent of the built in timelapse.

Auto config:
https://github.com/FormerLurker/Octolapse/wiki/V0.4---Automatic-Slicer-Configuration#if-you-are-using-cura-follow-these-steps

Go to Settings → Preferences and click Machine Settings of printer. Paste at top of Start G-code:

```
; Script based on an original created by tjjfvi (https://github.com/tjjfvi)
; An up-to-date version of the tjjfvi's original script can be found
; here:  https://csi.t6.fyi/
; Note - This script will only work in Cura V4.2 and above!
; --- Global Settings
; layer_height = {layer_height}
; smooth_spiralized_contours = {smooth_spiralized_contours}
; magic_mesh_surface_mode = {magic_mesh_surface_mode}
; machine_extruder_count = {machine_extruder_count}
; --- Single Extruder Settings
; speed_z_hop = {speed_z_hop}
; retraction_amount = {retraction_amount}
; retraction_hop = {retraction_hop}
; retraction_hop_enabled = {retraction_hop_enabled}
; retraction_enable = {retraction_enable}
; retraction_speed = {retraction_speed}
; retraction_retract_speed = {retraction_retract_speed}
```

```
; retraction_prime_speed = {retraction_prime_speed}
; speed_travel = {speed_travel}
```

Taking photo before or at first layer: https://github.com/FormerLurker/Octolapse/issues/677

Add to the bottom of the very end of the Start G-code:

```
@OCTOLAPSE TAKE-SNAPSHOT
SNAP
```

or

```
G4 P1
```

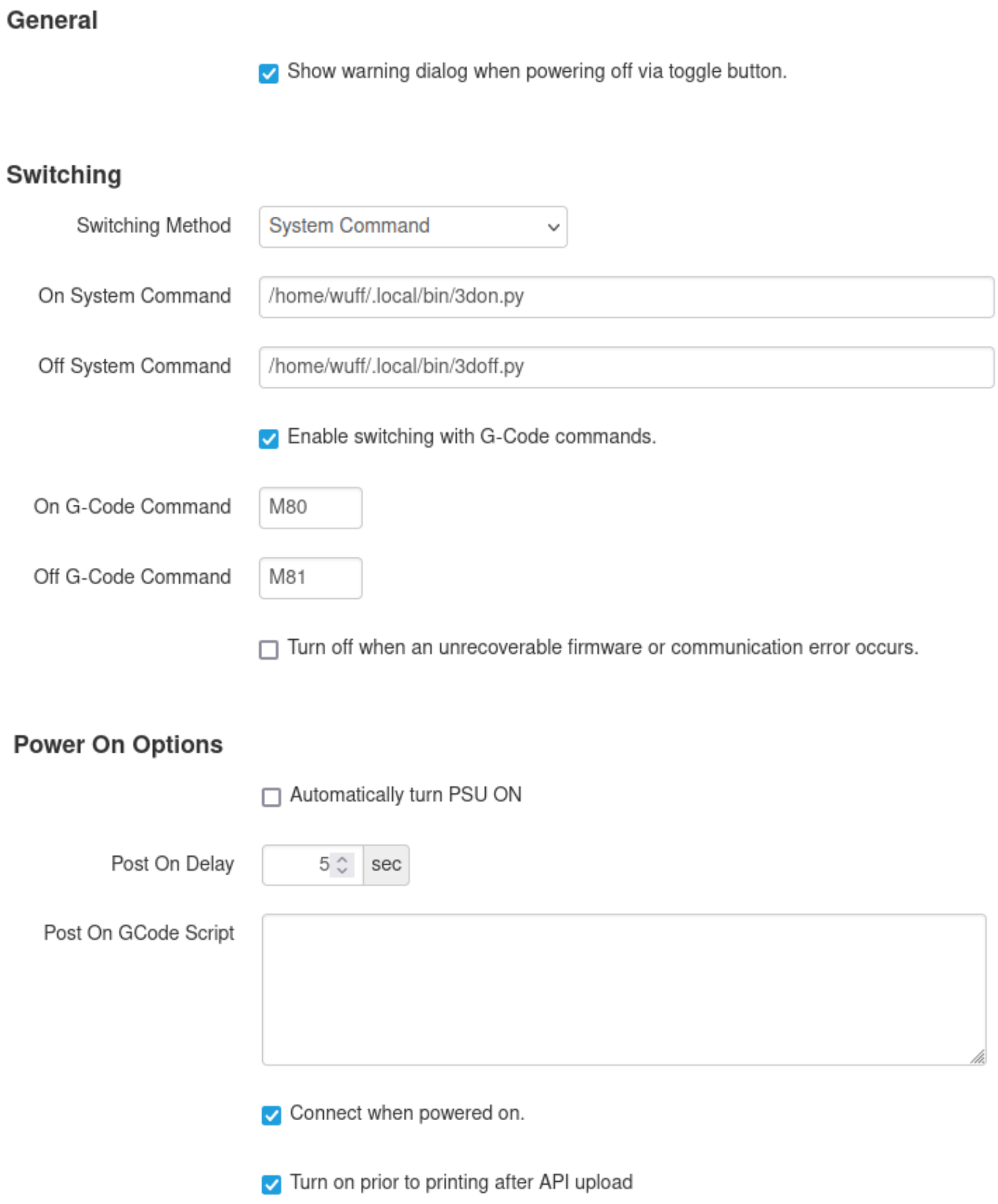
Add to very end of End G-Code:

```
G28 Z0 ;move Z to min endstops
```

PSUControl + Tuya Plug/LED On/Off

The following python scripts can be used to switch on/off a Tuya compatible smart plug in the local network and to trigger two flashes in red of a smart LED, then restoring the LED to the previous colour and state.

Using the PSUControl plugin, these scripts can be triggered automatically:
https://github.com/kantlivelong/OctoPrint-PSUControl



To locally control the Tuya devices, the tinytuya python module needs to be installed:

```
pip install tinytuya
```

The module provides local system scanning options and methods to obtain the local key required to control the devices. The devices may need to be connected to a Tuya cloud account first and an API account set up. However, this might only be required if the devices need to be controlled from tinytuya using the cloud option from outside the local network. More information provided here:

https://pypi.org/project/tinytuya/

Configure the slicer (Cura or others) to add gcode at the end of the sliced file to trigger shutting down the printer.

```
M81 ;switch off printer
```

~/.local/bin/3don.py

```
#!/usr/bin/python
import tinytuya

# 3D Printer Plug
d = tinytuya.OutletDevice(
    dev_id='07870772cc50e3d2fcf2',
    address='192.168.1.23',
    local_key='d7382aa465d40908',
    version=3.3)

d.turn_on()
```

~/.local/bin/3doff.py

```
#!/usr/bin/python
import tinytuya
import time

# Hall Light

# Connect to Device
d = tinytuya.BulbDevice(
    dev_id='722168502cf4320a9d1e',
    address='192.168.1.11',
    local_key='3209036606016f40',
    version=3.1)

# Optional: Keep socket open for multiple commands
d.set_socketPersistent(True)
d.set_socketNODELAY(True)
d.set_sendWait(0)

# Get Status as dictionary
olddata = d.status()
olddps = olddata['dps']

#Switch on
d.turn_on(nowait=True)

d.set_scene(3, nowait=True)
```

```
time.sleep(6)

# restoring old data
for key, value in olddps.items():
    # print('%s : %s' % (key, value))
    d.set_value(key, value)

# 'dps': {'1': True, '2': 'colour', '3': 135, '4': 255, '5':
'301f000027ff2f', '6': 'cf38000168ffff', '7': 'ffff500100ff00', '8':
'ffff8003ff000000ff000000ff00000000000000000', '9': 'ffff5001ff0000',
'10': 'ffff0505ff000000ff00ffff00ff00ff0000ff000000'}}
# Wulf Default:
d.set_value(1, olddps['1'])
d.set_value(2, "colour")
d.set_value(3, 135)
d.set_value(4, 255)
d.set_value(5, '301f000027ff2f')
d.set_value(6, 'cf38000168ffff')
d.set_value(7, 'ffff500100ff00')
d.set_value(8, 'ffff8003ff000000ff000000ff00000000000000000')
d.set_value(9, 'ffff5001ff0000')
d.set_value(10, 'ffff0505ff000000ff00ffff00ff00ff0000ff000000')

time.sleep(10)

# 3D Printer Plug
p = tinytuya.OutletDevice(
    dev_id='07870772cc50e3d2fcf2',
    address='192.168.1.23',
    local_key='d7382aa465d40908',
    version=3.3)

p.turn_off()
```

```
chmod 755 ~/.local/bin/3don.py
chmod 755 ~/.local/bin/3doff.py
```

motion webcam

```
sudo apt-get install motion
mkdir ~/.motion
vi ~/.motion/motion.conf
```

~/.motion/motion.conf

```
videodevice /dev/video2
picture_output off
```

```
movie_output off
stream_quality 98
stream_grey off
stream_maxrate 5
stream_port 8090
stream_localhost off
stream_motion on
# stream_motion off #stream 1 fps when no motion detected
framerate 10
movie_codec mpeg4
# http://192.168.1.3:8080/webcam1.cgi
width 1280
height 720
auto_brightness off
vid_control_params "contrast"=0,"saturation"=0
#log_level 7
webcontrol_interface 0
webcontrol_localhost off
webcontrol_port 8091
#emulate_motion on #always save images even without motion
```

Log Level 7 shows camera controls, e.g:

```
[1:ml1] [INF] [VID] v4l2_ctrls_list: ---------Controls---------
[1:ml1] [INF] [VID] v4l2_ctrls_list:   V4L2 ID   Name and Range
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963776 Brightness, -64 to 64
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963777 Contrast, 0 to 64
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963778 Saturation, 0 to 128
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963779 Hue, -40 to 40
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963788 White Balance, Automatic, 0
to 1
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963792 Gamma, 72 to 500
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963795 Gain, 0 to 100
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963800 Power Line Frequency, 0 to 2
[1:ml1] [INF] [VID] v4l2_ctrls_list:   menu item: Value 0 Disabled
[1:ml1] [INF] [VID] v4l2_ctrls_list:   menu item: Value 1 50 Hz
[1:ml1] [INF] [VID] v4l2_ctrls_list:   menu item: Value 2 60 Hz
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963802 White Balance Temperature,
2800 to 6500
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963803 Sharpness, 0 to 6
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID09963804 Backlight Compensation, 0 to
2
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID10094849 Auto Exposure, 0 to 3
[1:ml1] [INF] [VID] v4l2_ctrls_list:   menu item: Value 1 Manual Mode
[1:ml1] [INF] [VID] v4l2_ctrls_list:   menu item: Value 3 Aperture Priority
Mode
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID10094850 Exposure Time, Absolute, 1
to 5000
[1:ml1] [INF] [VID] v4l2_ctrls_list: ID10094851 Exposure, Dynamic Framerate,
0 to 1
```

```
[1:ml1] [INF] [VID] v4l2_ctrls_list: --------------------------
```

Since the exact device number is set by the kernel upon boot, when there is more than one video device it is possible that the particular cameras that were assigned to /dev/video0 and /dev/video1 may switch. In order to set up Motion so that a particular camera is always assigned the same way, users can set up a symbolic link using udev rules. To do this a unique attribute must be identified for each camera. The camera attributes can be viewed by using the command

```
udevadm info -a -p $(udevadm info -q path -n /dev/video0)
```

while the camera is attached. Usually a serial number can be used. (“Usually” because some cameras have been observed to have the same serial number for different cameras)

Once a unique attribute has been identified for each camera, edit or create the file /etc/udev/rules.d/99-local.rules. Assuming that the unique attribute for the camera was name and was `ATTR{name}==“Philips SPC 900NC webcam”` you would add the following line to the 99-local.rules file:

```
KERNEL=="video[0-9]*", ATTR{name}=="Philips\ SPC\ 900NC*", SYMLINK+="video-webcam0"
```

Once the change has been made and saved, reboot the computer and there should now be a “sticky” device called /dev/video-webcam0

URL for static current image: http://localhost:8090/current