RocketLaunchPi – Next Launch from Planet Earth

Version 2016-07-26 r.grokett
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Overview

This describes an add-on feature to EarthquakePi (https://github.com/rgrokett/earthquakepi)

RocketLaunchPi displays the next space launch from planet Earth on an LCD screen using your Raspberry Pi (including a Pi Zero) including the vehicle name, location, status, and date/time of the launch in local time. If the launch is imminent, it even plays a count down and blast off sound effects.

This project retrieves Launch data from the excellent site www.launchlibrary.net via its JSON API interface. It then displays information for the next launch on the LCD screen. Audio effects are played if the launch is imminent.

Hardware Requirements

***IMPORTANT NOTE**: This document assumes you have already built an Earthquake Pi (See: http://www.instructables.com/id/Earthquake-Pi-Shake-Rattle-Your-Desk/) so you should already have all these for adding RocketLaunchPi :*

- Raspberry Pi running Raspian, Python 3 and EarthquakePi software.
- Internet connection for Raspberry.
- The I2C compatible LCD display **20 char x 4 line** as used by Earthquake Pi.
- External Audio option of Earthquake Pi installed and working.

Software Installation

GITHUB: https://github.com/rgrokett/RocketLaunchPi

Install and test the rocketlaunch program from GITHUB:

```
1. $ cd /home/pi
2. $ git clone https://github.com/rgrokett/RocketLaunchPi.git
```

Software Test rocketlaunchpi.py

Type:

```
$ sudo python3 /home/pi/RocketLaunchPi/rocketlaunchpi.py
```

The LCD display should blink several times and then show the information about the next launch.

Operating RocketLaunchPi

Load CRON entry to run the program every 15 minutes between 8am and 11pm daily. This way it will only run during waking hours (adjust as desired!).

```
$ cd /home/pi/RocketLaunchPi

$ crontab -l > tmp
$ cat pi.cron >> tmp
$ crontab tmp
```

Example cron:

```
# RocketLaunchPi
5,20,35,50 08-22 * * * sudo python3 /home/pi/RocketLaunchPi/rocketlaunchpi.py
>/home/pi/RocketLaunchPi/rocket.log 2>&1
```

Be sure your Raspi is set to LOCAL time for the cron to work as expected:

```
$ sudo raspi-config
```

Select **Localization Options -> Change Timezone**

Finally, set up your RocketLaunchPi on your desk and reboot it. An initial display showing the IP address for the Pi will be shown for a few seconds.

Every 15 minutes you should see the LCD display. The display will be blank otherwise. It will only display between 08:00 AM and 11:00 PM Local time, so as to not disturb you during the night. Feel free to adjust the hours 08-22 to your schedule. Replace 08-22 with an asterisk (*) to run 24/hr/day.

NOTE: *The launch countdown sound will only occur if it is within 15-30 minutes of a launch.*

Troubleshooting

Wiring errors or missing software packages are the most likely failure points.
Use the DEBUG = 1 option and manually run earthquake.py to display any error messages.

```
$ nano rocketlaunchpi.py
Set  DEBUG = 1

$ sudo python3 rocketlaunchpi.py
```

In normal operation, if you have LOG = 1 (default), you can look in the log file for the last information.

`/home/pi/RocketLaunchPi/rocket.log`

Typically, issues would be missing software packages (`$ sudo apt-get install {package}`) or a wiring problem, particularly if you had to substitute different components from those described in EarthquakePi. You may need to cut/paste the error message into Google search to find assistance!

If you have intermittent crashes/reboots/hangs, most likely is an insufficient power supply. You MUST have a high quality 5 volt power supply. You CANNOT run this from a PC USB port. A separate supply is needed with at least 1.5 amp or greater.

5…4…3…2…1!