

Crossing the Digital Divide (v61)

“Do you like pi?”

By Joseph Feigon for the Observer

Computers can be expensive, they can also be quite affordable projects for those inclined to build their own. Raspberry Pi is a small, Internet capable, micro platform with innumerable configuration options.

Raspberry Pi at home (partial article)

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The [Raspberry Pi](#) computer can be used in all kinds of settings and for a variety of purposes. It obviously has a place in education for helping students with learning programming and maker skills in the classroom and the hackspace, and it has plenty of industrial applications in the workplace and in factories. I'm going to introduce five projects you might want to build in your own home.

Media center

One of the most common uses for Raspberry Pi in people's homes is behind the TV running media center software serving multimedia files. It's easy to set this up, and the Raspberry Pi provides plenty of GPU (Graphics Processing Unit) power to render HD TV shows and movies to your big screen TV. [Kodi](#) (formerly XBMC) on a Raspberry Pi is a great way to playback any media you have on a hard drive or network-attached storage. You can also install a plugin to play YouTube videos.

There are a few different options available, most prominently [OSMC](#) (Open Source Media Center) and [LibreELEC](#), both based on Kodi. They both perform well at playing media content, but OSMC has a more visually appealing user interface, while LibreElec is much more lightweight. All you have to do is choose a distribution, download the image and install on an SD card (or just use [NOOBS](#)), boot it up, and you're ready to go.

Before proceeding you'll need to decide [which Raspberry Pi model to use](#). These distributions will work on any Pi (1, 2, 3, or Zero), and video playback will essentially be matched on each of these. Apart from the Pi 3 (and Zero W) having built-in Wi-Fi, the only noticeable difference is the reaction speed of the user interface, which will be much faster on a Pi 3. A Pi 2 will not be much slower, so that's fine if you don't need Wi-Fi, but the Pi 3 will noticeably outperform the Pi 1 and Zero when it comes to flicking through the menus.

CCTV / pet camera

Another great home project is to set up a camera module to take photos or stream video, capture and save files, or streamed internally or to the internet. There are many reasons you might want to do this, but two common use cases are for a homemade security camera or to monitor a pet.

The [Raspberry Pi camera module](#) is a brilliant accessory. It provides full HD photo and video, lots of advanced configuration, and is [easy to program](#). The [infrared camera](#) is ideal for this kind of use, and with an infrared LED (which the Pi can control) you can see in the dark!

If you want to take still images on a regular basis to keep an eye on things, you can just write a short [Python](#) script or use the command line tool [raspistill](#), and schedule it to recur in [Cron](#). You might want to have it save them to [Dropbox](#) or another web service, upload them to a web server, or you can even create a [web app](#) to display them.

If you want to stream video, internally or externally, that's really easy, too. A simple MJPEG (Motion JPEG) example is provided in the [picamera documentation](#) (under “web streaming”). Just download or copy that code into a file, run it and visit the Pi's IP address at port 8000, and you'll see your camera's output live.

A more advanced streaming project, [pistreaming](#), is available, which uses [JSMpeg](#) (a JavaScript video player) with the web server and a websocket for the camera stream running separately. This method is more performant and is just as easy to get running as the previous example, but there is more code involved and if set up to stream on the internet, requires you to open two ports.

Once you have web streaming set up, you can position the camera where you want it. I have one set up to keep an eye on my pet tortoise:

If you want to be able to control where the camera actually points, you can do so using servos. A neat solution is to use Pimoroni's [Pan-Tilt HAT](#), which allows you to move the camera easily in two dimensions. To integrate this with pistreaming, see the project's [pantilthat branch](#).

If you want to position your Pi outside, you'll need a waterproof enclosure and some way of getting power to the Pi. PoE (Power-over-Ethernet) cables can be a good way of achieving this.

There are plenty more uses for the Raspberry Pi at home. What do you use Raspberry Pi for at home? What do you want to use it for?

