

Solar Powered Camera for Wearables or Outdoor Installation

With some newfound free time thanks to a few obligations wrapping up, I was able to finally break into the box of components sitting on my desk along with a new addition, the Raspberry Pi 3. I have had issues with pairing a Dropcam (especially when traveling and on hotel wifi, but also at home) and a friends foray into a wearable with the [Pokepak](#) both had video and wearables squarely on the mind.

Without knowing what I would mount it on I figured a wifi connected streaming camera would be a good component to have in the arsenal and a great place to start, bonus points if I could find a way to get it battery powered. A few additional devices, mostly giveaways from various conferences, along with the harness for a goPro mount let me combine the whole thing into a wearable streaming body camera. This was helped out by a handy battery pack solar charger which would let me consider moving it to a semi-permanent outdoor installation if I wanted to remove the “wearable”. The final part list of what is used:

- Raspberry Pi 3 ([\\$35 from Amazon](#))
- Bask Solar Power Bank w/ 4000mAh capacity and 5V/1A output (branded by Solidworks) [\\$35](#)
- 8GB SD Card with Noobs ([\\$8.99](#))
- 5MP Spy Camera ([\\$39.95](#))
- goPro Head Strap ([\\$19.95](#))
- Case (optional \$6)

In total that comes to \$140 (\$105 if you consider the powerbank was free) but that is not optimized at all. There is probably \$25 reduction from finding an alternate power bank, even when keeping the solar panel. A camera can be found for as low as \$10 while the SD card price can be halved if you are willing to load the noobs image yourself.



Even the goPro head strap can be replaced by a ballcap or the whole rig can be strapped to a hoodie so if you need to it's possible to build this for well under \$100.

There was some work with additional items. Mainly I have a HDMI out cable, monitor, wireless mouse, and USB keyboard that allow me to fully connect to the Pi and get things setup. The Pi also typically sits in a \$6 case just to keep it clean, this can be seen in the image..

Setup Raspberry Pi for screenshots and connect to the Internet

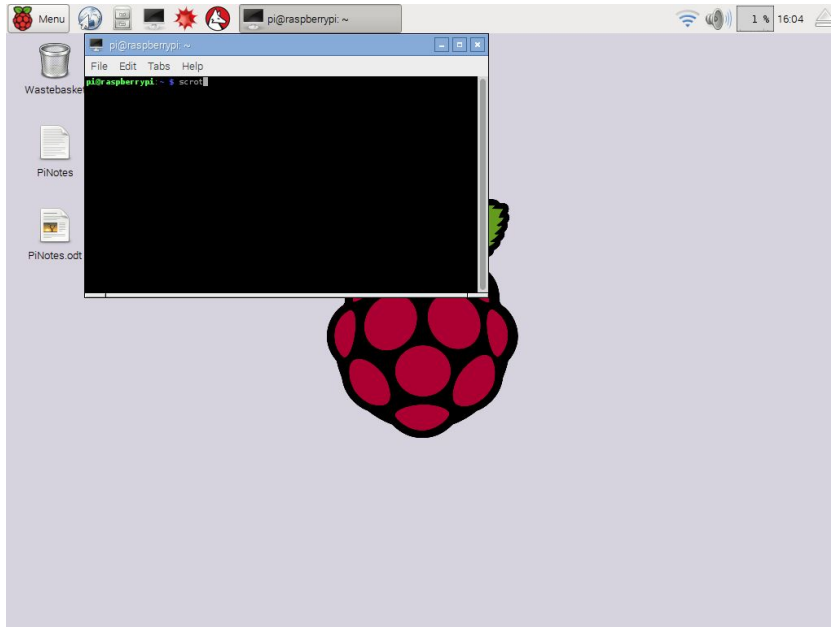
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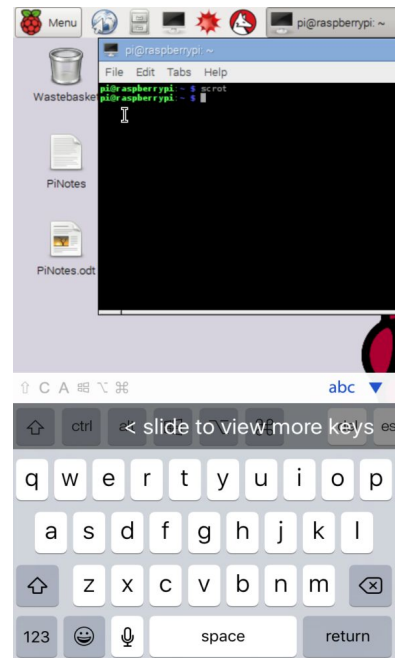
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Setup VNC to remotely control the Pi

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Attach and Setup a Raspberry Pi Spy Camera



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Add a power supply to remove tethering for Raspberry Pi 3

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hc\Uj Y'Ub'5b_Yf'Dck YfVtFYZ'a]b]`Uh]b['Ufci bXZ]hk Ug'U[]j YUk UmUhigca Y'VtZYfYbW`
H\Y'ga U`'gngYa '\Ugi gV'UbX'a]b]i gV]b#ci hdcfh'UbX'Wla Y'k]h'U'VtFX'k \]Y'Ugc`
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VY'ck]g'hU_Yb`Vm'h\Y'Wla YfU'k \]Y]h]g'VY]b['dck YfYX'Vm'h\Y'VU'hYfmdUW`"



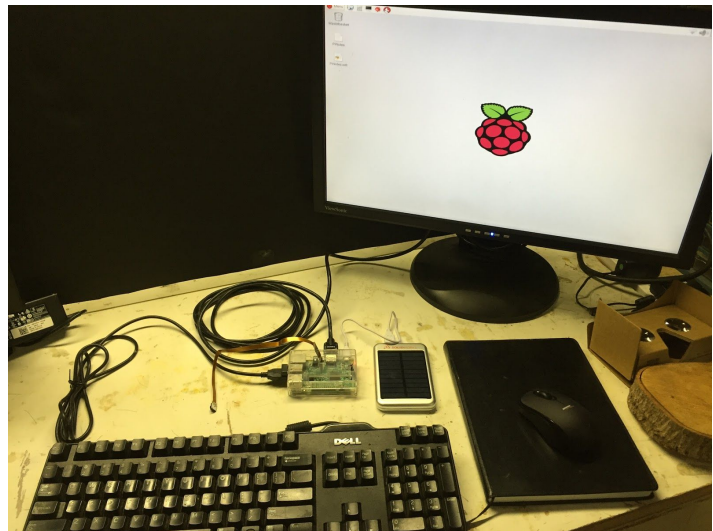
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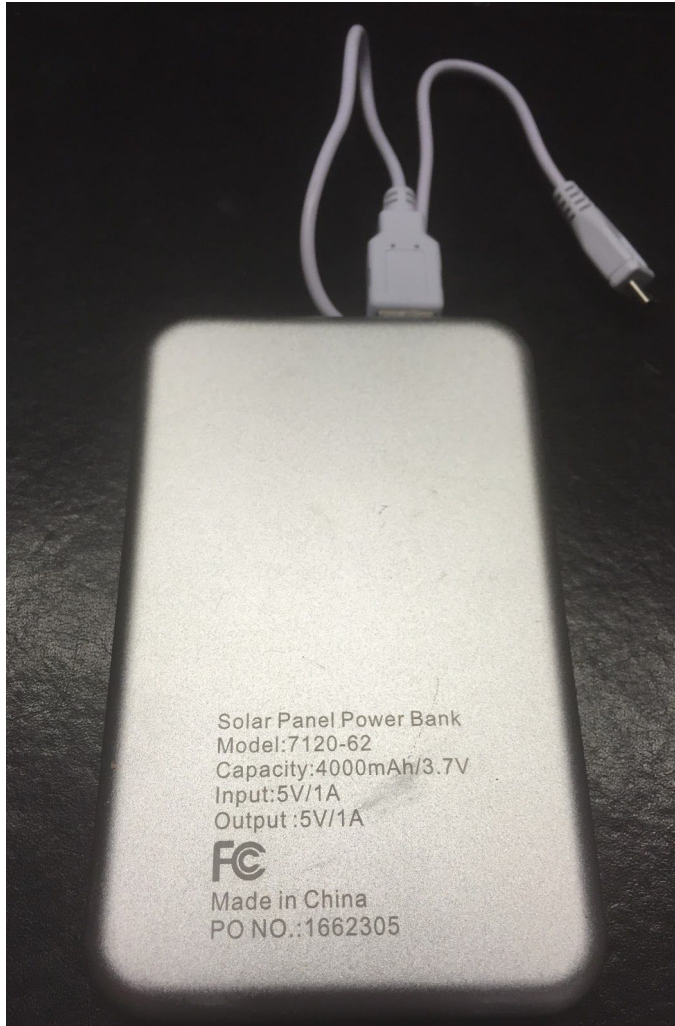
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gUa`Y`VUHYfm'VcUfX`UbX`"] [\h'hc`f'f] [[Yf'gca`Y'h\]b ['cb`h\Y; D=C`d]bg'Vi`h'Zcf`bck`'k`]"`
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Add solar power pack to Raspberry Pi 3 build

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d`Yb'm'hc`dck`Yf`h\Y`*)`\$a`5`XfUk`'cZ`
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Setup streaming camera from Raspberry Pi

The still images and manual activation over VNC are great but my ideal scenario is to get things streaming and controlled via motion or other triggers. Again here is where the community of developers is great, there is an easy to install system that automatically sets up a web server and stream the attached camera. It only took a few minutes to run the required commands and configure everything, [full instructions are here](#). With autoloading of the camera system enabled the Raspberry Pi can go headless and a Pi + Camera + Powerpack automatically delivers a wireless view of anywhere I decide to drop the camera up. Here is a view that it is taking of my camera as I took a few shots.

