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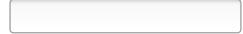


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[**DotStar Pi Painter**](#)

[Ultimate light-painting rig!](#)

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Contributors

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[RASPBERRY PI LEDS / LED STRIPS](#)

Overview

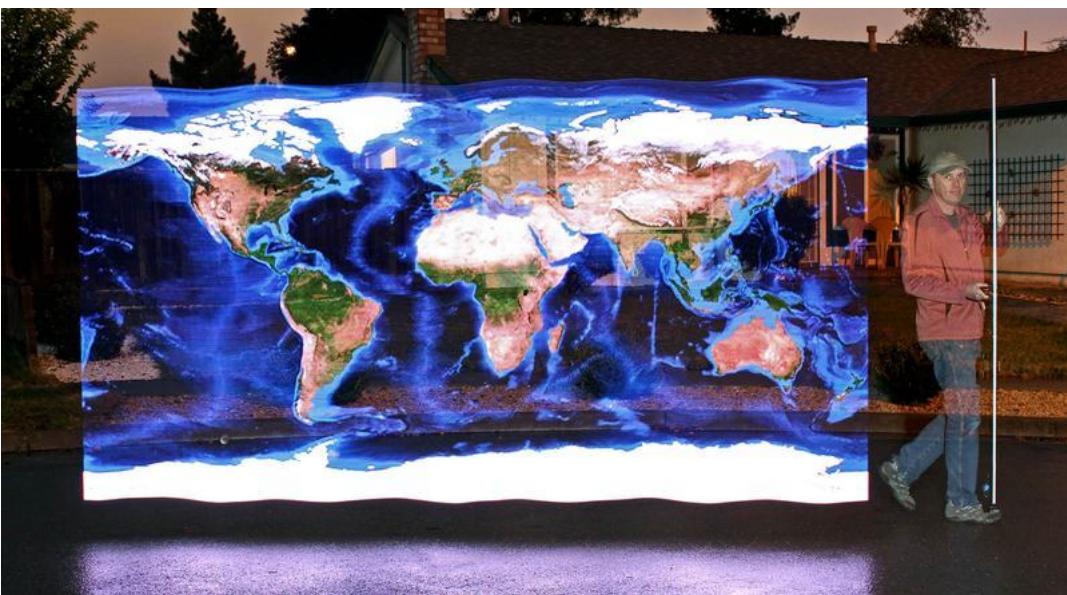
by [Phillip Burgess](#)





Digital light painting is a consummate maker project, a marriage of electronics, code, photography...and of course *lots and lots* of LEDs!

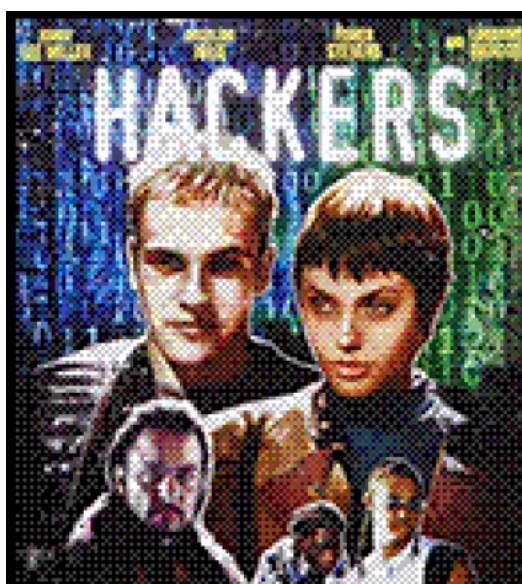
Using a long (several seconds) camera exposure, a single row of LEDs under computer control displays an image one line at a time while it's carried or rolled across the frame. The combined result is a luminous picture floating in air.



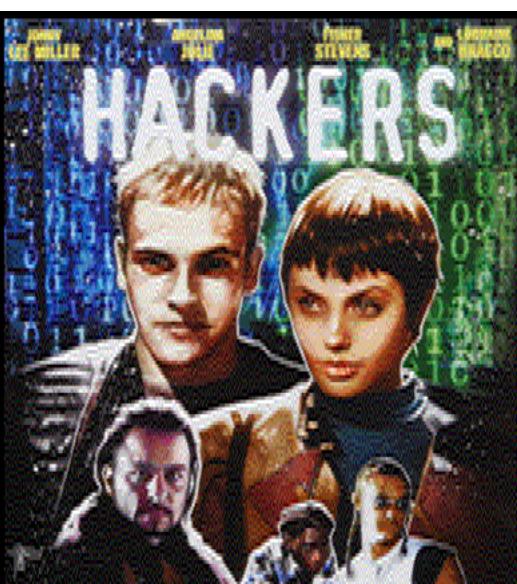


We've done light painting guides before — like our original [Light Painting with Raspberry Pi](#) and the Arduino-based [NeoPixel Painter](#) — it's a topic we like to revisit whenever there's a substantial evolution in the available technology. Each used a new generation of addressable LED strips.

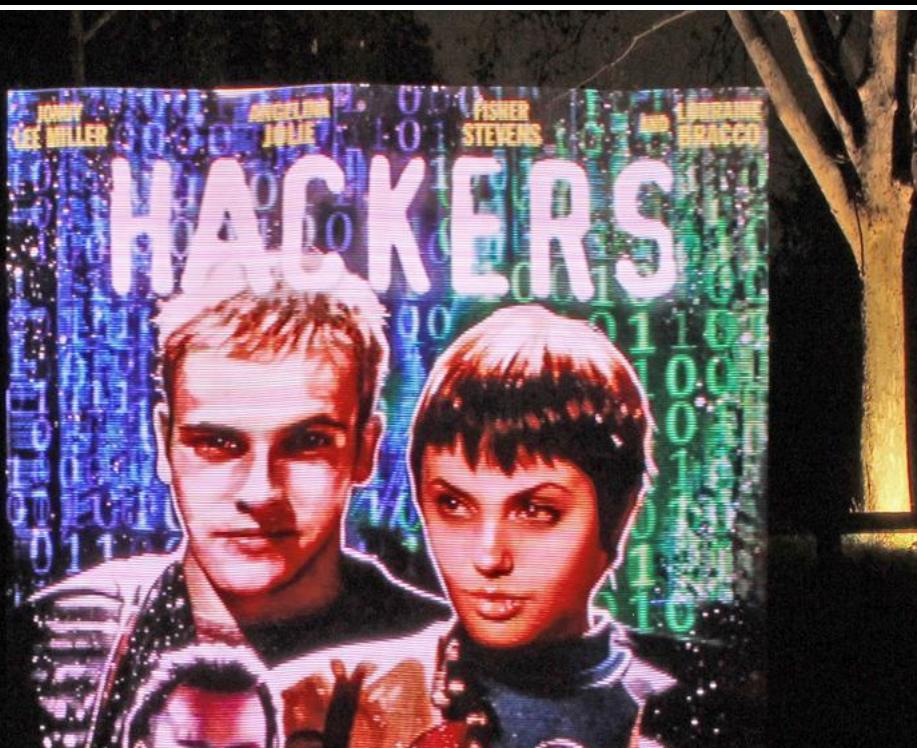
This latest blend of **Raspberry Pi** computer and **DotStar LEDs** may be the ultimate, with no size constraints, easy image loading (just plug in a USB flash drive full of pictures) and super buttery smooth interpolation and dithering.



NeoPixel Painter w/Arduino
(simulated)



DotStar Painter w/Raspberry Pi
(simulated)





Required Parts

- **Raspberry Pi computer:** the code runs fine on any Raspberry Pi, but we *really* recommend a recent model with the 40-pin GPIO header (Model B+, Model A+, Pi 2 or Pi Zero), because...
- **Perma-Proto Pi HAT:** installs neatly atop the Pi's 40-pin GPIO header, providing a sturdy connection point for various other parts.
- **2GB or larger microSD card.**
- **USB flash drive for loading images.**
- **DotStar LED strip:** any length and density will work, but 144 LED/m is ideal. 1 meter is good for a painter that's still easy to store and transport. I built a 2 meter painter, but that was mostly to showcase the added horsepower of the Raspberry Pi...it's harder to build and unwieldy to move around!
- **74AHCT125 level shifter IC.**
- **Six (6) momentary pushbuttons.**
- **Large USB battery bank** or other 5V portable power source. The more current it can provide, the brighter the images can be. Or use two.
- **Two (2) USB Type A male** DIY connectors if using a USB battery bank.
- **Soldering paraphernalia, wire, etc.** A solderless breadboard and jumper wires may also be useful during initial testing.
- **An opaque enclosure for the Raspberry Pi** (or get creative with tape, paint, etc.)
- **Hardware store bits & bobs.**
- **A 3D printer** is optional but may be handy for improvised brackets, cases and parts.

READ THROUGH THE ENTIRE GUIDE FIRST for more parts and construction ideas. Every painter will be a little different, depending on what materials and tools you have access to.





[RASPBERRY PI SETUP](#)

Last updated on 2015-12-16 at 03.24.50 PM Published on 2015-12-11 at 01.35.28 PM

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Raspberry Pi 2 - Model B - ARMv7 with 1G RAM
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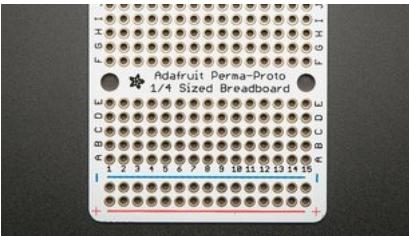


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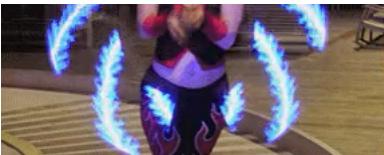
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These prodigious POV poi pack a pretty punch. Super fast and super high resolution Dotstar LEDs a giant 2200mAh battery, easy control with an infrared sensor and remote, and a galactic amount of memory so you can upload hundreds of images and spin all night.

[Touch Pi: Portable Raspberry Pi](#)

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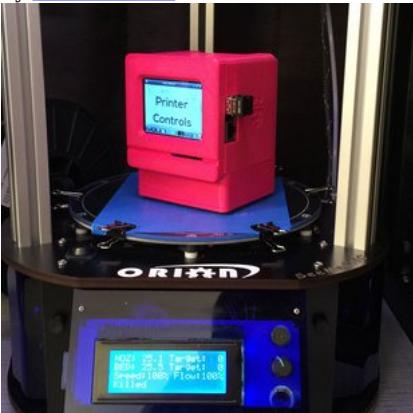


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[Manage and control 3D Printers through WiFi using Raspberry Pi and AstroPrint.](#)

[Adafruit DotStar LEDs](#)

[Imagine NeoPixels with a double shot of espresso...](#)

by Phillip Burgess



NeoPixel LEDs are the bee's knees, but in a few scenarios they come up short... connecting odd microcontrollers that can't match their strict timing, or fast-moving persistence-of-vision displays. Adafruit DotStar strips deliver high speed PWM and an easy-to-drive two-wire interface, bridging the gaps in the spectrum of awesome.

X

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