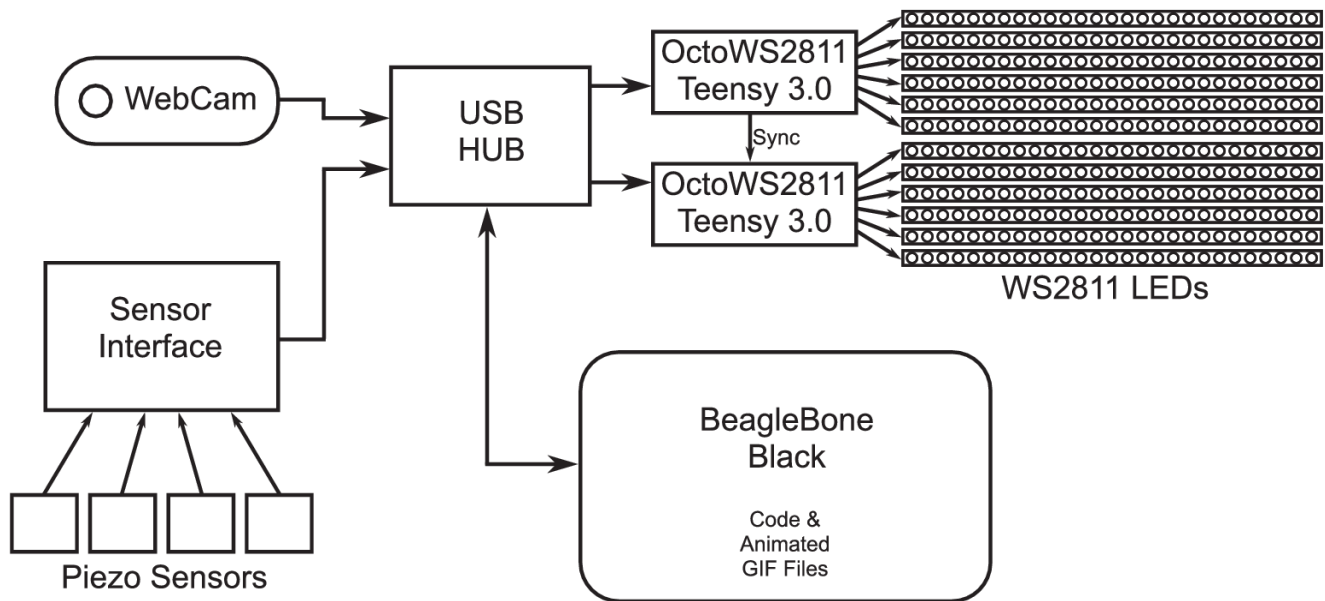


How To Make A Large LED Video Display

with the
OctoWS2811 Arduino Library
and
BeagleBone Black



With inexpensive electronics, you can make a very large LED display capable of full speed video and animation. WS2811 LED strips are the most affordable on the market today. Sensor input and LEDs output are programmed with Arduino and Arduino libraries. A BeagleBone Black is capable of processing the video data using only 30% of its CPU time. Alternately, a Mac or PC can be used for easy programming in the Processing environment.

- **Piezoelectric Sensors:** These transducers are Murata 7BB-27-4L0 (Mouser)
- **Sensor Interface:** Diodes and LMV393 amplifiers convert the analog signals to digital, with adjustable voltage thresholds. Arduino's `attachInterrupt()` responds to the digital rising edges. A timeout using `millis()` ignores additional sensor responses during a brief vibration period.
- **BeagleBone:** Software reads the sensors and combines animated GIF images with live webcam video. The image is scaled and converted to OctoWS2811's special format.
- **OctoWS2811:** The VideoDisplay example receives encoded video and streams it to the timing-sensitive WS2811 LEDs. Each Teensy 3.0 can update 1000 LEDs at full video rates. Very large displays can be built using one OctoWS2811 instance for each 1000 LEDs. Frame sync between the boards ensure precise video update timing, regardless of USB latencies.
- **Webcam:** Logitech 9000. Any video4linux-compatible camera will work.

Source code and technical details are available at
http://www.dorkbotpdx/blog/paul/maker_faire_2013