

1.

Make a crude USB oscilloscope. It should operate as follows: PC sends the desired sampling frequency, arduino samples the analog input at that rate and then sends both the time and voltage vectors to a PC which displays the waveform. Use the `avdweb_AnalogReadFast` library ([link](#)) to get faster sampling rates. (3p)

2.

Make a music visualizer. Listen to audio through a microphone*, compute FFT and display the frequency content on the dot matrix display. (3p)

*You will need to adjust the potentiometer. The DC level of the analog microphone output should be around 4V. Note that it's still not very sensitive but you should be able to pick up audio if you place it next to a speaker. For testing you can find e.g. a sine wave generator from the internet.