

ECE 153 Proposal

Anthony Pella and Ryan Mosalem

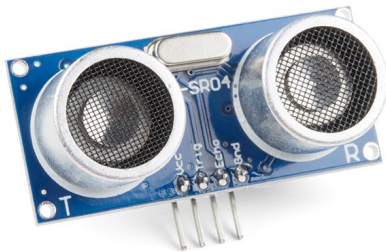
Wave Visualizer

Overview:

Our goal is to implement a display which helps people visualize what waveforms generated by different devices looks like. The waves would be drawn on an ultra sonic sensor on an LCD which displays the frequency of the wave, and its scale would be adjustable by a button press. We would also be utilizing Termite to input formatting commands.

Peripherals:

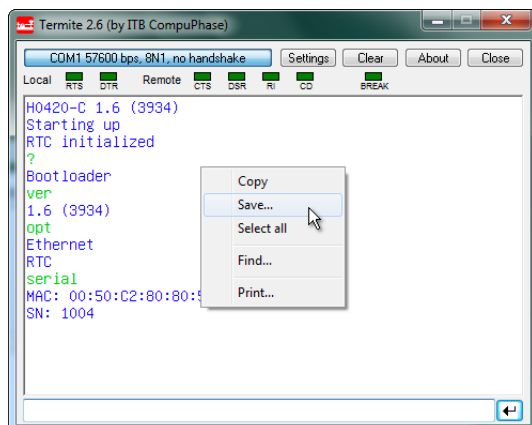
Ultra sonic sensor - used to determine how close an object is to our contraption.



LCD display - used to display the waveform of a given device

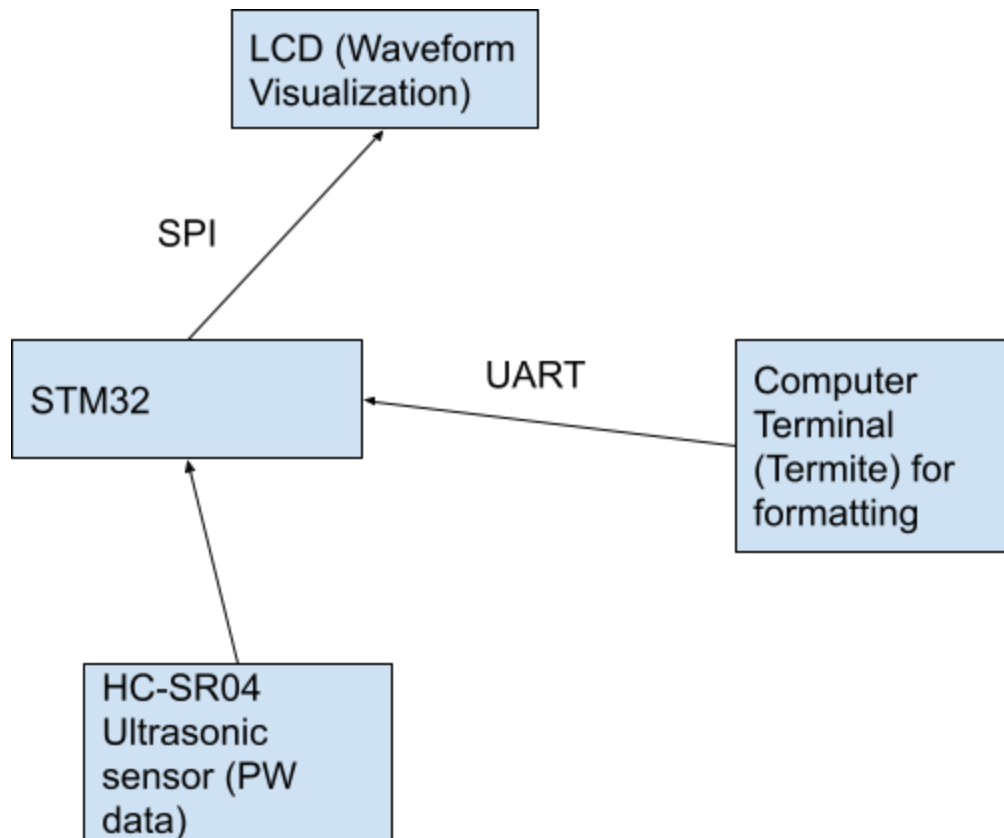


Computer terminal (Termite) - used for inputting formatting commands



Serial Interface protocols:

- SPI for the LCD display
- UART for the computer terminal (Termite)

Block Diagram:**Software Structure:**

First we would read in the data from the ultrasonic sensor, and calculate the width of the waveforms we want to generate from that. We would then use formatting rules (Scale, amplitude) to draw as many formatted waveforms to the LCD as will fit, along with the values for the scale of the waves, the frequency and the distance measurement from the sensor. We will also have functionality to take in new formatting rules from termite and update the drawing accordingly.

Teammate Responsibility

Anthony Pella:

I will be responsible for programming the LCD system, and calculating and drawing the wave to the screen, as well as handling the termite interface.

Ryan Mosalem:

I will be responsible for handling the the Ultrasonic sensor input and converting it into usable data for the LCD drawing system.

Website

<https://anthonypella.com/>

(Will add a project page)