Raspberry Shake + Boom Presentation

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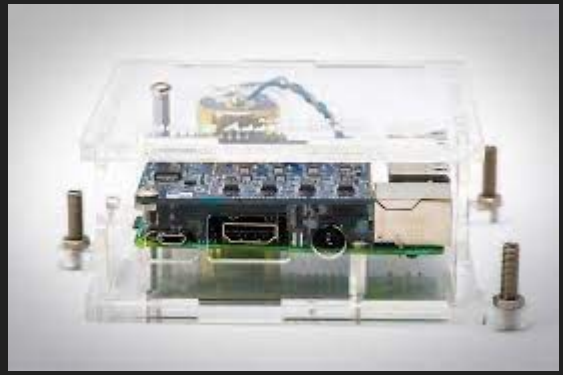
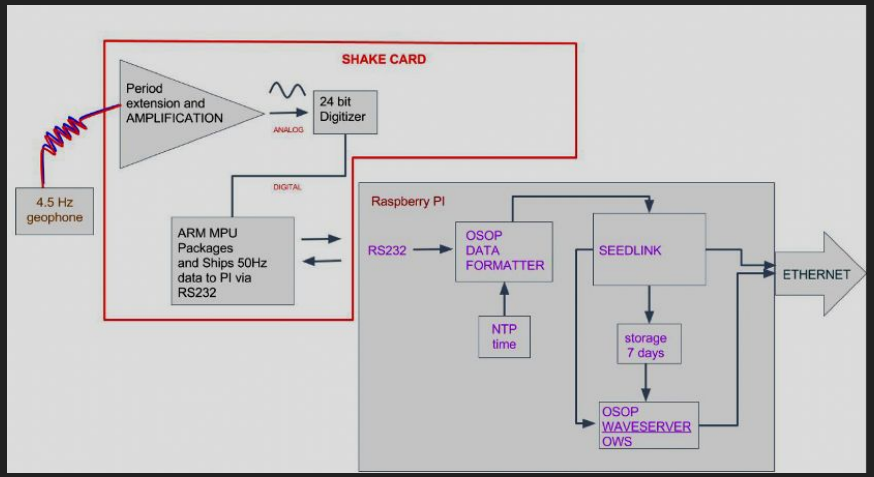
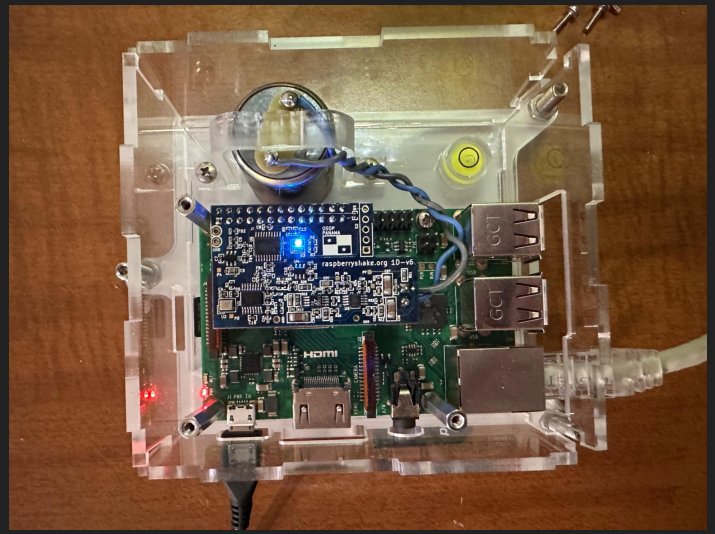
Functions (Shake)

- Display frequencies, in Hz and µm from vertical motion
- Display live data from its' location
- Detect and visualize earthquakes
- Present data to the world

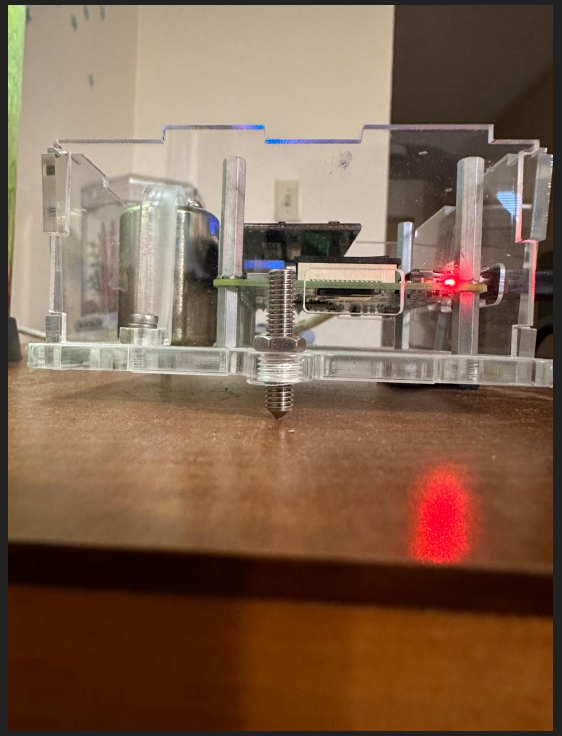


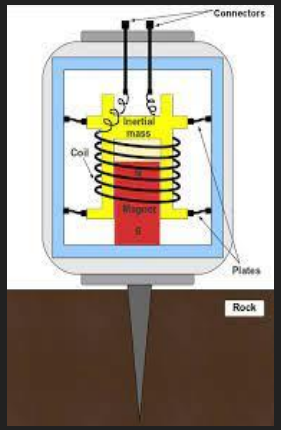


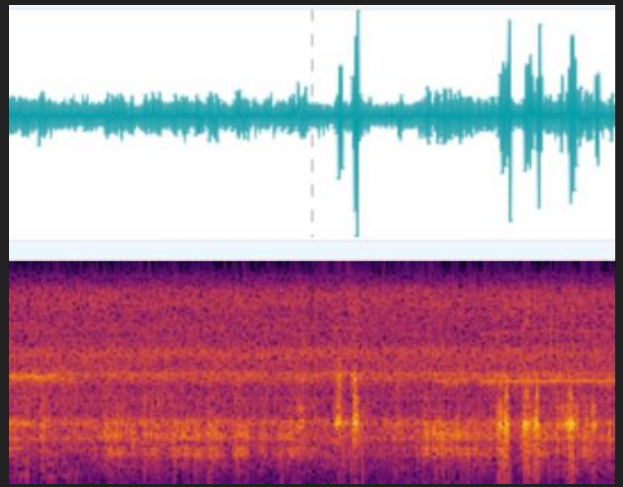


Analysis (Shake)

- The Raspberry Shake communicates through it's geophone
- Geophone uses a magnet, which catches movements/freq.
- The movements are converted to m/s or a frequency







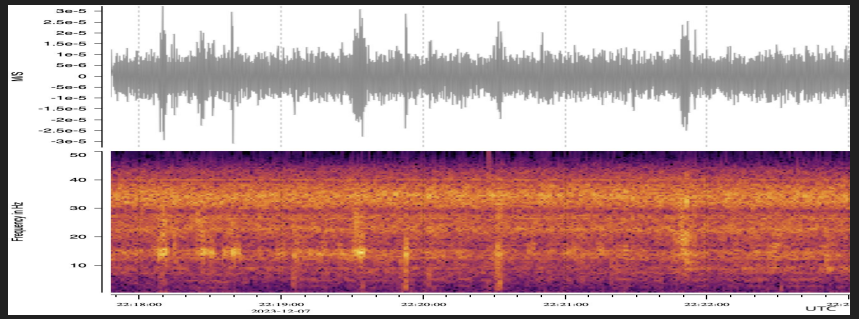
M/S

Freq (hz)

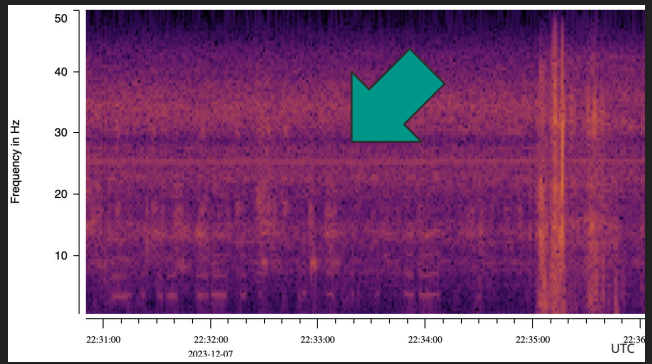
Process (Shake)

- I conducted various tests with the Shake
  - Different tones (near Shake)
  - Tapping on the desk
  - Swarm Program

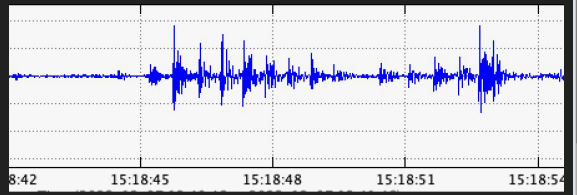
Base Measurement:



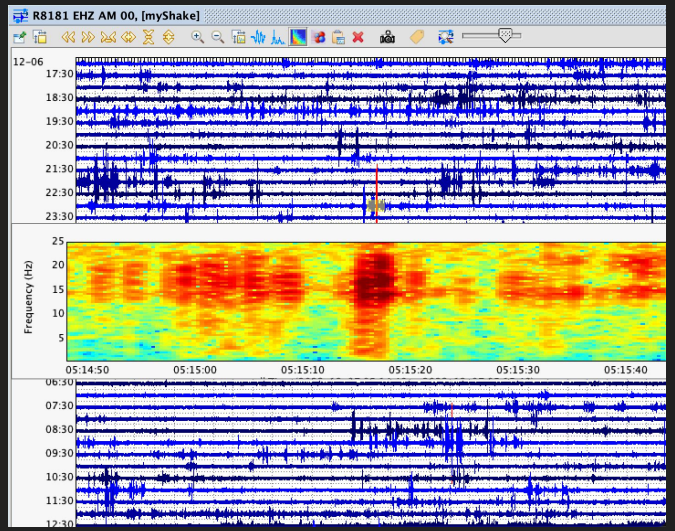
Tone At 25Hz:



Tapping:

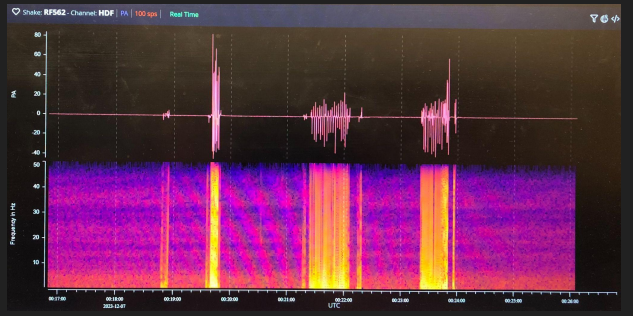


Swarm Analysis Of Time Frame:

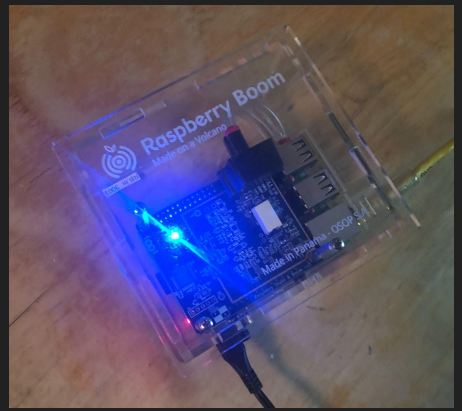


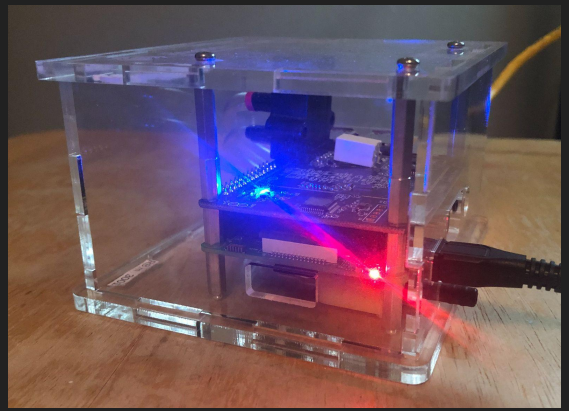
Nyquist's theorem - Sample at twice the highest expected frequency

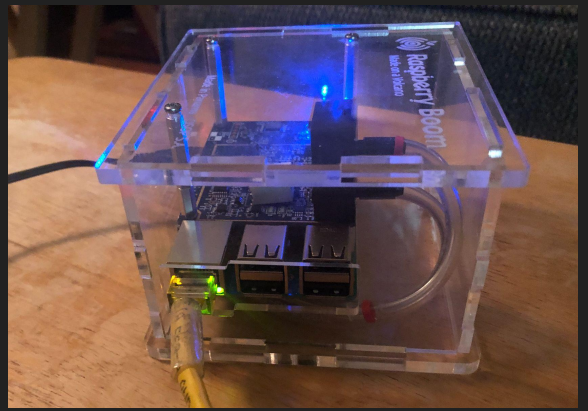
Functions [Boom]



- Measures Infrasound waves and displays
- Measures sounds less than 20Hz, less than we can hear
- Specifically measures pressure waves that loud bassy sounds produce
- On Raspberry Station View site you can see the measurements live





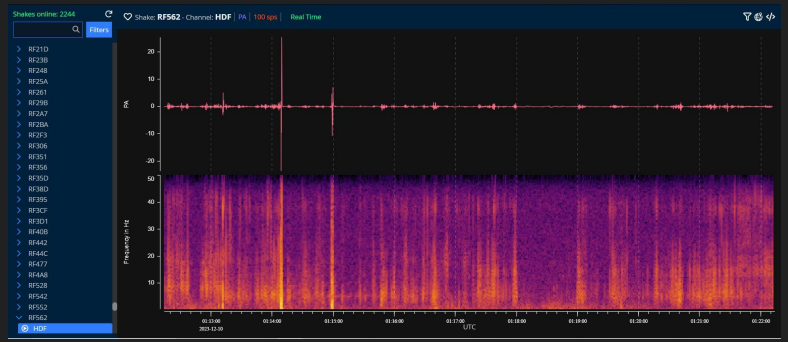


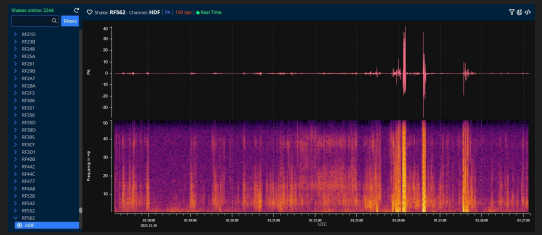
Analysis (Boom)

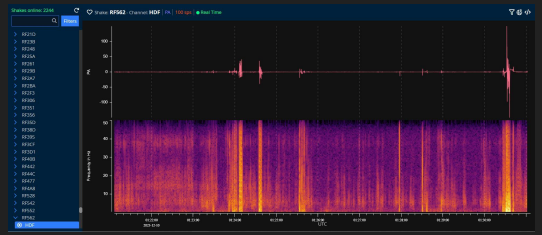
- Raspberry Boom uses an Infrasound sensor to detect low frequency sound waves
- Can be used to detect distant yet powerful sounds
    - Volcanos
    - Explosions
    - High flying planes
    - Etc.
- This is because low frequency sound waves travel farther than high frequency waves, making it possible to hear distant sounds that produce these lower frequencies
    - In the picture you can see two measurements “PA” and “Frequency in Hz”
        - PA: stands for pascal and is a measurement of pressure
        - Frequency in Hz: measures the frequency of sound the sensor detects

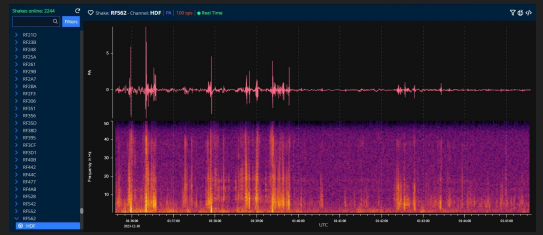
Process [Boom]

- There were a number of tests I made to see what would show up on the sensor outputs
    - Clapping
    - Lightly tapping the Boom on a table
    - Blowing into the sensor
    - Popping plastic bags I blew up









Raspberry Station View

https://stationview.raspberryshake.org