E5IoT - Project description

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Clip-on tuner

It is possible to tune a string instrument in two ways, either by using the actual sound/electrical signal produced or by sensing the vibration the string produces in the wood. Using the vibration in the wood has the advantage of not collecting noise or other interference from the surroundings.

Clip-on guitar tuner, made by Korg

Most tuners on the market at the present time will tell the user which tone is being sensed when a string is picked. And this is perfect for people who know to which tones they need to tune each individual string, to get the tuning they wish to use. But for people with that do not have this knowledge it would be advantageous to have the possibility of selecting the desired tuning and the device would then know which tones each string has to be tuned to.

Scope

The project will focus on getting the information from the sensor to the photon. The photon will then send this information to ThingSpeak for analysis and comparison to a known table of frequencies. This will trigger a response back to the photon that tells it to indicate to the user if the picked string is flat, OK or sharp.

When the task of collecting, sending and receiving information has been accomplished the task of programming in a possibility of selecting tuning and having that result in the cloud be compared to different frequencies will be implemented.

Project focus:

Primary tasks

- Collecting sensor data
- Sending data to the cloud
- Processing in the cloud
- Receiving and acting on response from the cloud

Additional task (if time permits)

- Interface for selecting tuning
- Different tuning profiles in the cloud
- Improved user display

Hardware

For the vibration sensor I will be using the SW-1802P, or similar. This component has a coil inside that will be moving when vibration is detected. The reason for using this component is based on the datasheet mentioning instruments as a possible application.

SW-18020P vibration sensor

The response from ThingSpeak will trigger the Photon to turn on one of three LEDs that will indicate to the user if the string is flat (red), OK (green) or sharp (red).