Project plan

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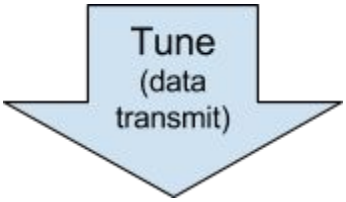
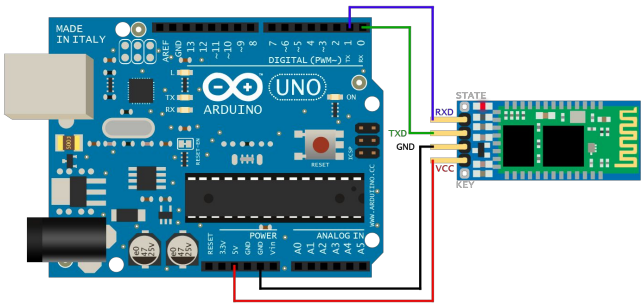
Bluetooth is one of easiest way to let iOS devices and an additional physical computing device communicate directly each other. Apple provides core Bluetooth framework, enabling the hardware module of iOS device can transmit or receive data respectively throughout paired BTLE module.

We are thinking to develop a kind of physical musical instruments that is connected to iOS, in either way that iOS device transmit musical data to physical music percussion to play music itself, or, that the physical sensors transmit data to the iOS, such as different resistance, different number of light detection, etc., and iOS plays digital sound based on these sensor data. We have not yet decided to communication direction between iOS and the physical instruments, so that there can be two possible direction.

Scenario 1
Generate data based upon button touch from iOS device, send it to Arduino to control physical object. In this case, the Arduino takes a role of data transmitter. A physical instrument that plays along with the digital sounds coming from the iOS device. The iOS device plays piano notes, and some external physical object (triggered by a servo or solenoid) makes a percussive sound, or manipulates some sort of instrument.

iOS piano application generates sound data

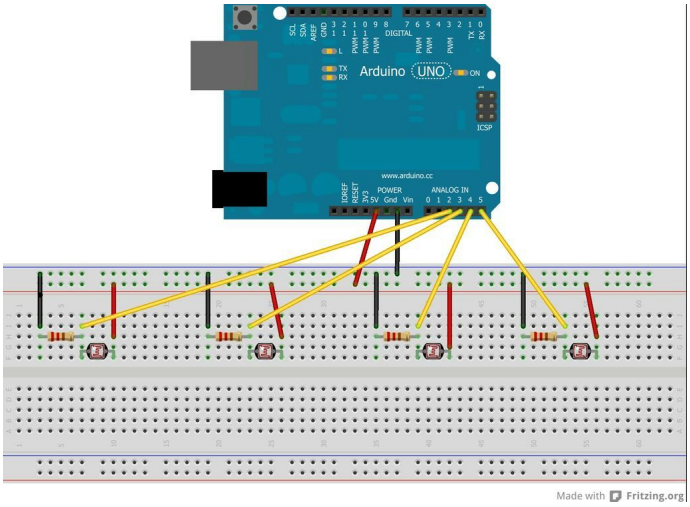




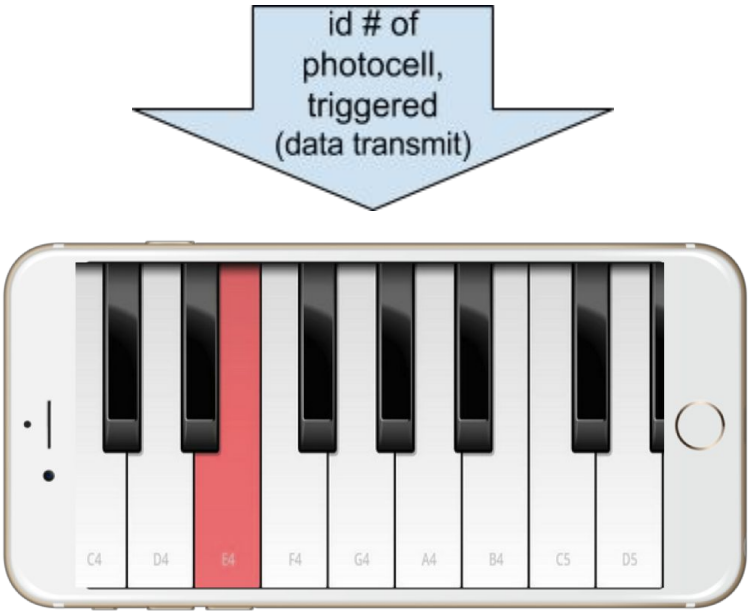
Bluetooth module connected physical instruments.
Based on data comes from iOS, the motor(or solenoid) will change the angle of rotation, or rotating speed

Scenario 2

Generate sensor data from Arduino, send it to iOS device to generate sounds. We can either send the data directly to the iOS device by creating some kinds of protocol, that will be used to wrap data from the Ard uino, and also to unwrap and interpret in iOS. The other possible solution will be using the server to get synchronized data simultaneously, seamlessly, and develop the iOS device to get this by web application request access to this server. We plan to modify the Ploty Node.js server application: http://adilmoujahid.com/posts/2015/07/practical-introduction-iot-arduino-nodejs-plotly/



Arduino connected with 4 photocell, so each photocell generates and transfers different data to iOS device



iOS piano app hit designated key along with sensor number