XBox One Controller

ECE153B Project Proposal
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Section: Tuesdays 7 - 10 pm

Overview

For this project, we will be attempting to read the input signals from an XBox One controller through a USB port to the LPC4088 microcontroller. By following a Keyboard usb device connection example, we will figure out how to configure the LPC4088 device to understand the Xbox One controller's input signals. We will display these direction signals with LED displays and the button signals with different buzzer sound while sending all signals to the computer through UART.

Peripherals

1. XBox One Controller
2. (1 or 2) 8 x 8 LED Boards
3. Buzzer (On Board)
4. Termite UART connection

Software Design

The LPC408 board will be programmed to be a host and be able to recognize the Xbox control as valid device based on the existing program, keyboardhost.c, in the provided examples. The analog signals of the controller joystick will be used to display direction and magnitude of the input on the 8x8 LED board and the signals from the buttons will be programed into playing sound on the buzzer. Each of the input signals will be sent to the computer through UART.

Goals/Intermediate Milestones

1. Set up connection between Xbox One controller using configuration, interface, and endpoint descriptors.
2. Collect data from Xbox One controller including joysticks and buttons.
3. Display joystick direction and magnitude input on 8x8 LED
4. Play different frequencies of sound on buzzer based on different input buttons
5. Display all input data on Termite console

Group Responsibilities

We will both study the lpcuslib_KeyboardHost demo project to understand how the USB connection was made with a keyboard. We will also have to do research online to find out how the XBox One controller sends data with its specific configuration and interface descriptors. Afterwords, we will have to understand how the data is passed through the various inputs and use the data to control an assortment of outputs.