BLE Intro – CySmart to Robotic arm

Welcome back to Cypress Academy, PSoC 6 101. In this set of videos, I will show you how to add BLE connectivity to the robotic arm project we’ve been working on. We’ll start simple and then build up from there, so let’s get started.

For this lesson, you will need either a BLE-enabled smart phone and an app from Cypress, CySmart; or the CySmart PC application and the CySmart BLE USB Dongle that’s included in the PSoC 6 BLE Pioneer Kit. This is needed to read and write BLE control signals to the PSoC 6 BLE robotic arm.

As we’ve done in the previous videos, we’re going to pickup where we left off. I will first add the BLE connectivity code to our robotic arm project, and then I will walk you through how to interface to and control the robotic arm via BLE commands. So far we have only been working with the ARM Cortex-M4 core within the PSoC 6 BLE device. As we discussed earlier in the introductory section, we want to optimize this design for low power so tasks that will require a much higher duty cycle, we want to put those tasks in the lower power, ARM Cortex-M0+ core.

[Reminder on how to configure and code for the CM0+ core]

[Add the BLE component and configure it…explaining a long the way how BLE works]

[Add the BLE APIs and explain the PDL interface to it]

[Add the IPC commands and explain how data passes between cores using the shared memory map]

[Build and run]

[Setup the PC CySmart app using the dongle and show how to connect to and read/write commands]

[Setup the iOS CySmart app using the dongle and show how to connect to and read/write commands]

Now we have a basic BLE-controlled robotic arm—hooray! We’re done! Wait…nope, it’s not quite cool enough. What I want is a capacitive sensing interface to control the robotic arms and maybe a motion sensor to detect how my hand moves to then relay those movements to the robotic arm over BLE. In the next video, we’ll start setting up a BLE remote control using a second PSoC 6 BLE Pioneer Kit and it’s E-ink shield to do just that.

You can post your comments and questions in our PSoC 6 community or as always you are welcome to email me at alan\_hawse@cypress.com or tweet me at @askioexpert with your comments, suggestions, criticisms and questions.