MEng Design Project Announcement – 2018

Project title: PIC and Pi: PIC32 and Raspberry Pi interface

Brief Description of Design Project Goals: To combine the realtime PIC32 and the powerful Raspberry Pi.

Overview:

The PIC32 microcontroller is a powerful, 32-bit cpu with many peripherals and available libraries, but no real operating system. The Raspberry Pi runs Linux, with all of the cool stuff available to a full Linux distribution, but does not do fast-deadline realtime very well. The combination should have the best of both worlds.

Specific MEng Contribution:

There are several layers to this project.
(1) Fast communication protocol between the PIC and PI.
(2) A set of real-time functions running on the PIC which can be used from the PI.
(ADC, PWM, motor control loops, etc)
(3) A PCB for the PIC32 that mates with the PI version 3.
(4) A working real-time example, perhaps a oscilloscope or inverted pendulum.
(5) Stretch goal: compile and load PIC code directly from the PI.
(6) Stretch goal: web server on the PI allowing access to PIC

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Project Web Site:

Number of MEng Students Needed: 1 to 3

Required Skills: MIcrocontroller programming experience, ability to read and understand large quantities of vendor documentation, ability to write microcontroller applications. PC board layout will be necessary. Linux experience necessary.

Estimated Project Time Frame:

2018-19 academic year