MCTX3420 Team 4: Progress Report #5

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Work Done:

1. Graph simulated sensors in JavaScript GUI
    a. Used jQuery to make AJAX requests to server software
    b. Used jQuery flot library to plot results
2. Improve sensor API to allow for dumping of data to text file
3. Control simulated actuator in JavaScript GUI
    a. A login is required to modify actuator values
4. Basic streaming of images to web page using OpenCV
5. Fix memory leaks in OpenCV
6. Test server software with JavaScript GUI on raspberry pi
7. Initiate work on unit testing the server API (QUnit and jQuery framework)
    a. Mitigate regression issues
8. Investigate alternative design of GUI using Java (netbeans)
9. Implemented AJAX functionality in GUI code
10. Separated basic GUI code into functional units of Javascript
11. Added Beaglebone Black code to the webserver to access sensor data
    a. Opens ADC module, reads 12-bit data stream from module, saves value to file
12. Code sections to read/write GPIO pins for digital use
    a. Can read value from pin, write value to pin & set data direction
13. Investigated PWM control for actuators (three 50Hz signals required)

Work Todo:

1. Decide between JavaScript and Java GUI
    a. Changing to a Java GUI would require modifications to the server side code
2. Generate analog output on BeagleBone as required by Electronics team
3. Add digital sensors/switches (GPIO pins) code to server side code
4. Improve GUI design and layout
    a. For example: Currently a graph is used for digital sensors. A “ON/OFF” image may be more appropriate.
5. Improve server API to meet GUI requirements
    a. For example: Currently the API only returns the last 10 data points recorded by a sensor. This can lead to gaps in the data plotted by the GUI.
6. Add watchdog thread to check values of sensors are safe
7. Write BOM (SD Card, Ethernet cable, Powered USB Hub)
8. Make potentiometer to test ADCs on beaglebone

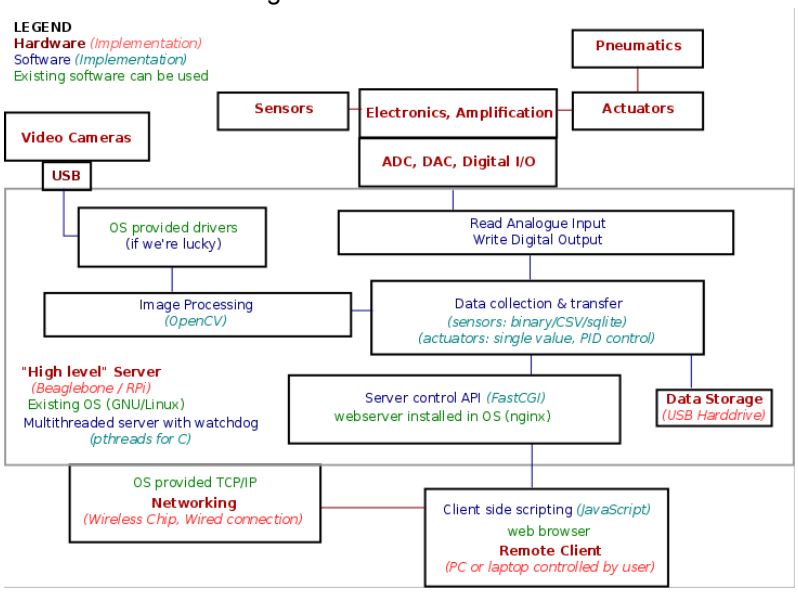
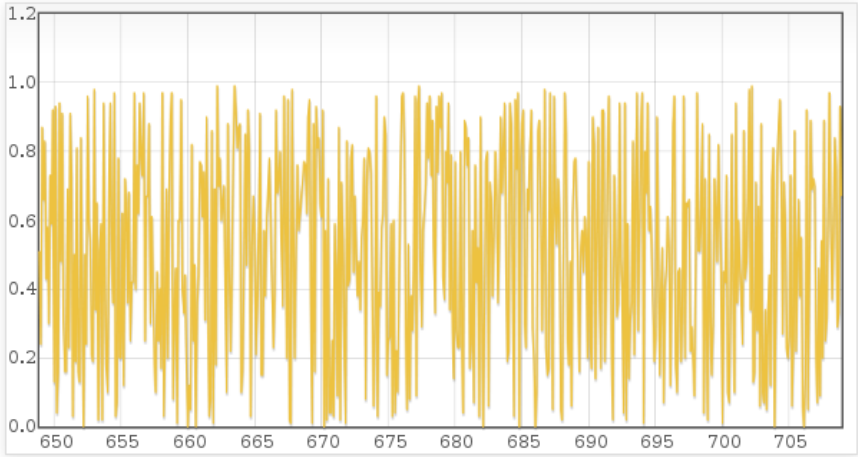


Figure 1: Function Block Diagram

MCTX3420 Test GUI

Image Stream

Sensor: 0



Plot since 60 seconds ago Update

Dump All Data

Controls

Pressure: 234100 SET

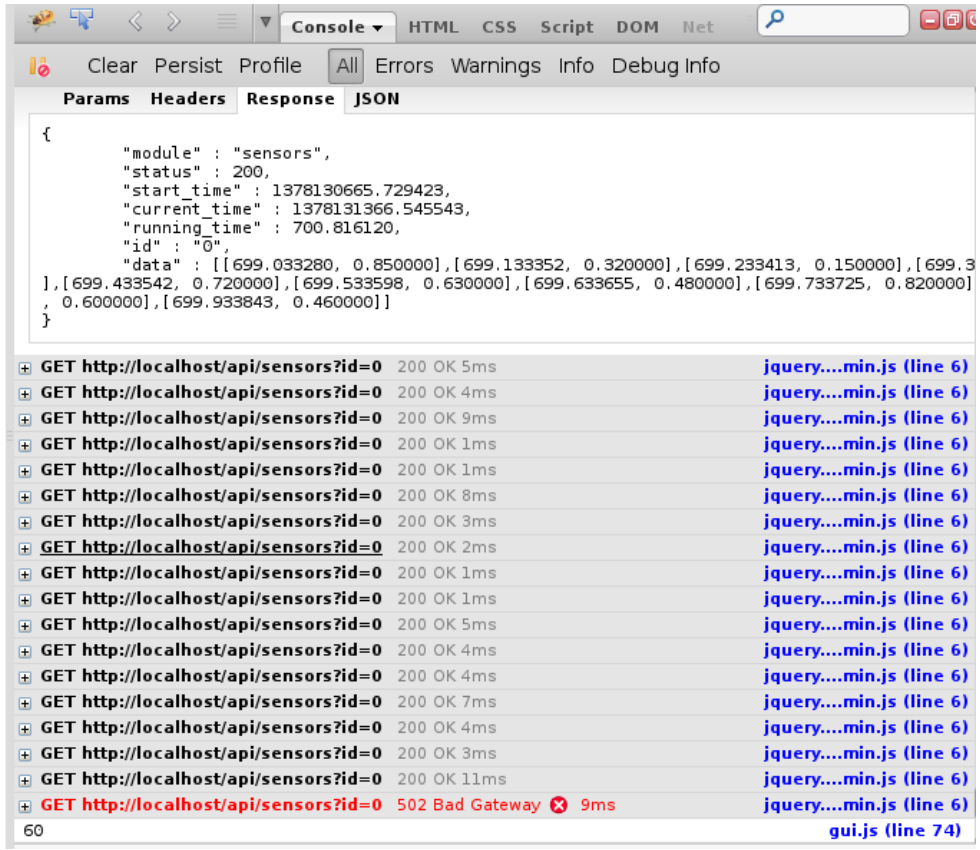


Figure 2: Test GUI Running in Firefox browser
Server (might not be up): http://mctx.us.to:8080/gui/