

# MCTX3420 Team 4: Progress Report #12

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## Work Done:

1. GUI Design
  - a. Fixed some issues with new Graph page: graph no longer crashes when axes are changed, and added ability to download graph as png image
  - b. Continued development of Control page (set pressure, specify sampling rates, etc)
  - c. Continue development of Data Download page (simplified design, added experiment loading)
  - d. Started to merge code over to a more encapsulated system
  - e. Added design improvements to the GUI for a more aesthetically pleasing page
  - f. Created Yet Another GUI in python as a backup, currently just graphs a single sensor
2. Login and Authentication
  - a. Server program modified to keep track of owner of experiment and allow admin to take control.
  - b. Started building on UserCake <http://usercake.com/> to make a User Management System
  - c. Added MySQL as an authentication method to the server program (for use with UserCake)
3. Experiment and control handling
  - a. Experiment files are now all stored in a dedicated directory, specified when the software is started
  - b. Each user gets their own folder in the experiments directory
  - c. Each experiment is named, and gets stored in their folder
4. Microscope and dilatometer
  - a. Got the camera(s) to work at a higher resolution (max 1600x1200 pixels)
    - i. This was done by switching from Debian to Ubuntu
    - ii. Still can't poll too fast, otherwise a black image is returned
  - b. Continue to improve dilatometer algorithm
    - i. Included OpenCV's Canny Edge algorithm
5. Hardware Testing (with Sensors/Electronics teams)
  - a. Tested High pressure sensor, appears to function correctly
  - b. Tested Microphone, could resolve clicks at 2Hz against background noise
  - c. Tested GPIO pins toggling relay; GPIO pins do not appear to provide enough current
  - d. Compared sampling rates on an amd64 laptop using RT Linux and regular linux (3.2.0-4).
    - i. No significant difference in sampling rate distribution width
6. Documentation / Wiki
  - a. Created page explaining how to compile the program with custom sensors/actuators: <https://github.com/szmoore/MCTX3420/wiki/Software:-Custom-Sensors-and-Actuators>
  - b. Added wiki pages on how to use the GUI and updated the software documentation

## Work Todo:

1. GUI design
  - a. Finish segmenting GUI and add widgets
  - b. Change UserCake styles to match the rest of the GUI
  - c. Graph page still has issues that should be worked on
    - i. Colours still change when axes change
    - ii. Axes are unlabelled
    - iii. Selecting a relative time range does not function correctly (it only affects the next update)
    - iv. Graph as png image opens an extra tab for some reason
2. Hardware Testing and Calibration
  - a. Use microphone calibration data from Sensors team
  - b. Pressure sensors need more detailed testing and calibration
  - c. Need to test everything. All the things need to be tested. All of them.
  - d. Check safety mechanisms all work
3. Login and Authentication
  - a. Merge user management git branch with master branch
  - b. Add user management to BeagleBone; email needs to be config
4. Documentation / Wiki
  - a. Update software block diagram to reflect the advances in design since week 3