Report 4
Garrett & Wendy

Accomplished:

For this milestone we were able to successfully write to the SD card and take data that will be essential to forming our algorithm of correcting time drift based on temperature. We were able to store RTC time, GPS time, Temperature, and time difference (to see time drift). Wendy connected her board to external power and took sample data for one day inside of her apartment. This data showed promising results as the temperature did force a time drift, but minimal due to a pretty constant temperature.

Difficulties:

Our biggest difficulty came with writing to the SD card, we worked on this issue for the majority of our time during this milestone. After working with the sensor group and Seth we were able to detect that our thread that was writing to the SD card was too small in size to accomplish this. After adjusting the size of the thread the SD card writing function was fully capable of accomplishing writing all data to a text file named data.txt. After completing this step we were able to collect the needed data.

Next Step:

Our next step is to take 3 days of data outside so we can have a more accurate field test were the weather variable will fluctuate more. Our current one day of data does not have a large enough fluctuation for weather making our time drift minimal and not a good representation of what the board will actually go through in the field.

Sample Data:

RTC Time GPS Time Time Difference Raw conversion of

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0060384400,0060308200,0000076200, -011
0060385174,0060309000,0000076374, -012
0060386414,0060310000,0000076614, -011
0060387654,0060311000,0000076854, -011
0060388893,0060312000,0000077093, -011
0060390133,0060313000,0000077333, -011
0060386535,0060380000,0000006735, -010
0060387775,0060381000,0000006975, -012
0060389014,0060381800,0000007214, -011
0060390254,0060383000,0000007454, -011
0060391494,0060384000,0000007694, -011
0060392734,0060384800,0000007934, -011
0060393973,0060386000,0000008173, -011
0060395213,0060387000,0000008413, -011
0060396453,0060388000,0000008653, -011
0060397693,0060389000,0000008893, -011
0060398932,0060390000,0000009132, -011
0060400172,0060391000,0000009372, -011
0060401413,0060391800,0000009613, -011
0060402652,0060393000,0000009852, -011
0060403892,0060393800,0000010092, -011
0060405131,0060395000,0000010331, -011
0060406372,0060395800,0000010572, -011
0060407611,0060397000,0000010811, -011
0060408851,0060398000,0000011051, -011
0060410090,0060399000,0000011290, -011
0060411331,0060400000,0000011531, -011
0060412571,0060401000,0000011771, -011
0060413810,0060402000,0000012010, -011
0060415050,0060402800,0000012250, -011
0060416290,0060403800,0000012490, -011
0060417530,0060405000,0000012730, -011
0060418769,0060405800,0000012969, -011
0060420009,0060406800,0000013209, -011
0060421249,0060408000,0000013449, -011
0060422489,0060409000,0000013689, -011
0060423729,0060409800,0000013929, -011
0060424968,0060411000,0000014168, -011
0060426208,0060412000,0000014408, -011
0060427448,0060413000,0000014648, -011
0060428688,0060414000,0000014888, -011
0060429927,0060415000,0000015127, -011
0060431167,0060416000,0000015367, -011
0060432407,0060417000,0000015607, -011
0060433647,0060418000,0000015847, -011
0060434887,0060418990,0000016087, -011
0060436126,0060420000,0000016326, -012
0060437367,0060421000,0000016567, -011
0060438607,0060421800,0000016807, -011
0060439846,0060423000,0000017046, -011
0060441086,0060423800,0000017286, -011
0060442326,0060425000,0000017526, -011
0060443566,0060426000,0000017766, -011
0060444806,0060427000,0000018006, -011
0060446045,0060428000,0000018245, -011
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