

## **EE / CprE / SE 492 - Team #15**

### **Portable DAQ for Dogs**

#### **Bi-weekly Status Report #2**

**Client:** Simon Lalflamme

**Faculty Advisor:** Nathan Neihart

#### **Team Members:**

Yan Jie Hui - Co-Team Lead

Rohan Yadlapati - Co-Team Lead

Daeyoo Kim - Hardware Lead

Rishab Kinnerkar - Web Developer

Matthew Faronbi - Communications Lead

#### **Past Week Accomplishments**

Log data using interrupts - Yan

- Set up timer1 on atmega 328 which is a 16 bit timer for interrupts
- Set timer1 as Clear Timer on Compare Match (CTC) mode.
- Set up prescaler to and compare match register to make the analogRead() function collect data every 100Hz.
- Set prescaler as "256"
- Compare match register value as "624", because  $624 = (16 * 10^6) / (1 * 256) - 1$

Temperature sensor - Yan

- Found a temperature sensor (lm61)
- Connected to micro controller and configured to read data
- Write code to implement transfer function of the sensor.

Design of the PCB - Yan

- Worked on the different parts of the Arduino uno board we need and don't need for the design of our PCB.

I2C research and implementation - Rohan

- Completed research and testing
- Decided to not use it due to the small number of sensors being used

Web-Application- Rishab Kinnerkar

- Installed and debugged web-application on the group website.
- Tested dynamic file reading and graph plotting locally.
- Worked on the website design and slider animations on the web-application
- Configured roles which allows us to give different users different types of permissions.
- Worked on slider animations on the web-application.

Power Management - Matt

- Researched various battery types and decided on lithium ion
- Researched different types of power management systems

### Design of the PCB - Daeyoo Kim

- Worked on Multisim/Ultiboard with a sample circuit to apply our project circuit.
- Researched some components that we are using for our circuit and figured out how we can use corresponding components based on "digikey.com" in Multisim/Ultiboard.
- Researched some ways to solder with conformal coating for the water proof.

### Pending Issues

Design anti-alias filter

Write interrupt to log data

Design power management system

Connect a temperature sensor.

Finish a fully working prototype of online app.

### Individual Contributions

Team Members	Contribution	Weekly Hours	Total Hours
Yan Jie Hui	Wrote arduino code to run interrupts. Implemented temperature sensor. Worked on the design of the circuit overall.	14	19
Rohan Yadlapati	Completed research and testing of I2C protocol. Decided to stay away from it, due to the fact that we will only need to collect data from resistance sensor and external temperature sensor.	10	19
Daeyoo Kim	Spent most of time on working with Multisim/Ultiboard. Researched how we can protect our device from water such conformal coating on PCB.	10	18
Rishab Kinnerkar	Worked on the web-application and data calibration	11	18
Matthew Faronbi	Researched different battery types to maximize the power efficiency of the data acquisition device. Examined various utilities to monitor and control regulation of power flow through the data acquisition device.	5	16

## Plans for Coming Week

Interrupts to log data:

- Collect data more often than 100Hz to be able to store an averaged value.
- Collect temperature value less often than the resistor value.

Find a more accurate temperature sensor:

- The current sensor lm61 gives a +/-2 degrees accuracy.

Find out how to connect Sd card to Atmega328:

- Implement the SD breakout board into our circuit.

Web-Application:

- Try to get dynamic data plotting implemented on our web-application. Test the file reading program.
- Improve the website design

Temperature Sensor:

- Familiarize myself with I2C protocol, and begin running tests so that it can be implemented into prototype

SD Card:

- Determine best way to manage collected data
- Program to overwrite data if SD card is full
- Look into getting new SD card with more capacity

Power Management:

- Calculate power draw
- Continue research on various battery types
- Decide which type of battery will maximize power efficiency for device
- Design and implement a system that will
- Implement some type of alarm to alert user when battery is low/almost dead

Web-Application:

- Implement file reader on the web server.
- Work on the design to improve web application performance and debugging web application.
- Test the interaction between different user roles.

Anti-aliasing:

- Begin research and implementation of LPF to limit the effects of noise
- Run tests through matlab and then finalize with arduino