EE 491 Weekly Report #6 **Date:** 10/14/2013

Group Project: Garmin - Energy Harvesting in Fitness Electronics
Website: http://home.engineering.iastate.edu/~redejmal/senior_design/index.html
Project Number: May14-17
Client: Adam Rasmussen
Advisor: Dr. Degang Chen
Group Members:

Tyler Chenhall – Project Leader
Rebekah Dejmal – Communications & Webmaster
Catherine Homan – Research & Testing
Allison Sapienza - Research & Testing
Omer Vejzovic - Research & Testing
Jeramie Vens - Research & Testing

Accomplishments in the Past Week

- Held a meeting with our advisor & client
- Continued researching possible energy harvesting strategies
  - Focusing on Piezoelectric, Peltier & Seedbeck effect, and some solar
  - Increasingly, research is being focused on finding energy harvesting parts and ICs that would be useful in a human-wearable device
- Began writing a research summary document which will be part of the deliverables for this project
- Collected accelerometer data via a smart phone strapped to a walker & runner's shoe (for piezoelectric energy harvesting)
  - Shoe data showed similar frequency content (1-5Hz) to the arm data, but stronger acceleration magnitudes. This indicates good potential of piezoelectric/mechanical methods for powering a shoe pod device

Plan for the Upcoming Week

- Continue overall research on energy harvesting & parts
- Work on the research document for Adam
- Begin the first draft of the design document which is due in approximately two weeks
- Continue building the list of desired parts for energy harvesting prototyping & testing
- Meet with Dr. Chen (& Adam Rasmussen via conference call) on Monday

Pending Issues

- none

Individual Contributions

- Tyler
  - Took meeting notes & created the weekly report
  - Helped take accelerometer data at a foot location while walking or running
  - Researched piezoelectric energy harvesting parts, with a focus on finding parts for low frequencies and low cost
  - Began a summary of piezoelectric research completed so far
- Rebekah
  - Managed communications with Adam and others
  - Continued looking for energy harvesting parts
- Catherine
  - Continued looking for energy harvesting parts
  - Made final edits on the project plan 1st draft
- Allison
  - Researched the Seedbeck effect & thermoelectric devices
  - Looked at possible piezoelectric devices
- Omer
  - Researched piezoelectric energy harvesting & parts
- Jeramie
  - Performed analysis of the new accelerometer data
  - Started the research report & the design document
  - Researched thermoelectric parts and heat sinks

Individual Hourly Contributions

- Tyler – 9.2 hours
- Rebekah – 3.5 hours
- Catherine – 2.5 hours
- Allison – 6 hours
- Omer – 4 hours
- Jeramie – 9.5 hours