EE 491 Weekly Report #5 **Date:** 10/07/2013

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
- Continued researching possible energy harvesting strategies
  - Focusing on Piezoelectric, Peltier & Seedbeck effect, and some solar
  - Considering power output, size, solution constraints, and which products might benefit
- Finished writing most of the Project Plan document due next week
- Measured typical current consumption of each of the Garmin devices
- Collected accelerometer data via a smart phone strapped to a walker & runner's wrist (for piezoelectric energy harvesting)

Plan for the Upcoming Week

- Finish the first draft of the project plan & review it with our advisor & client
- Continue overall research on energy harvesting, and begin producing a research summary for eventual submission to Adam at Garmin
- Begin creating a list of desired parts for energy harvesting prototyping & testing
- Complete data processing on the accelerometer data
- Meet with Dr. Chen (& Adam Rasmussen via conference call) on Monday

Pending Issues

- We still need schematic information from Adam. Until then, we are limited to basic testing on devices received from Garmin. Schematics should be arriving soon, but we will remind Adam if needed.

Individual Contributions

- Tyler
  - Took meeting notes & created the weekly report
  - Characterized the current consumption of the three sensors & watch in power save mode
  - Researched piezoelectric energy harvesting parts, with a focus on finding parts for low frequencies and low cost
- Rebekah
  - Managed communications with Adam and others
  - Helped test Garmin devices
- Catherine
  - Continuing energy harvesting research
  - Helped test Garmin devices
  - Helped edit & fill out the project plan
- Allison
  - Researched the Seedbeck effect
  - Looked at possible thermoelectric ICs for use in the project
  - Helped fill out the project plan
  - Helped test several of the Garmin sensors & watch
- Omer
  - Researched piezoelectric energy harvesting
  - Helped test Garmin devices
- Jeramie
  - Helped test & performed analysis of the accelerometer data
  - Researched mathematical models of thermal-electric devices
  - Began working on the research summary document

Individual Hourly Contributions

- Tyler – 9.8 hours
- Rebekah – 4 hours
- Catherine – 7 hours
- Allison – 8 hours
- Omer – 5 hours
- Jeramie – 9.5 hours