EE 491 Weekly Report #9 **Date:** 11/04/2013

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 & Foot-Pod Team Member
Rebekah Dejmal – Communications & Webmaster & Foot-Pod Team Member
Catherine Homan – Research & HR Monitor Team Member
Allison Sapienza - Research & HR Monitor Team Member
Omer Vejzovic – Research & Foot-Pod Team Member
Jeramie Vens - Research & HR Monitor Team Member

Accomplishments in the Past Week

- Held a meeting with our advisor & client
- Held separate meetings for the thermo & piezo groups
- Continued researching energy harvesting strategies
  - Focusing on Piezoelectric, Peltier & Seebeck effect
  - Research is being focused on finding energy harvesting parts and ICs that would be useful in a human-wearable device
- Began coming up with designs for the two energy harvesting prototypes
  - The thermo (heart rate monitor group) has finished their first schematic, and almost have the layout complete. The group has requested samples for several parts and plans to have the first iteration board ordered by Wednesday.
  - The mechanical (foot pod group) is working on the schematic. Most of the main components have been identified, including a power supply component, a potential supply manager for multiple power sources, and a few options for the actual energy harvesting component.

Plan for the Upcoming Week

- Work on the research document for Adam
- Continue research on energy harvesting & parts
- The thermo / heart rate monitor group plans to place an order for their first design by this Wednesday
- The mechanical / foot pod group plans to complete the schematic, begin layout and work on ordering important parts that cannot be sampled
- Meet with Dr. Chen (& Adam Rasmussen via conference call) on Monday

Pending Issues

- none

Individual Contributions

- Tyler
  - Took meeting notes & created the weekly report
  - Followed up with TQ Electronics for information on low frequency mechanical energy harvesting parts
  - Researched power management ICs for the foot pod energy harvesting circuit
  - Began coming up with a list of characteristics to be tested when prototypes have been built
  - Outlined a few sections of the research document
- Rebekah
  - Managed communications with Adam and others
  - Began creating the foot pod energy harvesting schematic in Multisim
  - Researched power management ICs for the foot pod energy harvesting circuit
- Catherine
  - Worked on the heart rate monitor energy harvesting schematic
  - Looked for parts for the HRM energy harvesting circuit
- Allison
  - Read datasheets for parts for the heart rate monitor energy harvesting circuit
  - Learned to use Multisim & Ultiboard, and began working on the layout for the HRM circuit
- Omer
  - Contacted Mide and requested piezoelectric energy harvester samples
  - Researched power management ICs for the foot pod energy harvesting circuit
- Jeramie
  - Finished building the first iteration of the heart rate monitor energy harvesting schematic in Multisim
  - Worked on the HRM energy harvesting circuit layout
  - Sampled parts and began creating a Bill of Materials for the HRM energy harvesting circuit

Individual Hourly Contributions

- Tyler – 10.3 hours
- Rebekah – 7.5 hours
- Catherine – 6 hours
- Allison – 7.5 hours
- Omer – 5.5 hours
- Jeramie – 14 hours