Senior Design - Spring 2015
EE/CpE 424

Class 2 – 3/10/15
Outline

• Spring 2015 tasks
• Reimbursement
• Upcoming priorities
Senior Design Tasks – Spring ‘15

Today

- Publish interim project report
- Develop final report
- Submit final report
- Oral/slide/poster presentations/demos
- Design Day: 4/29

Weekly status Reports (Monday)
- Web site updates (1st)

2/1 3/1 4/1 5/1/08

build, debug, test

Reports (Monday)
Senior Design Tasks – Spring ‘15

- 2/1: Publish interim project report
- 3/1: Develop final report
- 4/1: Submit final report
- 4/29: Oral/slide/poster presentations/demos
- 5/1/08: Web site updates (1st)
- Group Eff. Reports (Monday)

Today is 50 days until Design Day: 4/29
Senior Design Tasks – Spring ‘15

Today

50 days until Design Day

31 effective days

Design Day: 4/29

Weekly status Group Eff. Reports (Monday)

Web site updates (1st)

2/1

3/1

4/1

5/1/08

Publish interim project report

Develop final report

Oral/slide/poster presentations/demos

build, debug, test

Submit final report

Senior Design Tasks – Spring ‘15

EE/CpE424:
Senior Design
Spring 2008
Reimbursement

- Reimbursement for Senior Design expenses $400/group

- Save your receipts, shipping invoices and credit card statements to demonstrate that you actually purchased the items (printouts of receipts from a web site may not be accepted alone to demonstrate something was purchased)

- One check per group, at the end of the semester (unless you spend your entire budget early and pay interest on the balance)

- The summary form is on Canvas. Give it to me along with receipts and I will submit it. I have to approve all expenses so I can track them, trying to circumvent the process only slows things down and may lead to a missing reimbursement.
Reimbursement form

Request for reimbursement of expenses for ECE Senior Design project

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<th>Return to ECE</th>
<th>Item description/purpose</th>
<th>Vendor</th>
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Total:

- A single request for reimbursement should be submitted per group at the end of the Spring semester.
- Receipts are required for all expenses. Receipts must include date, vendor information, item description and price. On-line printed receipts must be corroborated with a charge card statement. Blank out all private information, such as account number.
- If receipt contains expenses that are not associated with Senior Design, circle the expenses for reimbursement.
- There is a strict limit of $400 reimbursement per group from ECE funds. Amounts in excess of $400 will be ignored.
- Check will be made payable to person submitting request unless other arrangements are made. The person submitting the request hereby attests that they are entitled to reimbursement and will distribute the reimbursement as needed to other group members.
- Check will be delivered to requesting student upon return of checked items to ECE Senior Design coordinator.

Date received:

Approved for submission to Prof. Yao for department approval:

Approved for reimbursement:
Deliverables Schedule

• Interim project report due Tuesday after Spring Break (3/24/15)
  – Specific details on Canvas > Course Content

  – Interim Progress Report vs. previous report focus:
    • updated design progress
    • current thinking about architecture, implementation, features and functions
      of prototype
    • how will you evaluate prototype performance?
    • subsystem tests and results
    • design risks and how to control them?
    • remaining technical issues

• Design Day is April 29th – less than 2 months from now
Design Day Resources Available

• Fan fold poster board (supplied by ECE department)

• Large format HP DesignJet “plotter” in B200
  
  – Check with me to arrange plotter use - plan early to get this done, or plan on going outside (Staples, Kinkos).

  – If previous years are any indication, most of you will show up after 6pm on the night before Design Day. If we run out of paper at that point, the chances of being able to find the special paper the plotter **requires** are slim. (Many groups were dismayed to see what happens when ink droplets are sprayed against paper that wasn’t designed to absorb them.)

  – Set your favorite illustrating tool (Powerpoint, PageMaker, MS Publisher, etc.) to an appropriate page for the poster and generate pdf output. Bring the resulting file to B200 to print. (other printer formats have been used, but I have only tried .pdf)

• One or two 110 VAC outlets per group

• WiFi connections for networking – let me know if you require a hard-wired connection
Design Day 2003
Senior Design Day

- What will catch the interest of a passer-by?
- What have you done that is significant/worth demonstrating?

- Organization of the poster is important to maximize effectiveness
- Use each media (demo, words, pictures, conversation) to present what is best done with that media.

- **Demonstrate** your project concept
Project Brochure

• Introduced by a ‘03 ECE Senior Design group
  – Improved upon by ’04
  – ECE now sets the standard for other Departments’ Senior Design teams

• Provides a brief “take-away” synopsis of project

• Your project’s “business card”

• Each group must create one, put it on web site, and bring at least 25 copies to Design Day

• Basic format at:
  http://koala.ece.stevens-tech.edu/sd/material/brochure format.pdf

  Enhanced format is worth extra credit

For more details, please visit our website:
http://koala.ece.stevens-tech.edu/sd/archive/03F-04S/websites/grpNN/
GPS Technology
Background: Basics 101

The Global Positioning System (GPS) is actually a constellation of 27 Earth-orbiting satellites (24 in operation and three extras in case one fails). Each of these solar-powered satellites circles the globe at about 12,000 miles, making two complete rotations every day. The orbits are arranged so that at any time, anywhere on Earth, there are at least four satellites “visible” in the sky.

A GPS receiver’s job is to locate 4 or more of these satellites, figure out the distance to each, and use this information to deduce its own location. This operation is based on a simple mathematical principle called trilateration. 3-D trilateration involves the intersection of the satellites’ spheres. A sphere is generated by using the distance between the receiver and a satellite as the radius. The receiver would exist on the surface of several satellite spheres at an intersecting point.

From: www.lowstuffworld.com

About the Stevens Campus:

“This land was a part of the island of Hoboken which was deeded on Feb. 16, 1663 by Peter Stuyvesant, governor of New Amsterdam for the benefit of his sister Anna, widow of Samuel Bayard of Amsterdam.

In 1784, these 564 acres belonging to Willie Bayard, her great great grandson, were declared forfeit because he had “joined the army of the King of Great Britain.” They were bought at public auction for 13,360 pounds by Colonel John Stevens, “Treasurer on Horseback” of the state of New Jersey during the war of the Revolution.

In 1868, his son Edwin Augustus who had married Martha Bayard Dod of Princeton, a descendant in the seventh generation of Anna Stuyvesant Bayard, left this land and an endowment for a school of learning which was established in the year 1870 as the Stevens Institute of Technology.”

-On the Wittpenn Walk plaque
Environment Aware GPS Information Extravaganza

Design Approach

PDA:
- HP iPaq H2215

Microsoft Products:
- Visual Studio .NET '03
- SQL Server 2000
- Windows CE
- Embedded Visual Tools
- Pocket PC 2003 SDK

Earthmate GPS Receiver:
- USB-powered for laptop
- Bluetooth compatible

Project Description

The Global Positioning Satellite (GPS) System is one of the newest technologies to permeate the consumer market from its military origins. GPS receivers are excellent at providing precise positional data on the globe, yet a vast potential for greater utilization of GPS technology as an interactive informational delivery aid remains to be tapped.

Current GPS systems for the consumer market make minimal use of the information provided by the technology. Our project intends to add environmental awareness, which the group defines as the ability to provide detailed information on what is situated at and around a particular location, and what is interesting or important about it, to portable GPS devices. By simply walking around and exploring, a user can get a full and insightful account of a locale, including information such as the history of a statue or building, or perhaps that a restaurant near a particular location is highly regarded and is a "must-stop" eatery.

The group's approach to technologically creating the described system involves the amalgamation of several existing technologies. The platform for this system is a Personal Digital Assistant (PDA) attached with a compatible GPS receiver module. The group has also developed a native application and database for this platform capable of providing the described usage.

The Team Bios

Christopher Dong is the team leader of this project. Having the initial concept for this project, he has persistently driven the group in completing his "baby".

Nicole Taylor is the assistant manager of this project. Her direct approach and calmness during adversity has made everyone jealous and stared at the same time.

Omar McGinn likes the ladies. The ladies like Omar. His past accomplishments are passing classes at the last moment and starting a game club based on the groundbreaking game "Mafia".

Vikram Sori lead the procurement of project materials. The Police have yet to find the bodies he's hidden (psst... check the trunk). He was last seen impersonating a graduating engineer.

Allan Flores is lovable, charming, and likes to flatter himself. His project support involved counting campus wildlife. None of the 2 bunnies, 3 groundhogs, or geese were hurt.
Other deliverables

• Every group will produce a real invention disclosure for some aspect of their project (Due April 1)

• While you own your intellectual property, I want you to go through the process of describing it for patent filing. If you decide to work with Stevens to create a patent filing, this will be the first step to describe it to the Stevens IP Committee.

• Patent disclosure format can be found at:

  http://www.stevens.edu/provost/sites/default/files/Invention_Disclosure_Form.doc

• You will need to address
  – What is your idea used for?
  – How is it used?
  – What is novel about it?
  – How is it created or assembled?
  – What are the limitations?
  – How can it be commercialized?
  – What have you built, verified or prototyped?
  – Has the idea been publicized?
  – Has the project been sponsored?
  – Who might be interested in licensing the idea?
  – Who are the inventors?
  – How will the idea be continued after you graduate?
Other deliverables

• The Office for Innovations and Entrepreneurship has sponsored “The Elevator Pitch” competition.

• Several of you have projects that are easily presentable to people who know nothing about technology and would lend themselves well to the competition.

• Participants in (and especially winners of) the Elevator Pitch competition will receive extra credit for the extra effort.