ECE 500 C1: Building Software Products for ECE Applications

First Lecture

1/19/16

BOSTON UNIVERSITY

I will be happy if I can help you build world class products

- Analyze Product Concepts.
- Define product requirements.
- Define system requirements.
- Appreciate design tradeoffs (speed versus accuracy, cost versus features, etc.)
- Design hardware-software products and services

Evaluation

Team Grade (50%)		Individual Grade (50%)	
Sprint Presentations: 50%	50%	Attendance	25%
Final presentation:	25%	Sprint Reports	25%
Final Report	25%	Your teammate evaluation of you	25%
		Your evaluation of another team project	25%

Class Plan

Week	Date	Lecture	Comment
1	19-Jan	Class Introduction Description of project ideas Definition of first assignment	
1	21-Jan	No Class	
2	26-Jan	Product Stories + Usability. This includes studens actively working on exampels together	
2	28-Jan	APIs and sequence diagrams This Includes students working together to define APIs and sequences that translate basic requirements	
3	2-Feb	Cloud Platforms	One team will demosntrate the setup of AWS
3	4-Feb	Open Source Projects	One team will present their review of OpenCV
4	9-Feb	WEB Development	One team will demosntrate developing simple application
4	11-Feb	Introduction to Databases	One team will demosntrate a web application accessing a DB
5	16-Feb	No Class Holiday Monday	
5	18-Feb	Product Quality	
	21-Feb	Hackathon 1	All teams submit their product requiement presentations
6	23-Feb	Sprint 1 presentations	
6	25-Feb	Sprint 1 presentations	

Class Plan

7	1-Mar Buidling a business case
7	3-Mar Business model example
	8-Mar Spring Break
	10-Mar Spring Break
8	15-Mar Sprint 2 presentations
8	17-Mar Sprint 2 presentations
	19-Mar Hackathon 2
9	22-Mar Product Example: WEBRTC Video chat system
9	24-Mar Product Example: Tabeeb.org
10	29-Mar Sprint 3 presentations
10	31-Mar Sprint 3 presentations
	2-Apr Hackathon 4
11	5-Apr Hackathon 5 a
11	7-Apr Hackathon 5 b
12	12-Apr Sprint 4 presentations
12	14-Apr Sprint 4 presentations
	16-Apr Hackathon 5
13	19-Apr Hackathon 2a
13	21-Apr Hackathon 2b
14	26-Apr Final presentations
14	28-Apr Final presentations

What makes a product successful?

What makes a product

- Who is the product for?
- Mission of the product?
- What makes the product special?
- Product Quality?
- Response to demand?
- Keeping customers happy
- $$$ as a business

Exercises to prepare us for the class

1. Cloud Exercise: AWS + Bootstrap
2. Video/Image Exercise: OpenCV Example
3. Data management Exercise: Using mongo DB in apps
4. Data management Exercise: Using mySQL in apps
5. Android app exercise: Example Android app
6. iOS app exercise: Example iOS app
7. Client/Server exercise: use of node.js
8. Testing exercise: Study monkey, AWS app and web application testing. Run an example
9. Accessing public Data: Example service to retrieve images from NASA (https://open.nasa.gov/open-data/)

Lets talk projects for a second?

- Track 1: Satellite Imagery
  - Utilize yearly open royalty free satellite imagery to help farmers analyze their crops
  - Utilize royalty free satellite imagery to track environmental changes, e.g., deforestation, erosion of farmland, erosion of beaches
- Track 2: Kaggle data competitions Predict service faults on Australia's largest telecom network
  - Transforming How We Diagnose Heart Disease
- Track 3: Object recognition
  - Develop a state of the art reliable product using face recognition
  - Products that use video tracking of objects. (ImageNet)
- Track 4:
  - Your own ideas. Please present your concept in the first week of class.

Some basics

- We will use Agile SW development
  - Trello
- We will use GitHub

What are examples of great software products?

What defines a great product?

- Solves a problem
- Invents or Reinvents interactions and workflows (e.g., “streamline existing cumbersome workflows” Nico Bonatsos
- Intuitive to use
- Hides Complexity
- Hides Technology

A great idea or product

- You can explain it in plain English!
- Lets try with examples:
  - What is YouTube?
  - What is Apple Photo?
  - What is DropBox?
  - What is Skype?

One minute for each to introduce him or herself

- Your name
- Your research and technical interests
- Give us one product and why you like it?

Thank You!