CSE 521S Project

Chenyang Lu
Three students per team
- Need permission for a bigger or smaller team.

Perform a **full-stack, system** project
- Develop/integrate **software/hardware**
- Perform **experiments** on real systems
- Write a **paper**
- **Demos**
Minimum Viable Product (MVP)

- Build **full-stack** IoT applications
  - Device
  - Wireless
  - Cloud
  - Analytics

- Leverage cloud services
  - AWS IoT, Alexa, streaming, messaging, analytics…

- Experiment, measure and analyze
Spice Bot: Spice-Blend Automation

- 3D-Printed Prototype
- Voice-Control-Interface
  - Amazon Echo
- Actuator Control
  - Raspberry Pi
- Control Command Interpretation
  - AWS IoT

BY ALEX HERRIOTT, QUOC NGUYEN, RAYMOND JONES
Car Informatics in the Cloud

- Pull real-time OBD data from a car
- Upload to the Cloud and display stats at real-time

BY Ethan Vaughan, Frank Sun, and Adith J. Boloor
Smart Lock

- Remote doorway system
  - Live video
  - Arrival (motion) detection
- Web application
  - Node.JS server on an EC2 instance
  - Live video via ssh tunnel
  - Engage/disengage lock

BY Charles Ahrens Feldman, David Ayeke, and Steven Bosch
Steps

1. Come up with your favorite topic
2. Form a team
3. Proposal: propose a design and plan
4. Analyze and Implement your solution
5. Evaluate your solution
6. Demo 1, 2 and Final Demo
7. Write a technical report
Get Started Early

- Think about topics and ideas
- Talk to TA and me
- Put together a team

- A **lot** of work (and fun) throughout the semester!
Teaming

- Everyone should be in a **three**-member team
  - unless you receive special approval from TA for a different size

- Use **Piazza** to “Search for Teammates”

- Email TA your team members by **9/9**
  - One email per team

- We will help make sure everyone has a team.
Proposal Presentation

- In class on 9/16

- 6 min per group
  - 5-min talk + 1-min Q&A
  - 4 slides
  - Rehearse in advance

- Your elevator pitch!

- Email TA your slides before class
Written Proposal

- One proposal/team, one page
  - Team members
  - Concise description of project
  - Responsibilities of each member
  - Equipment needed

- Written proposal due: 9/16, 11:59pm
Demo I

- In class on 10/5 and 10/7.
- 12 min per team.
- Must show something real.
- Submit a video before class as backup.
Demo II

- In class on 11/2 and 11/4.
- 12 min per team.
- Substantial progress → final demo.
- Submit a video before class as backup.
Final Demo

- In class on **12/7 (1pm - 3:25pm)**.

- 12 min per team.

- Set up and **test** your demo in advance.

- All expected to attend the entire session. It’ll be fun!

- Submit a video before class as backup.
Final Report

- Submit by 12/14/2021, 11:59pm

- Report
  - Style follows conference papers in the reading list
  - 6 pages, double column, 10 pts font
  - Use templates on the class web page

- Materials
  - Web page
  - Slides of your final presentation
  - Source code
  - Documents: README, INSTALL, HOW-TO-RUN
  - Video
Suggested Outline

- Abstract
- Introduction
- Goals and Requirements
- Design
- Implementation
- Experiments
- Related Works
- Lessons Learned
- Conclusion and Future Work
Peer Review

- For fairness in team projects.

- Email me on 12/14/2021
  - Percentage of contributions of each team member.
  - Brief justification.
Logistics

- TA for projects: Hanyang (Eric) Liu
- Email TA or me for appointments to discuss ideas
- All work will be submitted on Canvas