**Senior Design Project I**

**Summer 2014**

**AT&T Champion: Craig Lee**

**UTD Instructor: Andrea Fumagalli**

**Common Agenda with Weekly Tasks and Deliverables**

**Updated 7/2/2014**

**Notes:**

* Unless otherwise specified, meeting times is from 10am to 12:45pm, Wednesday.
* Meetings take place at two locations, as indicated in the weekly table:
  + UTD Classroom is ECSN 2.112.
  + AT&T Site: 2900 W Plano Parkway, Plano.
* This common Agenda will be updated regularly
* Each Team is encouraged to create their own internal Agenda with more and custom tasks/deliverables/details
* For purchase of equipment see online information regarding online stores you must buy from and forms that need to be filled out for approval with the UTD EE Department

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|  | **Task Description/Agenda** | **Deliverables** |
| May 28, UTD Classroom | 1. Course instructions given by Andrea | 1. Form teams, collect Arduino Kit |
| Week#1 May 28-June3 | 1. Define the scope of the project and what proof of concept you are going to produce by the end of SD-I: make sure you use at least two sensors and at least one actuator [optional: consider qualifying for the TI Analog Contest using at least 3 Texas Instruments components] 2. Use the Arduino Kit to run a number of projects (at least two) and familiarize with the sensors/actuators components and the Arduino motherboard. Prepare at least two simple demos that make use of at least 2 sensors and 1 actuator. Make use of the USB interface to report/display actions taken by the board on your PC. [Optional: collect human’s feedback through your PC using a simple user interface to influence operation on the Arduino board] | 1. Set of slides to present your project scope to AT&T 2. Demos to show what you have done with the Arduino Kit |
| June 4, AT&T site | 1. Present demos using the Arduino platform 2. Give short presentation about project vision (ppt slides are encouraged) 3. Exchange contact info as needed 4. Collect feedback from AT&T Advisors 5. Define deliverables for next week, including a more advanced set of demos with the Arduino Kit |  |
| Week#2 June 4-June 10 | 1. Revise and finalize your ppt slides about the project scope, what type of customers you are targeting, what value you product will offer and business plan 2. Identify the technical challenges that will have to be addressed: critical steps, fallback options, timetable to build demonstrator during SD-I 3. Identify the list of missing components that must be ordered and that are needed to achieve your goal 4. Enhance your demos using the Arduino Kit as agreed with AT&T. In this demo(s), you need to show that using your PC (keyboard or mouse) you can instruct the Arduino board to adjust its decision making process when processing the sensors’ input and sending output to the actuator(s). 5. Collect SIM shield car from Rosarita (EE Department) | 1. Final deck of slides presentation about your project scope/vision 2. List of technical challenges/milestones and deadlines for the SD-I semester 3. List of missing components needed in your project 4. Advanced demos with Arduino Kit |
| June 11, AT&T site | 1. Present advanced demos using the Arduino platform 2. Give presentation about final project vision 3. Refine and finalized list of components needed for your project, down to store hyperlink and part number for each required item [stores you can use to buy components are listed online] 4. Define deliverables for next week | 1. AT&T approval of the final proposed project 2. Receive SIM card from AT&T 3. Order list of components identified (use proper UTD form for approval) |
| Week#3 June 11-June 17 | 1. Interface all needed components (sensors and actuators) in your project with Arduino board and ensure correct functionality 2. Interface SIM Shield with Arduino board and ensure correct functionality 3. Interface PC (via USB) with Arduino board and ensure correct bidirectional data flow for all the functionalities required by your project 4. Familiarize with the Breeze platform | 1. Demos of successfully integrated modules (all components you need, SIM Shield and PC) 2. List of unresolved problems 3. Questions as to how to use Breeze and SIM |
| June 18, AT&T | 1. Present all successful integrated demos and discuss points of failures (if any) for troubleshooting at AT&T Foundry 2. AT&T gives tutorial on Breeze and SIM card features |  |
| Week#4 June 18-June 24 |  | 1. [*suggested deliverable to stay ahead of the game*] Demos running with Breeze, with decision making procedures now running with Breeze instead of on the Arduino board |
| June 25, AT&T site |  |  |
| Week#5 June 25-July 1 |  | 1. First fully integrated custom prototype demonstrating **all** the key features of the project |
| July 2, AT&T site | 1. Troubleshooting problems with the Breeze system |  |
| Week#6 July 2-July 8 | 1. Each team needs to identify its own specific deliverables for this week | 1. [*suggested deliverable to stay ahead of the game*] Prototype running with GUI (rough initial version is fine) in the Breeze platform enabling control from smart phone |
| July 9, AT&T site | 1. **Run Demo**: For each sensor that is needed in your envisioned system, you will need to demonstrate that sensor generated data is made available to the cloud via the Arduino board+RF cell connectivity 2. **Run Demo**: For each actuator that is needed in your envisioned system, you will need to demonstrate that the actuator can be controlled from the cloud via the RF cell connectivity+Arduino board |  |
| Week#7 July 9-July 15 | 1. Each team needs to identify its own specific deliverables for this week | 1. [*suggested deliverable to stay ahead of the game*] Beta solution of the entire project, including a fancy GUI and all parts well packaged |
| July 16, AT&T site | 1. **Run Demo**: In this demo, you need to demonstrate that data collected from the sensor is processed in the cloud (via Breeze), which in turn makes well defined decisions to control the actuators (what we call control functions) 2. You need to **define a number of demos**, each demo designed to prove one of the key control functions of your system |  |
| Week#8 July 16-July 22 | 1. Each team needs to identify its own specific deliverables for this week | 1. Final solution of the entire project, including soldered prefboard to integrate all components 2. Do not forget to have your **Project Abstract approved** by July 21 (see online instructions) |
| July 23, AT&T site | 1. **Run Demo** for UI: with this demo you show how the sensor states collected by the cloud are passed onto the user via a smart phone or computer User Interface (UI): the user can also be informed of the decisions made by the system, e.g. tuning a traffic light red 2. **Run Demo** for UI: with this demo you show how the user can (via smart phone or other UI device) affect the decision making process in the cloud, e.g., traffic light cannot stay green for more than 1 minute |  |
| Week#9 July 23-July 29 | 1. Each team needs to identify its own specific deliverables for this week | 1. Final report 2. Project Poster 3. Project Presentation (deck of slides) 4. Single Slide Presentation for Senior Design Day |
| July 30, AT&T site | 1. Practice presentation about the project 2. **Run Demo**: Demonstrate a fully functional integrated systems with all parts connected (Sensor-Arduino board, RF cell communications, cloud, UI) 3. **Run Demo**: Demonstrate each function/feature that your system offers to achieve the envisioned goal/mission – with this demo you need to show that you are accomplishing your specific mission, e.g., avoiding a car crash | 1. **Submit final report** to instructor for grading   (softcopy by e-mail to andreaf@utdallas.edu) |
| Week#10 July 30-Aug. 5 | 1. Complete any final trouble shooting of the entire integrated system and prepare stand demo for the Senior Design Day | 1. Do not forget to have your **Project Poster approved** by July 31 (see online instructions) 2. Do not forget to have your **Single Slide presentation** approved (see online instructions) |
| August 6, AT&T site | 1. **Final presentation to AT&T**: rehearsal of SSD presentation and full demonstration of the entire project |  |
| August 7, UTDallas TI Auditorium, 1:00pm – 4:30pm | **Senior Design Day**   1. Give presentation to Judges and answer their questions standing by your poster |  |