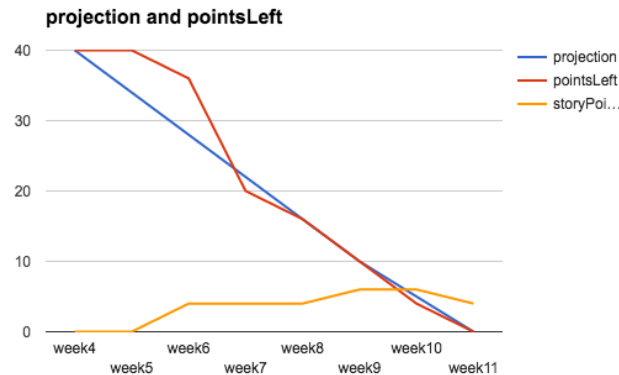


CSC595 Individual Final Project Report- Distracted Driving

- TEAM (PEER EVALUATION)
 - Lew worked on Sound sensor as well as the reward badges. Tracked Project Progress using Agile Methods.
 - Jesse (Zhicong) did a lot of backend work along with the raspberry pi camera. Technically Jesse is unmatched in coding skills.
 - Martin Led the group and developed the motion sensor as well as a lot of the layout for the detail screens. Martin compiled all the slides and was a driving force for the app.
- AGILE DEVELOPMENT
 - Agile development allowed us to shift priorities when things didn't pan out.
 - example: tracking actual speed was unfeasible with our current toolset so we cancelled that path and focused on other stories.
 - examples: our initial specification had social media and maintenance schedule of the car, but eventually we found that those things weren't really a good fit for our app. We didn't waste time developing those and finding out later it wasn't a good fit.
 - We had weekly Conference calls where we updated each other on the work we were all doing as well as our class development time.
 - Application Stories:
 - I want the CoreEngine API to automatically detect events
 - I want to use Face detection to identify when the driver is distracted
 - I want a Beacon to detect when the phone is in the car. This will reduce extraneous driving data.
 - I want the phone to monitor it's orientation. While driving the phone shouldn't be moving or rotating. If so, it could be in use.
 - I want the phone to detect when overly loud music is being played
 - I want to Use google maps API and location to get actual speed limits. (cancelled)
 - I want to see a report of my driving record Percentage and minutes of distracted driving per trip.
 - I want to be able to augment Allstate points with my App
 - I want to share my drives and behavior over a social network (cancelled)
 - I want to be able to see a schedule of needed maintenance for my car (cancelled)
 - VELOCITY/BURNDOWN CHART

APPLICATION STORIES	points	iteration1	iteration2	iteration3	iteration4	iteration5	iteration6	iteration7	
I want the CoreEngine API to automatically detect events	6						6		martin, lew
I want to use Face detection to identify when the driver is distracted	8	need raspberry pi					6		jesse
I want a Beacon to detect when the phone is in the car. This will reduce extraneous driving data.	2	need beacons				2			martin
I want the phone to monitor it's orientation. While driving the phone shouldn't be moving or rotating. If so, it could be in use.	2				2				martin
I want the phone to detect when overly loud music is being played	2				2				lew
I want to Use google maps API and location to get actual speed limits.	8				REMOVED				
I want to see a report of my driving record Percentage and minutes of distracted driving per trip.	4					4			martin
I want to be able to augment Allstate points with my App	4					BADGES instead		4	lew, jesse
I want to share my drives and behavior over a social network	2	bonus items				REMOVED			
I want to be able to see a schedule of needed maintenance for my car	2					REMOVED			



• Distracted Driving Application SUMMARY

- Our app works in the background using sensors to trigger and monitor events of distracted driving.
- The goal of our app is to monitor things in the background, as well as providing you with data in order to modify your driving behavior
- Infrastructure/Sensors:
 - IOS Based on Iphone
 - Cocoa pods FMDB Database to store data
 - ALLSTATE Core Engine Framework- registers driving events
 - GIMBAL Framework to sense the gimbal device to check if the driver is in the driver's seat driving the car.
 - Iphone Microphone to detect sound
 - Raspberry pi plus camera to capture video information
- SCREENS
 - DASHBOARD- starting point of the app. More for diagnostics and feedback during an actual drive.
 - pulls in sensor data at the start of a drive
 - changes from green to red on a distracted driving behavior trigger and marks it in a database
 - DRIVE DETAILS- shows a Table View with a list of all the drives
 - A tableview showing a list of drives by date
 - DRIVE DETAILS- These charts show a percentage of how well your drive went.
 - draws a chart of the driver's behavior
 - CONFIGURATION SCREEN- allows us to change the variables used in our app.
 - BADGES- rewards for perfect and almost perfect drives.

OVERALL ACCOMPLISHMENTS AND CONTRIBUTIONS

- Accomplishments:
 - wove different sensors into a coherent and nice application for ios
 - learned to work with one another in spite of hectic and sporadic schedules
 - learned to adjust to different requirements and changes going on
 - integrated Allstate CoreEngine.framework into our app.
- Contributions
 - Thought of using Martin's sensor app as a basis for our Application interface. Each sensor provides data to a dashboard, and the dashboard gives positive or negative feedback
 - Worked on the sound portion of the app
 - Worked on badges of the app
 - Gave design suggestions based on the strengths and capabilities of the team.
 - Managed Project using Agile Methods.

KEY DEFICIENCIES OF COMPONENTS AND HOW THEY CAN BE IMPROVED

- we were not able to get exact speed calculation from the Allstate CoreEngine Framework: suggest that they make a two tier system for detecting local speed overage, and highway speed overage.
- the camera doesn't work great in night driving...perhaps we had the wrong model.
- the raspberry pi doesn't currently have enough processing power or perhaps not the right framework to precisely detect face at a high resolution or high refresh rate
- gimbal location detection probably needs customized setup for each car as well as tuning the app...1 gimbal is probably enough
- built-in iphone sound analysis only measures volume, perhaps some framework takes the audio and analyzes it
- motion detection needs some fine tuning in terms of algorithms and measuring
- some functions may not be working properly in the background. Limitation of ios implementation of multitasking

DISCUSS THE LESSONS YOU HAVE LEARNED

- Learned how to integrate different Sensors and utilize the sensor data on an iphone
- It's hard when you miss a communication session. it's like you lose a whole cycle of development when that happens.
- There are a number of limits in ios development, since it is not an open platform. You only get what apple wants you to get.

SCREENSHOTS

