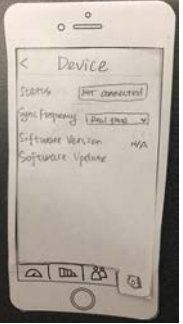
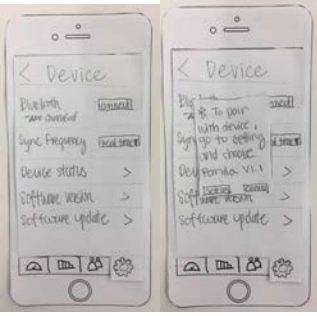








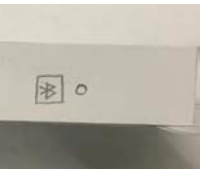



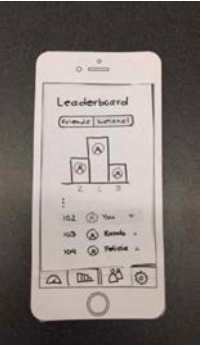



Heuristic Evaluation Issues & Revisions

Image	Issue	Severity	Revision	Revision Image
	<p>Not clear on how to connect bluetooth. There is no button allowing a user to connect their device on the device settings screen.</p> <p>Heuristics: Consistency and standards Help and documentation</p>	<p>2</p>	<p>The mobile app will automatically detect if no device has been paired. Following standard Apple procedure, it prompts the user to go to their iPhone settings to pair the device.</p>	
	<p>No back button or way to dismiss the user profile page. User must click on a bottom tab to leave view.</p> <p>Heuristic: User control and freedom</p>	<p>0-1</p>	<p>Added an Apple style back button to the Leaderboard.</p>	
	<p>No visual cues for scrolling on the statistics tab.</p> <p>Heuristics: Recognition rather than recall Consistency and standards</p>	<p>1-2</p>	<p>Added a scrollbar to the bottom of the screen that appears if the user interacts with the graph.</p>	

Heuristic Evaluation Issues & Revisions

Image	Issue	Severity	Revision	Revision Image
	<p>Derivation of safety score on Dashboard page is not obvious.</p> <p>Heuristic: Help and documentation</p>	3	<p>Added an annotation ("SAFETY SCORE") under the number.</p> <p>A pop-up appears when user clicks on the information icon, which explains how the score is calculated.</p>	
	<p>Friends and National tabs on the user profile page are unnecessary.</p> <p>Heuristic: Aesthetic and minimalist design</p>	1	<p>Removed the Friends and National tab from this screen and updated page to show more relevant information.</p>	
	<p>Bluetooth on device seems like a button rather than an indicator of connection.</p> <p>Heuristic: Aesthetic and minimalist design Consistency and standards</p>	1	<p>Removed the square around the Bluetooth symbol.</p>	

Heuristic Evaluation Issues & Revisions

Image	Issue	Severity	Revision	Revision Image
	<p>No option to delete friend</p> <p>Heuristic: Consistency and standards</p>	<p>2</p>	<p>Added remove friend button in personal profile page.</p>	
	<p>Week view is not consistent with the graph.</p> <p>Heuristic: Consistency and Standards</p>	<p>2</p>	<p>Added a day view of the data in the statistics.</p>	

Usability Test

Our first participant is a male student in the CSE lab. We chose this environment because there are many students in the CSE labs, and it was relatively easy to find our target user. We chose this participant because he is a potential user of our product; he is an inexperienced driver and is currently looking to purchase his first car. We conducted our test in an isolated room to avoid distractions and miscommunication. We explained to him that he is performing the tasks in his car to simulate a real-life situation. Novin filled the role of computer, JR and Melissa played the part of note takers/observers, and Clarissa served as the administrator.

We had our participant complete **two tasks**:

Set up hardware and mobile app:


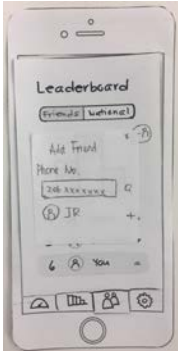

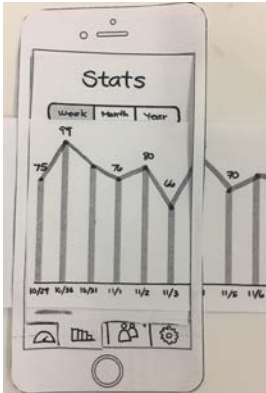


- Place the device on the dashboard of a car
- Pair hardware with phone app using Bluetooth
- Adjust alert settings, volume settings
- Update privacy for tracking settings

Check driving statistics (*assuming device has been used for 2 weeks*):

- Understand how you have been driving today and in the past week
 - Overall score
 - Trends
- Compare Driving Safety Scores within contacts (friends)
- Compare self to national scores
- Add and delete a friend

We learned from this process that we should be more organized with our paper prototype usability testing. We might assign two people to be administrator and layout paper prototypes based on the tasks sequences. We also learned that wording of questions might affect testing results. Questions and task instructions might give hints to user and might not effectively reflect the usability of our product. We also want to give more time to the participant to look at the device and explain that the ears of the panda device are speakers.

Usability Test Issues & Revisions

Image	Issue	Severity	Change	Fixed Image
	<p>Does not support adding new friends.</p> <p>Heuristic: User Control and Freedom</p>	2	<p>Added an "Add Friend" button in the leaderboard tab. A pop up window will show up and the user can search and add friends through their registered phone number.</p>	
	<p>The day view does not make sense as it shows the data for a whole week.</p> <p>Heuristic: Consistency and Standards</p>	2	<p>Changed back to the tabs we used to have: week, month, and year.</p>	
	<p>Not enough information about the different sections represented in the pie chart.</p> <p>Heuristic: Help and Documentation</p>	1	<p>Added views that provide details on various sections of chart. For example, with the "Focused" detail view, users will see the time spent focused on the road and the time spent checking side/rearview mirrors. In another example, in the "Texting" detail view, users will see the number of texts sent and received as well as time spent on this activity.</p>	

Current Paper Prototype | OVERVIEW



Current Paper Prototype | TASK 1: VISUALIZING AND PROCESSING DRIVING BEHAVIOR

The following hardware prototypes allow users to track driving behavior.



(Figure 1.1) Hardware overview. Kinect-like trackers are located in the eyes of a user-friendly panda.



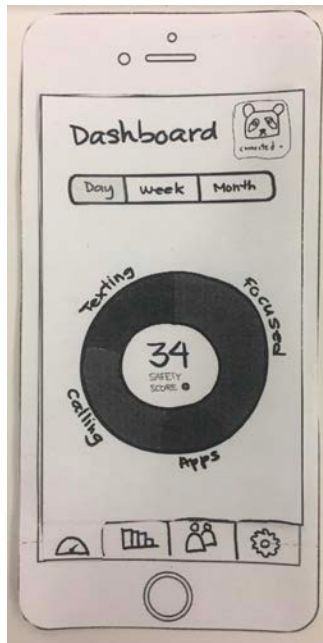
(Figure 1.2) Top: overview. Middle: Hardware switched off. Bluetooth indicator shows that mobile app is not paired.



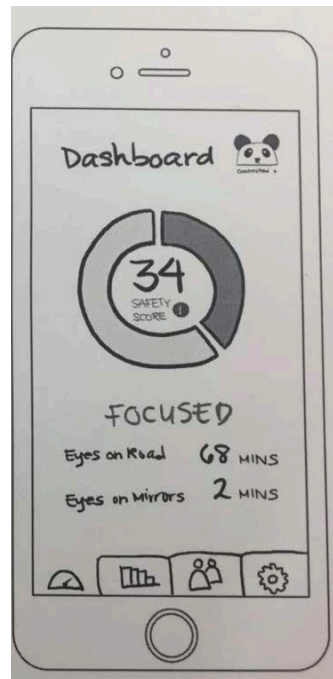
(Figure 1.3) Side view with volume controls.

Current Paper Prototype | TASK 1 (CONT.)

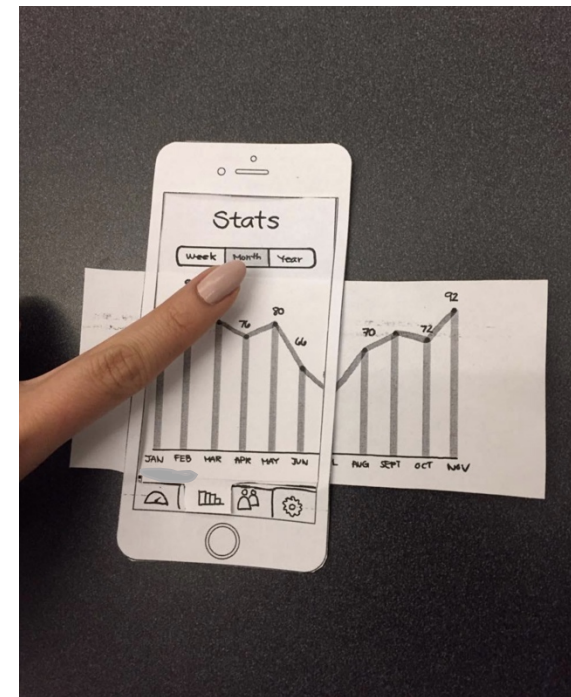
The following mobile app screens demonstrate overall data and statistics on overall driving safety.



(Figure 1.4) Homepage of recent driving activity, categorized. Center number represents driver's Safety Score.



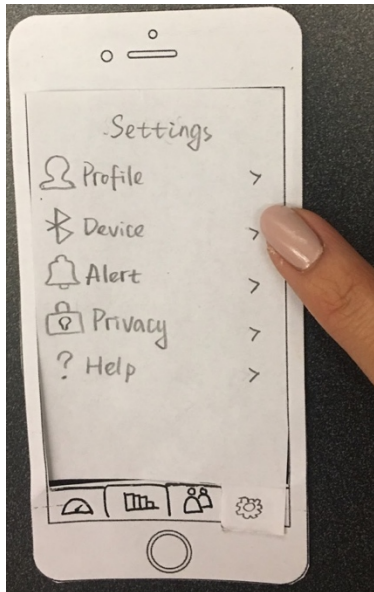
(Figure 1.5) Detail view when user clicks on a category.



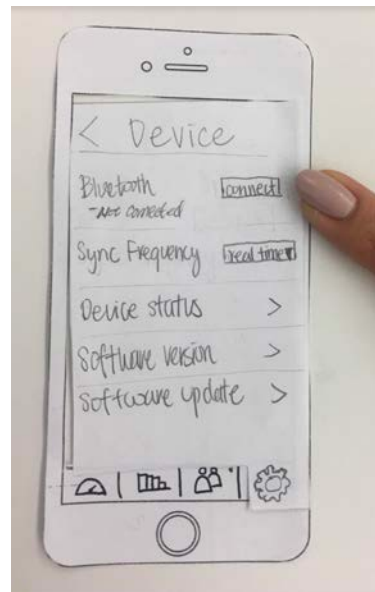
(Figure 1.6) Month view of safety scores with side scroll.

Current Paper Prototype | TASK 1 (CONT.)

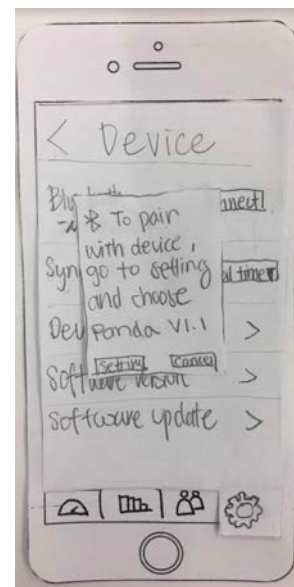
The following mobile app screens demonstrate settings for pairing hardware.



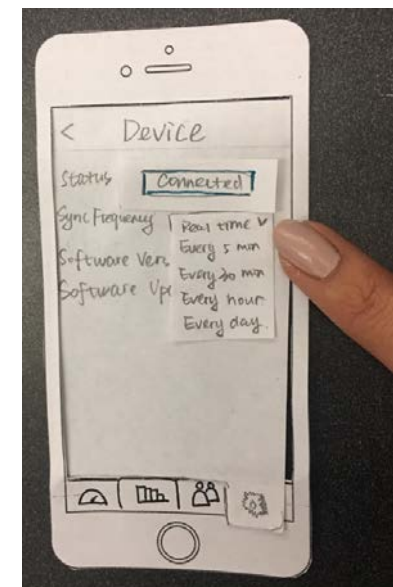
(Figure 1.7) Selecting "Device" takes user to hardware device settings.



(Figure 1.8) Default settings. Connecting device to Bluetooth leads to next pop-up.



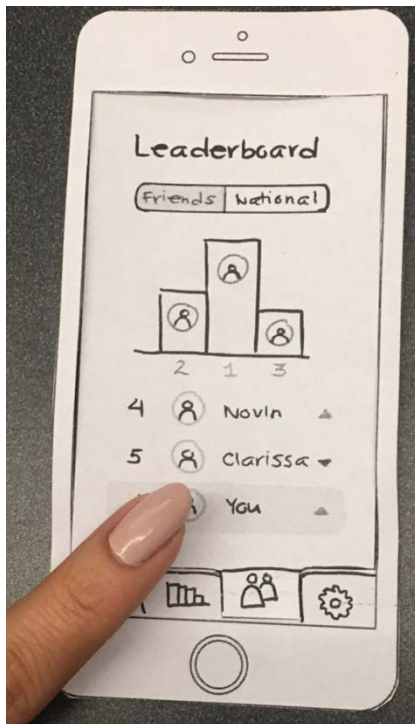
(Figure 1.9) Pop-up that takes user to iPhone Bluetooth settings



(Figure 1.10) Users can select sync frequency, which determines how quickly data is sent to the mobile app.

Current Paper Prototype | TASK 2: SHARING AND COMPARING DRIVING HABITS

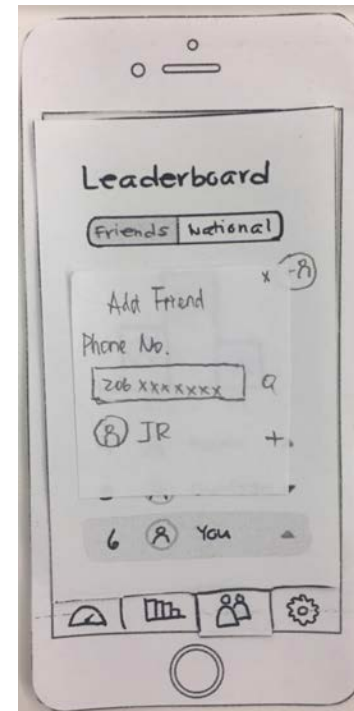
The following mobile app screens display the Driving Safety Score leaderboard.



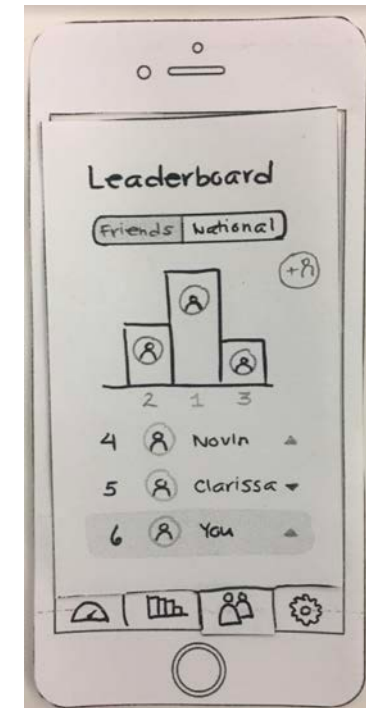
(Figure 2.1) Friend view of leaderboard. User can select a user to be directed to their profile.



(Figure 2.2) Result of clicking on a user's profile.



(Figure 2.3) Users can add friends by phone number.



(Figure 2.4) National view of the leaderboard.

Usability Tests | PLANS

Target Participants

We aim to conduct our next tests with an experienced driver and a professional driver (e.g. Uber driver).

Goals For Additional Tests

After our first iteration of usability tests, we are interested to see if our revisions are acceptable. We will be conducting additional tests for adding friends, viewing driving details via the pie chart, and controlling hardware settings (e.g. volume). If users believe that onscreen tutorials would be helpful with the product, we will update our design to include introduction screens. Our goal is for our user to understand the entire tool with minimal prompting and explanation.

Team Member Roles

Clarissa – Administrator

Melissa – Note taker and observer

Novin – Computer

Jiarui – Note taker and observer

Approaches

We will try to see if using the app in a more authentic environment, such as a stationary vehicle, will reveal any more issues with our product. As mentioned, we will be careful to word questions and task instructions in a way such that we do not reveal too much information on how the user is expected to interact with our product. Finally, we want to provide sufficient time for our participants to go through each possible interaction with both the panda device and mobile application.