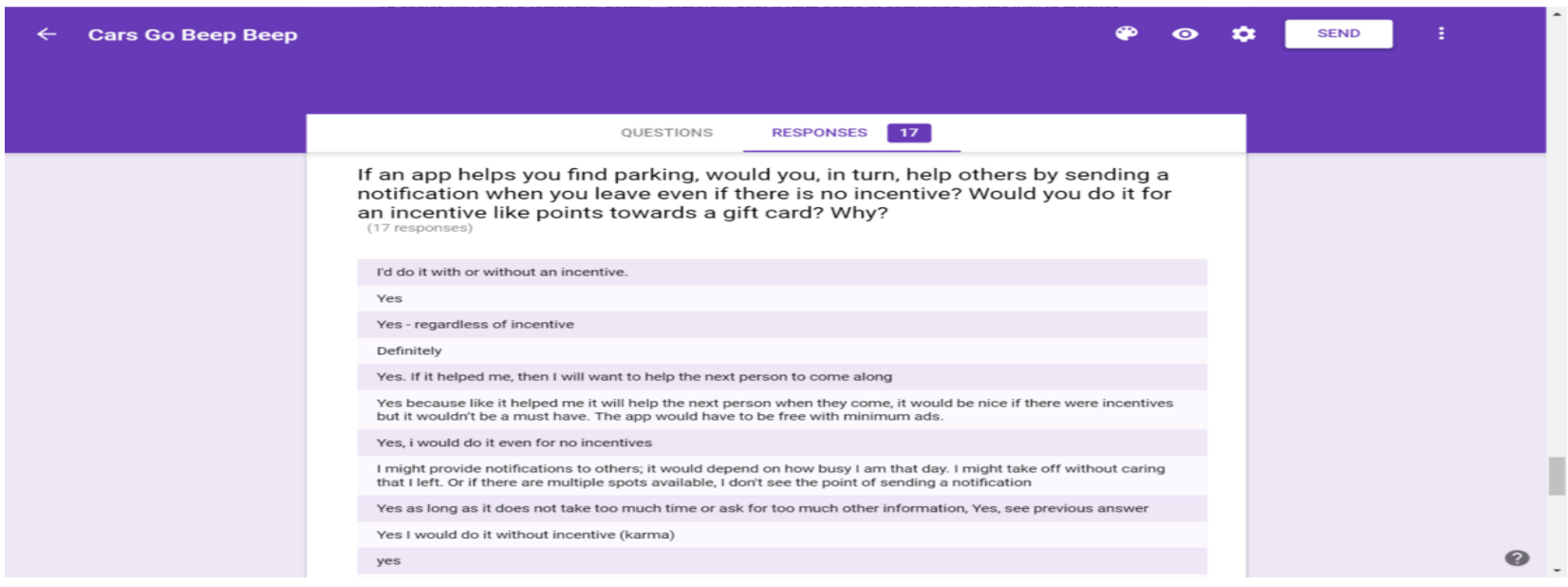
During the first week of summer course Cogs 187A the class was divided into groups of 5-6 people. The goal of the course was to identify a problem that during the 5 weeks our team could collaboratively solve. Hence we proceeded with an idea to create a mobile app to solve the problem of parking situation at UCSD. The aim was to allow students, faculty, and staff to be able to search open parking spots throughout the campus.

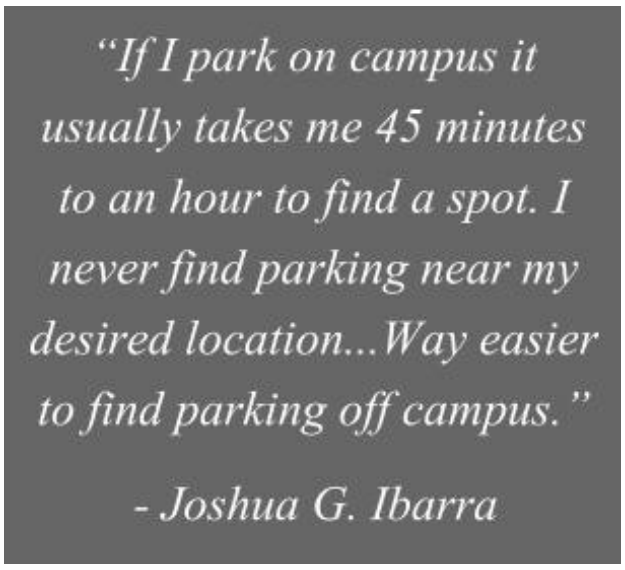
During the first week we created different Logo options to select from, and My Logo was voted to be implemented into the mobile app. Our team of 6 students had collectively decided to call our team *BEEP*.

During week two the task was to identify user needs. We created a survey with self-reported

questionnaires and each team member interviewed 3 potential users. Prior to the interview process, we identified 6 persona types: *Student, Faculty, Staff, Disabled, Visitor, Motorcycle* driver.



After obtaining the data and analyzing the needfinding research of our target market, we developed a set of personas and storyboards to illustrate the data. The process of transforming this information into distinct personas and storyboards helped us to identify the various differences and commonalities among potential users. This activity covered the various demographics, behaviors, needs, and goals of people who were interested in the idea of using an application to help meeting their parking demands.



The analysis of the data began with a review of the interviews. We discussed all of the concerns, as well as, features people would like to have in the parking application. Needs interviewees mentioned consisted of the following: (1) they wanted an app that's simple and easy to use; (2) to monitor occupancy of the lots; (3) to purchase temporary parking permits and load funds to their account remotely; (4) to view on the map where their car is currently parked; (5) to monitor specific parking locations, such as *Hopkins, Athena, Gilman, Regents, Equality & Voigt, East Campus 1* that they frequent; (6) to include visual indicators with distinct colors representing A, B, S, V, etc. parking areas. Our team then discussed the various features interviewees requested. We used the MoSCoW prioritization method (must haves, should haves, could haves, and won't haves) to decide on necessary attributes our application should have in order to be successful by satisfying various persona types.

Generating Personas

We evaluated the information obtained from interviewees, then categorized them into six different persona types: *Student, Faculty, Staff, Disabled, Motorcyclist,* and *Visitor,* and listed the *needs, behaviors, and demographics* of each group.

Three of the six team-members employed methods for introducing the personas and storyboards inspired by the logic of interaction-designer Bill Verpland. By scathing out three different scenarios per persona, our team illustrated key points interviewees were most concerned about. Storyboard ScenariosTo engage discussions that would spur ideas we created storyboards. Our goal was to explore ideas rather then merely focus on final results. To enhance visual communication, three of our team members hand-sketched the storyboards following the philosophy of drawing instructor Mark Baskinger. While other three group members used a newer form of technology, PIXTON, which enabled us creating digital storyboards. Both of these methods gave us the ability to transmit intangible ideas into palpable representations. We created three scenarios per persona illustrating how the BEEP application will solve the goal, keeping the human-app interaction and navigation facets in mind. In the storyboards we particularized the different backgrounds of the six personas representing selected categories of users. Furthermore

we integrated various scenarios of problems that BEEP application will potentially resolve. For example, finding available parking at destinations of choice, purchasing temporary parking permits, notifying closeby drivers about open parking spots, etc.

PROTOTYPES	COMMENTS	SUGGESTIONS
	▸ Unclear on what the value of a subscription was ▸ Consolidating the "I found parking" page with the subscription page ▸ unsure if this was the first screen	▸ to have 3 states: Looking/Found/Leaving ▸ sign in/ ▸ or ▸ sign out, 2) use as guest, 3) sign in with Facebook ▸ user testing ▸ choose the right color scheme/video for the application: https://github.com/movielala/VideoSplashKit ▸ design the system architecture in details before start coding it. ▸ find ways to minimize the amount of time they have to spend looking at their phone

There were 5–8 users simultaneously testing several different tasks on the prototypes displayed. Besides, the usability test also incorporated structured scenarios such as reserving searching for parking spot in preferred buildings and filtering out *S* and *V* parting lots. This allowed our team to evaluate if the app is usable in a real-life framework. Users suggested to discover ways to incentivize users to answer surveys, to include more data on the X,Y axis on graph, to incorporate a filter system which helps locating “closest available parking spots to the ultimate destination”. Users also advised integrating a background video, potentially from https://github.com/movielala/VideoSplashKit source. Withal, to decrease the number of questions and apply meter instead of stars in the survey. In the meantime, we heard approval from users on aspects that worked well in our prototype. Explicitly: the option to filter parking lot search to specifically S or S/V combination, the ability to reserve a spot with a single click on the icon, the projected statistics of reliability, the ability to review closely restaurant/cafeteria, the ability to store in memory the car’s current location, the ability to purchase permits remotely.

After attaining the information we provided with feedback to the prototypes presented by Rising Edge team. Following, a self-report survey was distributed for each team to complete and provide with even more detailed suggestions and critique. From the survey we discovered more qualitative data, specifically that: to have 3 states looking, found, leaving to select from on the front page, to add parking lot for each floor of garage, and to consolidate the *found parking* page with the *subscription* page. With such a broad spectrum of usability testing by various users we were able to bring forefront the current problems associated with initial prototypes, and acquire actionable design recommendations (Rosenzweig, 2015, p.153).

Part 2: Design decisions, based on heuristics and user feedback

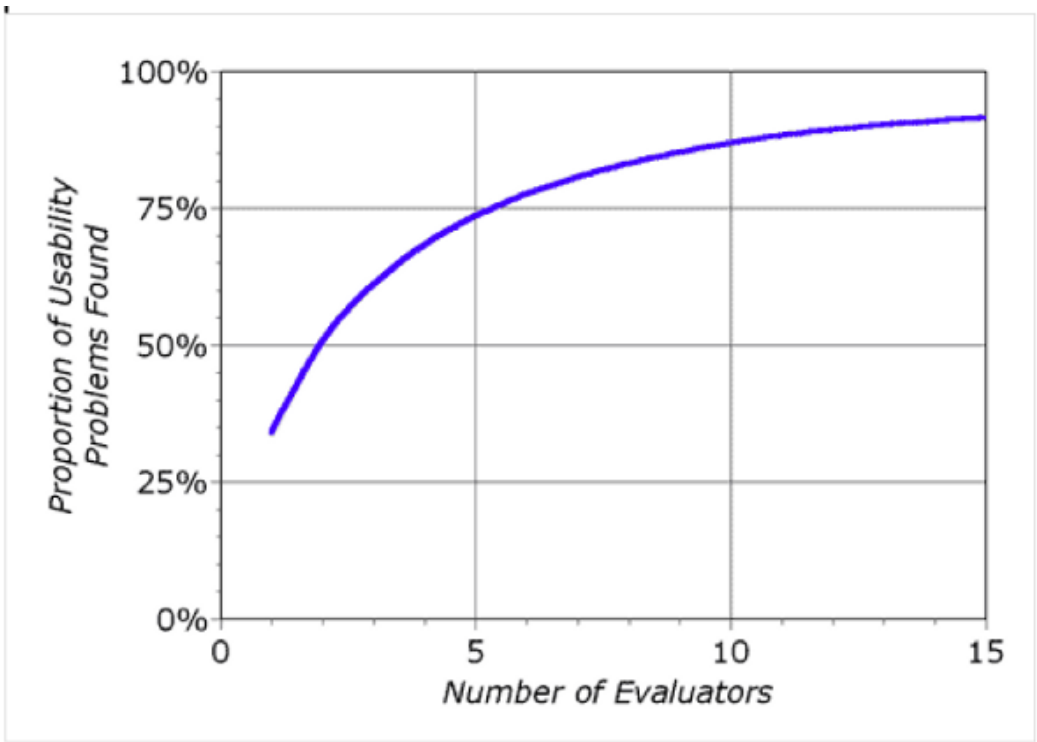


Fig. 1 The curve represents the average of six case studies of heuristic evaluation.

Following the logic of Jacob Nielsen, we used 6 evaluators to conduct the heuristic evaluation. We held a Google Hangout Video conference, and our team systematically went through the prototype interfaces initially solo, then as a group, while examining the myriad of features and comparing them to the 10 *Usability Heuristics for User Interface Design* by Jacob Nielsen. This process allowed independent and unbiased evaluations of the interface by each team member. Some evaluators verbalized their findings, while others had written reports. We obtained substantially better evaluations by aggregating data from different evaluators in our team which helped in making design decisions (Nielsen, 1995).


Landing
BEEP
Finding parking is a pain,
use BEEP to relieve the strain.
Find Parking
Leaving Lot