MOBILE PARKING APPLICATION

FOR

UNIVERSITY OF FLORIDA

Project #2: Wireframing

Course: CIS6930 User Experience Design

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1. Introduction

The Gator Community is facing a crucial problem of parking their vehicles on campus at the University of Florida. Students find the parking rules confounding and are often late for their classes or meetings as they cannot find appropriate available parking spaces. There are currently no solutions to solve this problem. But, the advancement of technology has led to a novel solution to this problem. Our design team, in this document, will present a design solution (wireframes) for a parking mobile application that will allow users to park their vehicles in the most simplistic and efficient manner albeit the various intricacies of the parking rules on campus which has been concluded from an intricate UX Design Process.

2. Process

2.1 User Research

The process began with the user research part so that we can collect information on the user needs and identify the target users for our application. We conducted two focus groups that included four and three people respectively and a pilot study consisting of two students. We also interviewed 15 students on campus to analyze what they really want and what is the current ground situation

2.1.1 Focus Groups

The team conducted two focus groups and a pilot study comprising a total of 9 participants. The idea was to incorporate different users from the eclectic diversity of students present at UF. The facilitator asked the members to share their bad experiences, their expectations and both open ended and closed ended questions. The participants even explained situations to the team by drawing layouts, such as the one shown in Fig. 1.

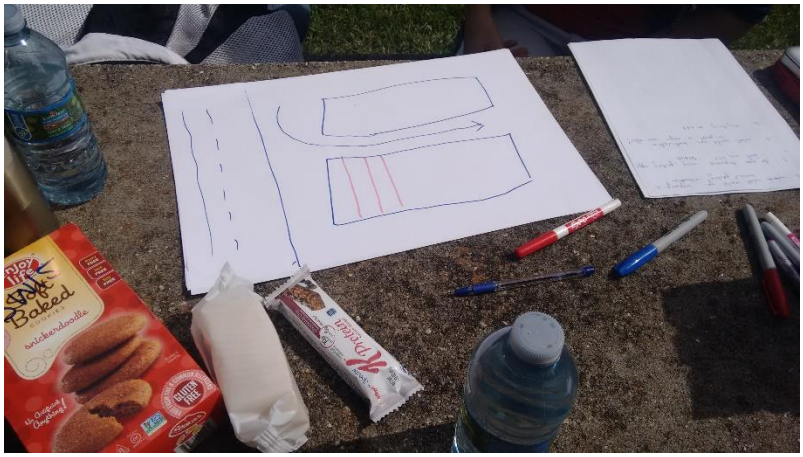


Fig 1. The participant drawing a parking situation (no visible decals) in the pilot study

2.1.2 Interviews

The team interviewed fifteen different students currently enrolled in University of Florida and asked them to fill a questionnaire, which contained general demographical information (analysis as shown in Fig. 2, 3), and also their experiences and expectations.

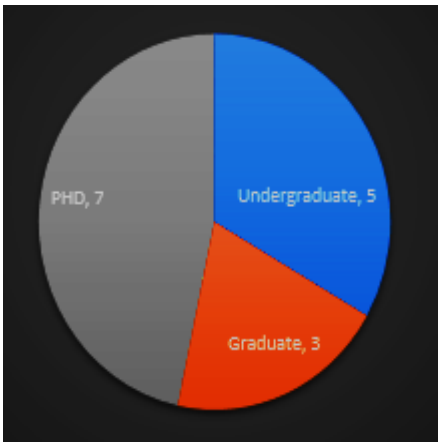


Fig 2. Student Type

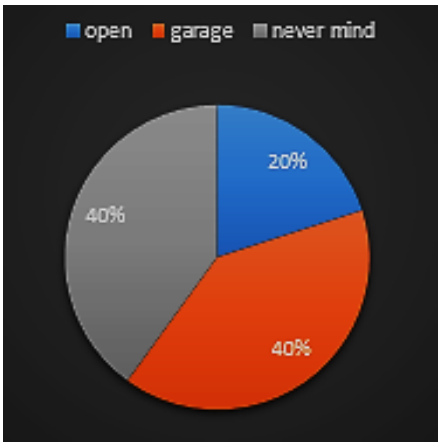


Fig 3. Parking Preference

2.1.3 Analysis of User Research

Based on the focus groups and the interviews, the team identified the potential target users of the parking application. They include all the students who drive to University of Florida and park on campus constituting four categories:-

- Enrolled students (such as Undergraduates, Graduates, Certificate Program Students, Ph.D. Students)
- Familiarity with Campus (such as International students, Freshmen, Cognizant student)
- Special cases (such as Disabled students, Special assistance and Reserved cases)
- Periodicity (such as Regular students, Irregular students and those who attend Special events)

The team concluded from the user research that the potential users need the following:-

- A live map of all the available parking spots on campus at that particular time.
- To park closest to where they have a class or meeting.
- The information of decals on the map.
- To park easily without understanding the terminology, but legally.
- To avail the free parking opportunities.
- To know about the special events.
- Those who are new to campus want to know where they parked there vehicles.
- To get reminders in case of metered parking.
- To reserve existing slots.
- Users who require special attention want to know where the reserved parking spots for disabled are.
- To know more about the nearest bus stops from where they parked.

2.2 Design Process

2.2.1 Brainstorming

The feedback from the focus group and interviews were analyzed and compiled together and are categorized as shown in Fig. 4. The green stickers represents the user thoughts, needs and preferences. These green ones with similar ideas were merged together to form a yellow sticker which represents the summary of the group, which were further merged at a higher blue level to represent the bigger picture of user needs and thoughts collected from focus groups. The highest level had four main categories:

- Reminder related problems
- Preference related issues
- Live parking lot status
- Saving money on parking

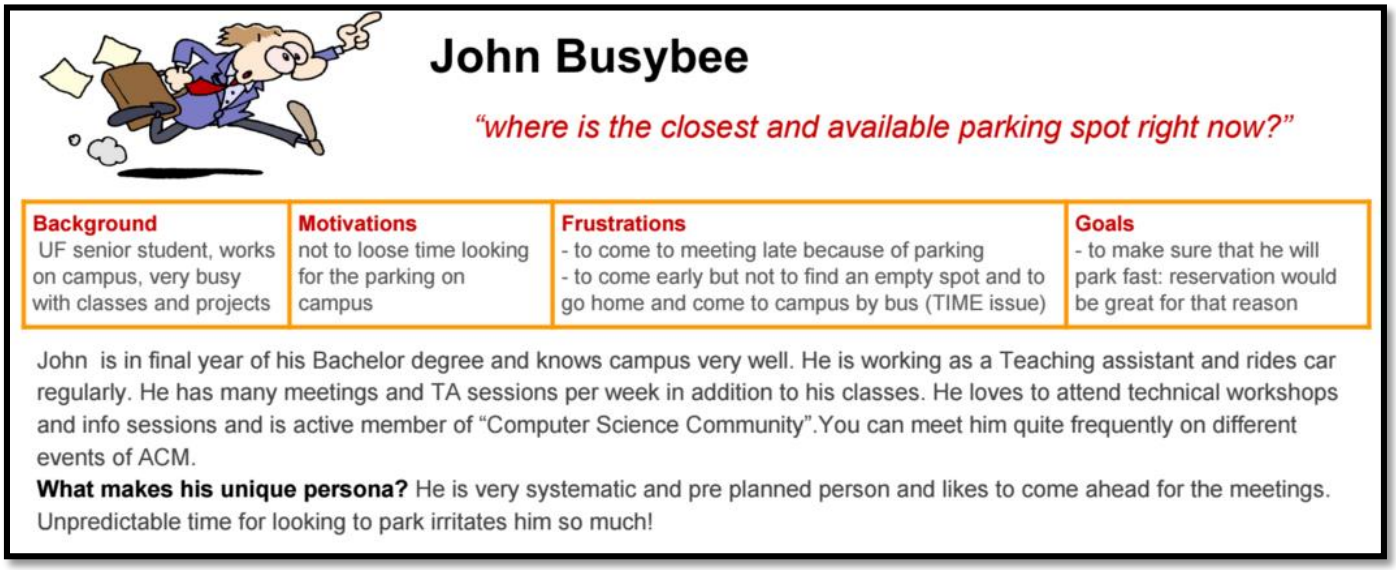
Fig. 4 Affinity Diagram

The pink ones represent solutions to the most relevant problems faced by users, after an intensive brainstorming session by the team. The features on the application were thought such that it covered all the major issues that were pointed by majority of users. These include live status in the various parking lots, alerts to solve the reminder related problems, setting up preferences so that the App will identify the ideal spot for the user by default, and an option to search for free parking spots. In addition, the user can also search for parking spots based on decals, ask for special assistance spots and also reserve spots in specific parking lots for a small amount that would be deducted from their account directly.

2.2.2 Personas, Scenarios and Storyboards

Based on brainstorming by the team, after the focus group and interviews, personas were identified. The scenarios and storyboards were considered such that each of the user persona's possible real life situations would be covered. These span the entire range of personas considered and the various functionalities of the App.

1. "Busy Bee"

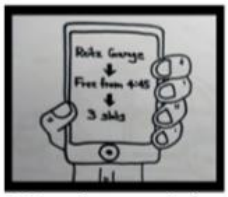


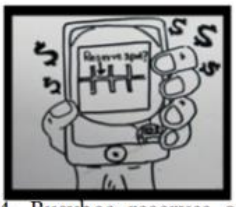
Scenario: Live Map - Busy Bee has a very busy day and doesn't want to be late for any of the appointments. He knows that searching for parking might take a long time on certain days and wants to ensure that he doesn't lose time on it. He opens the App., he enters the destination, selects a parking lot and reserves it for a small cost. The money is deducted from his account automatically. He drives to his reserved spot, parks and reaches on time to all his appointments.

Storyboard

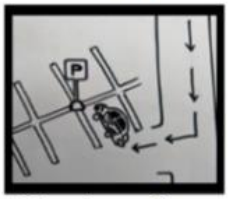

1. Busybee has a meeting in 40 minutes


2. Busybee inputs destination to App


3. Busybee gets info about available options


4. Busybee reserves one spot for 20 minutes to make sure not to spend too much time looking for a available spot (App reserves the spot for 15 minutes for free and if longer reservation is necessary, Juhi Busybee should pay for it)


5. Busybee drives to reserved spot


6. Busybee parks at a reserved spot


7. Busybee in time at the meeting! Great!

2. “Mr. Free Stuff”

Ricardo Freestuff

“I want to park on campus without any expenses”

“Seriously?! I did not know that I can park here for free...”

Background	Motivations	Frustrations	Goals
UF student, knows campus very well, do not work on campus (or work occasionally)	to park for free on campus	- to get ticket; - to spend money for parking not for party	- to get to know all the free opportunities to park around; - to get notifications what is going on around today

New Graduate student recently graduated from UF with Bachelor degree, who knows campus very well. He is usually driving, but sometimes riding a bike or taking a bus. He is very sociable and quite extroverted, sometimes too noisy. He loves free stuff and going to any “Free Pizza” events around the campus. You can meet him quite frequently on different events in different UF clubs. He does not have any favorite places to park on campus, quite flexible and does not mind to use a new sport (if they are free). **What makes him unique persona?** He is managing too many things in his mind at the same time. He wants to take all the advantages from the life with minimal expenses and wants to know everything what is going on around him. He wants to park on campus, but his preference is free parking spot.

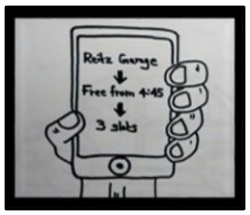
Scenario: Opportunities

Mr. FreeStuff is planning to go to a social event, which will start at 4:30pm at Reitz Union because there is free pizza. But he is worried about having to pay a lot for parking at Reitz union. At 4:15 he opens the parking app and checks for free parking spots. It shows him the free parking availabilities all over the campus. He sees that he will get free parking from 4:45 at Reitz. So, he decides to wait until 4:45 and then he parks at Reitz Union for free. He is having fun and loses track of time. Suddenly his alarm rings reminding him that his free parking time is over. He finds a new free spot to park through the app and returns to the event to eat more free pizza.

Storyboard

1. Mr FreeStuff wants to go the Indian festival but doesnt want to waste money on parking

2. He opens the parking app and searches for free parking



3. The app shows him the available free parking options

4. He drives to the free parking spot and parks his car there

5. He reaches the Indian festival happy that he saved money

6. He is having fun. His phone alarm rings to remind him that his free parking is over

7. He searches and finds a new free parking spot nearby

8. He drives and parks at the new spot

9. He returns back to the party having saved money and ready to eat pizza

3. “Mr. New Gator”

Ann Newgator

“oh, how to memorize all those decal rules and not to get confused? I just want to go to class - that is all”

Background	Motivations	Frustrations	Goals
International freshman at UF	just to get the class, but not to study more rules	- is it legal to park here for my decal pass - do not want to get a ticket again	Park casually without knowing the rules

Ann is a new international student at UF. She drives a brand new car. She still not know well campus and prefers to park as close to her department as possible. She has no idea about different parking locations on campus. Her parents bought for her decal pass for the year, but Ann did not figured out where exactly she can park and which color of decal matches her year pass. The big issue for her to get from one class to another, because they are located in different departments this semester making the situation even more complicated. On the other hand, she is not willing to devote her time to understand how the parking system at University works.

What makes her unique persona? Being international she is still not aware well about driving rules in US, but things are becoming more complicated when decal rules appear also. She does not want to waste her time figuring out which is appropriate parking spot for her, because she has a lot of homework assignments already.

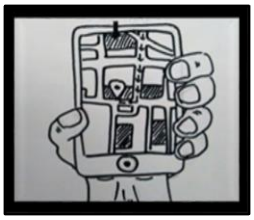
Scenario: Incognizant

NewGator is new to campus and has no idea about any rules. He wants to park his car at a legal place. He has seen the different colored decals but has no idea about what they mean. He has heard from his classmate about the parking app and so he downloads and opens it. He sees the different decal colored parking spots available. He filters it based on his preferred decal and selects one of the parking lots from the list. The app shows him the route to the parking lot and he drives and parks there with ease.

Storyboard

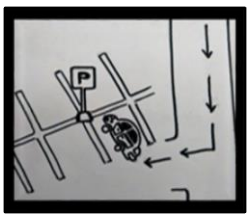
1. NewGator is new in town and has no idea about anything

2. He drives to class but doesnt know where to park. He has heard about the parking app.



3. He opens the app and sees decal based parking spots. He selects a parking lot. It shows him the route.

4. He follows the navigation and drives to the parking lot



5. He parks the car in the parking spot

6. His parking problems are over due to the app. Not new to parking in campus anymore

3. Design Solution

3.1 Conceptual Model

The Conceptual model of the UF Parking App looks like a Spiral in order to satisfy the idea about keeping the parking situation information updated in a real time. The mushrooming of spiral happens due to the user reaching their final destination. The change is less likely in a shorter period of time. Since the application is keeping a check on whether the parking spot is still optimal/acceptable (according to user's data and user's preferences) in real time, the route is calculated recursively and dynamically. On the Fig. 5 the visual interpretation of conceptual model is presented, where:-

- t_1 - the initial stage of using the application
- t_2, t_n – the current stages in time, where the application recalculates the chosen parking spot to make sure it is still optimal for the user
- t_d - the termination time (parking at parking spot).

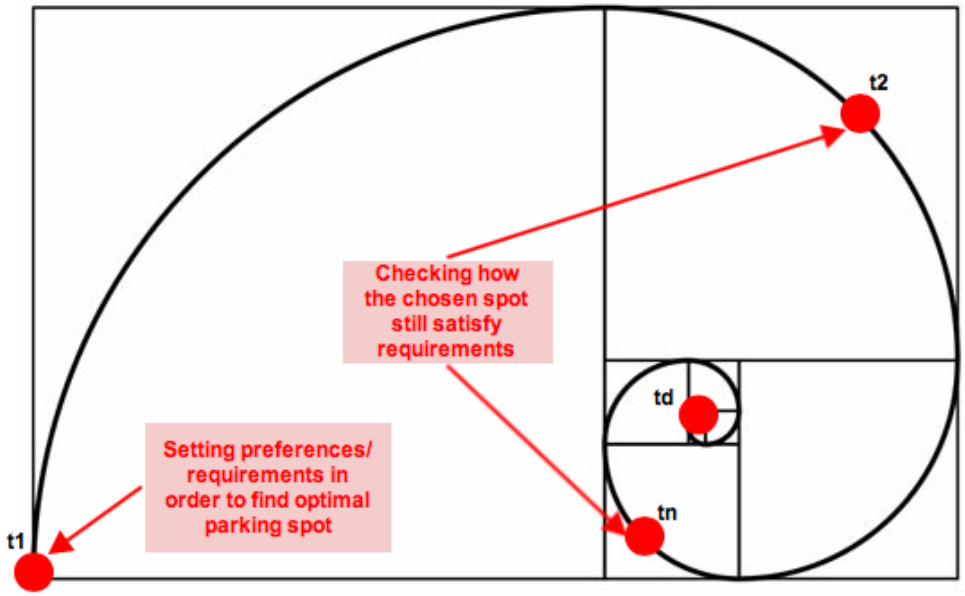


Fig 5. Conceptual Model of the Mobile Application

3.2 Task flow

The system as shown in Fig. 6 provides the following functions:-

- Log in
  - Sign up. During signing up, users provide data (decal information and disability information) and his preferences (e.g. free parking)
- to find optimal parking spot for the user according to:-
  - destination (user specified for a particular request)
  - expected parking time (user specified for a particular request)

- user data (whether he has a decal or not, disability information)
- user preferences (special assistance, free, garage or open parking)
- schedule of decal parking and free parking opportunities
- information about events on campus

- to show for the user route to the chosen spot
- to change user's data and preferences

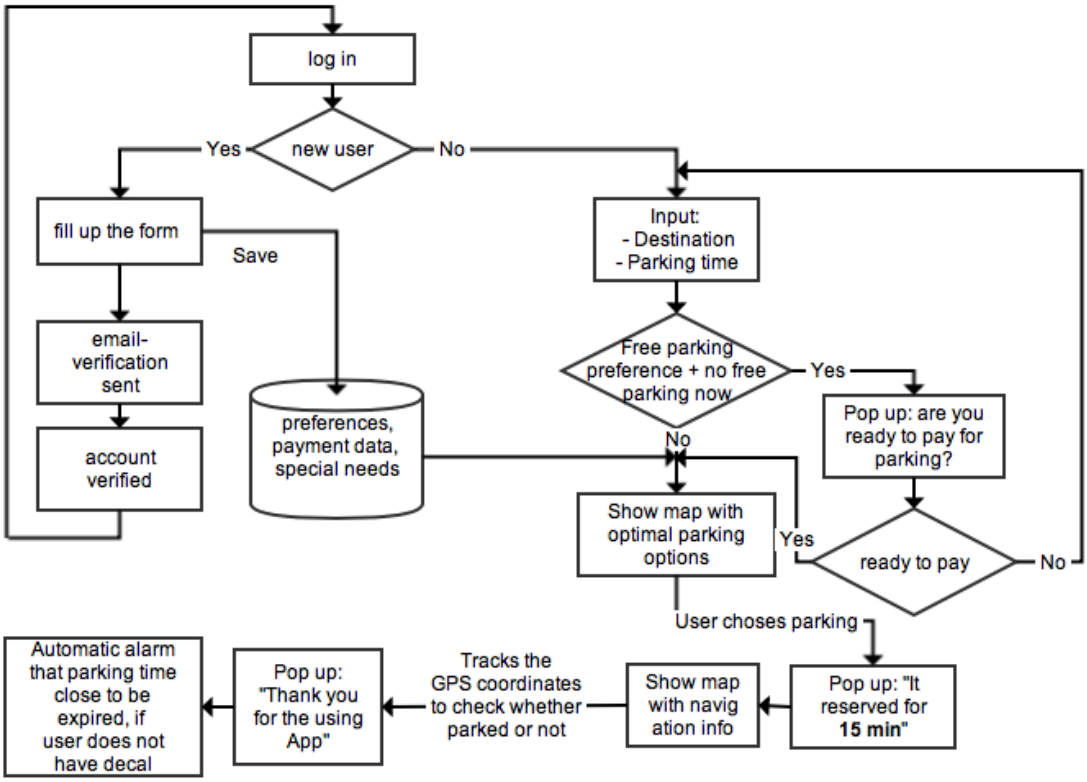


Fig 6. Task Flow for Mobile Parking Application

3.3 Wireframes

The team used Balsamiq to create wireframes to show how the application will actually look like. Some of the main wireframes are as follows:-

Wireframes UF Parking Application

4. Conclusion

The Design solution for the UF Parking Application was achieved through the following steps: -

- Getting to know the target audience and collecting their thoughts/ideas/needs/complaints about the current parking situation on campus
- Analysis of collected data using the affinity diagram. The main themes that came out were:
  - lack of information about Real Time parking spots availability
  - lack of information about events on campus (special events)
  - confusion about different types of decals and as a result getting tickets for wrong parking
  - some students, who do not have decal and want to know about free parking opportunities
- Developing personas in order to frame the user's portrait. The reason for that is to study the most common potential user from different sides taking into account his technical background/level of awareness about rules/schedule/decal on campus and to make sure that the Parking App will satisfy his expectations. The team created five personas, two of which most common on campus: "Busybee" and "Mr.Freestuff". They seem different (even opposite), but their expectations from application are quite similar - to see the current situation on campus map in real time and to get the suggestion for the best parking spot. So, developing personas helped to analyze which requirements/needs/complaints are the most crucial and helped the team decide the core functions of the parking application
- Crafting the best scenario of the parking situation for each persona. Analyzing different scenarios for different personas, helped the team realize that despite of the different characteristics the personas possess, a part of the scenarios was similar for everyone: the user wants to set the destination and to get the real time suggestion about the best legal parking spot according to the user's request, user's data (such as decal purchased or not, disabilities) and preferences (such as garage vs open spots, free spots only and others)
- Making scenarios visual by constructing the storyboards. This step convinced the team that the most important function for the application is real time recommendation mechanism for finding optimal spots of parking, based on user's needs/preferences
- Developing the conceptual model. The Golden Ratio Spiral conceptual model seems very suitable for the App, because, first, it is based on repetitive iterations as a spiral. Second, each iteration happens when user is closer to the destination and the probability of changing the parking situation gets lower from iteration to iteration

- Building the task flow, helped to organize and specify the Parking Application functionality and its sequence. Creating wireframes became the final step in the team's process in order to create a solution for UF Parking App. It visualizes the task flow of the App. The final solution for the UF Parking App was derived from the user intent and was created to meet the needs of the articulated persona. In a nutshell, the design came as a result of users' expectation of the application's usage.