

Project B

ParkSense

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ITGM 705 OL

Interactive Design and Media Application

Winter 2018



Part 1

Proposal

Proposal - ParkSense

For this project based on a digital artifact, I propose an application tentatively named "ParkSense." The main purpose of this app is to inform drivers who have found a parking spot whether they are allowed to park there or not. Given that street signs and sidewalk colors regarding parking are often confusing, this app can give a simple indication if the driver is safe or is in danger of getting a ticket or possibly towed. In order to do this, the app could retrieve the time of day and the driver's location to sort through an information base of laws and policies. Hopefully, this can not only prevent drivers from getting in trouble but also prevent parking in areas that are a severe hindrance to building owners, delivery people, and emergency workers like firefighters.

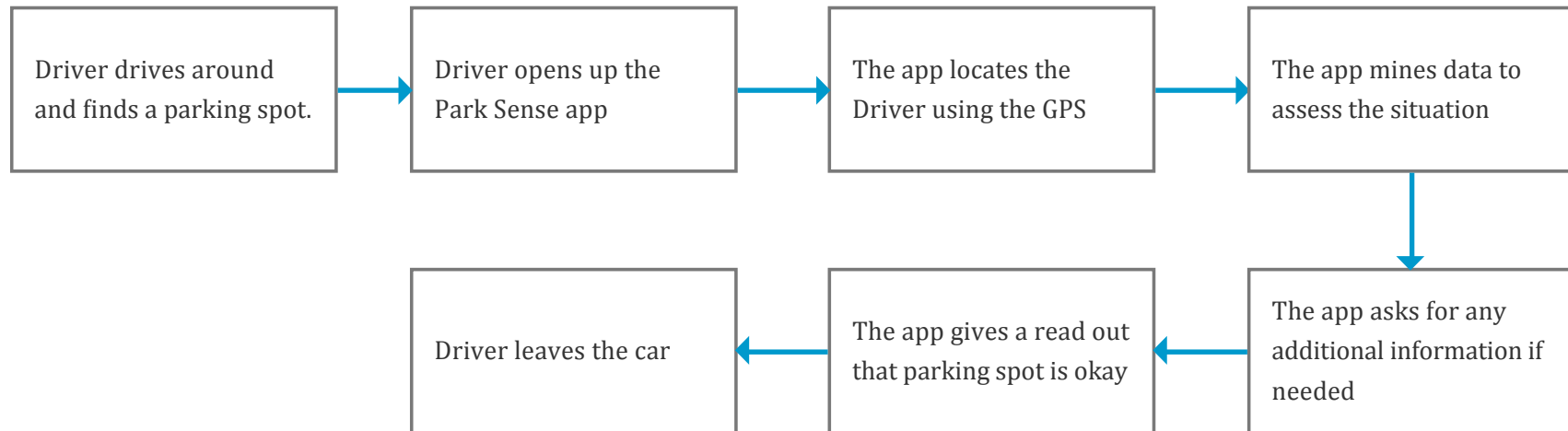
My main motivation for selecting this idea is having lived in a metropolitan city and often going to downtown areas of other cities. Though not in excess, I've gotten my fair share of parking tickets, not being aware of procedures like street cleaning or permit parking. As such, I've become very reluctant to park in unfamiliar areas out of fear of unintentionally disobeying a parking rule. Therefore, I expect that the audience for this app would have much the same context and motivations. Most likely, this app would be for an urban-dwelling crowd since suburban and rural areas less frequently have to deal with complicated rules regarding parking.

Other features that could round out the app's value is by providing details about the specific hours a person can park. If a user has parked in a spot for too long or past the permissible hours of the day, the app could send a notification beforehand informing them that they should attend to their car. Additionally, if a particular parking spot isn't permissible at the current time, the app could recommend alternative areas where the driver might want to look. I would have definitely benefited from this type of information after the amount of time I have spent searching for parking, only to find restricted areas for blocks on end.

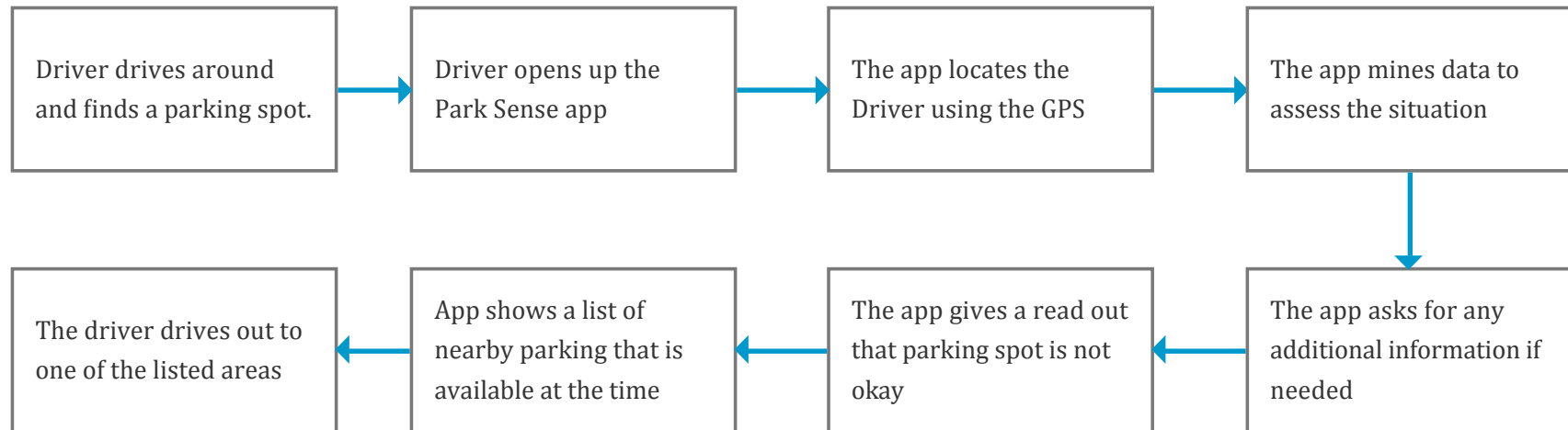
Part 2

Visualization & Conceptualization

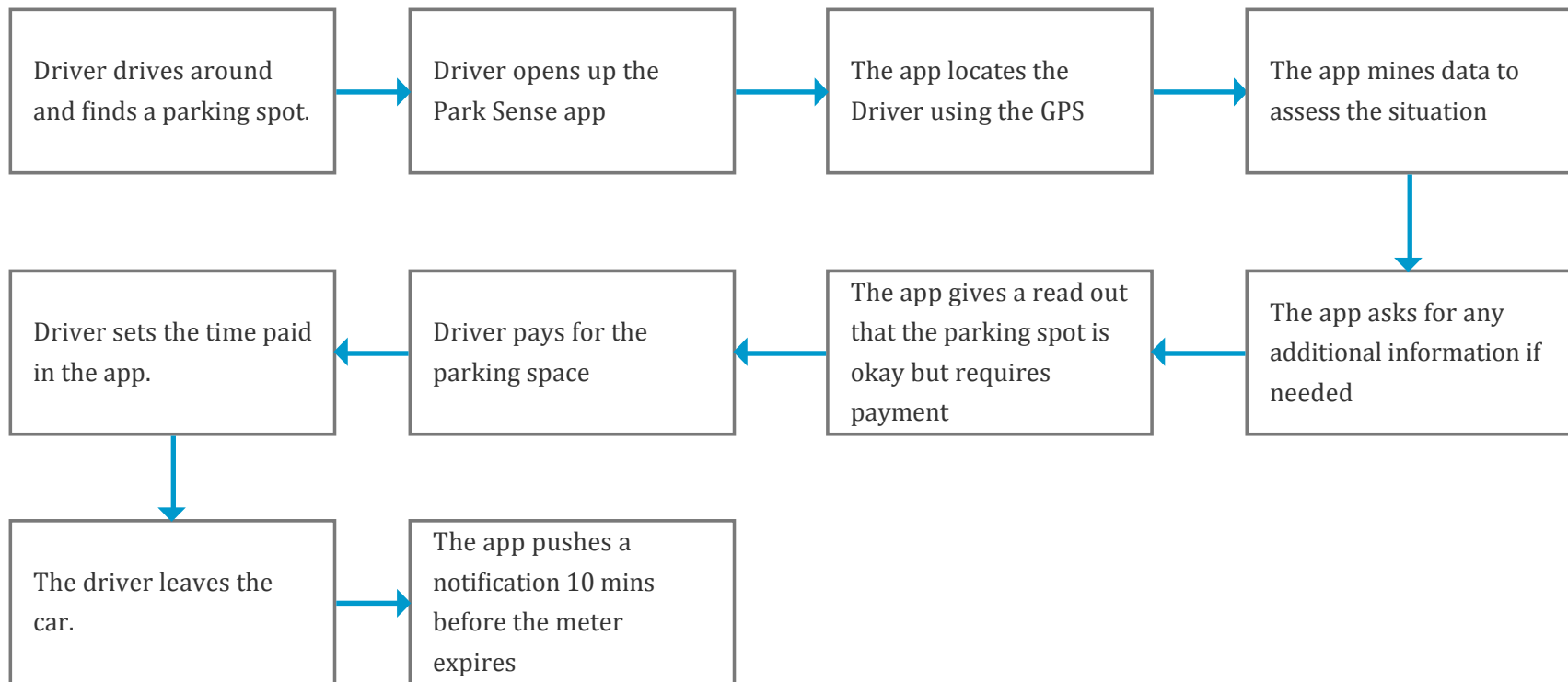
Flowchart - Parking (Okay)



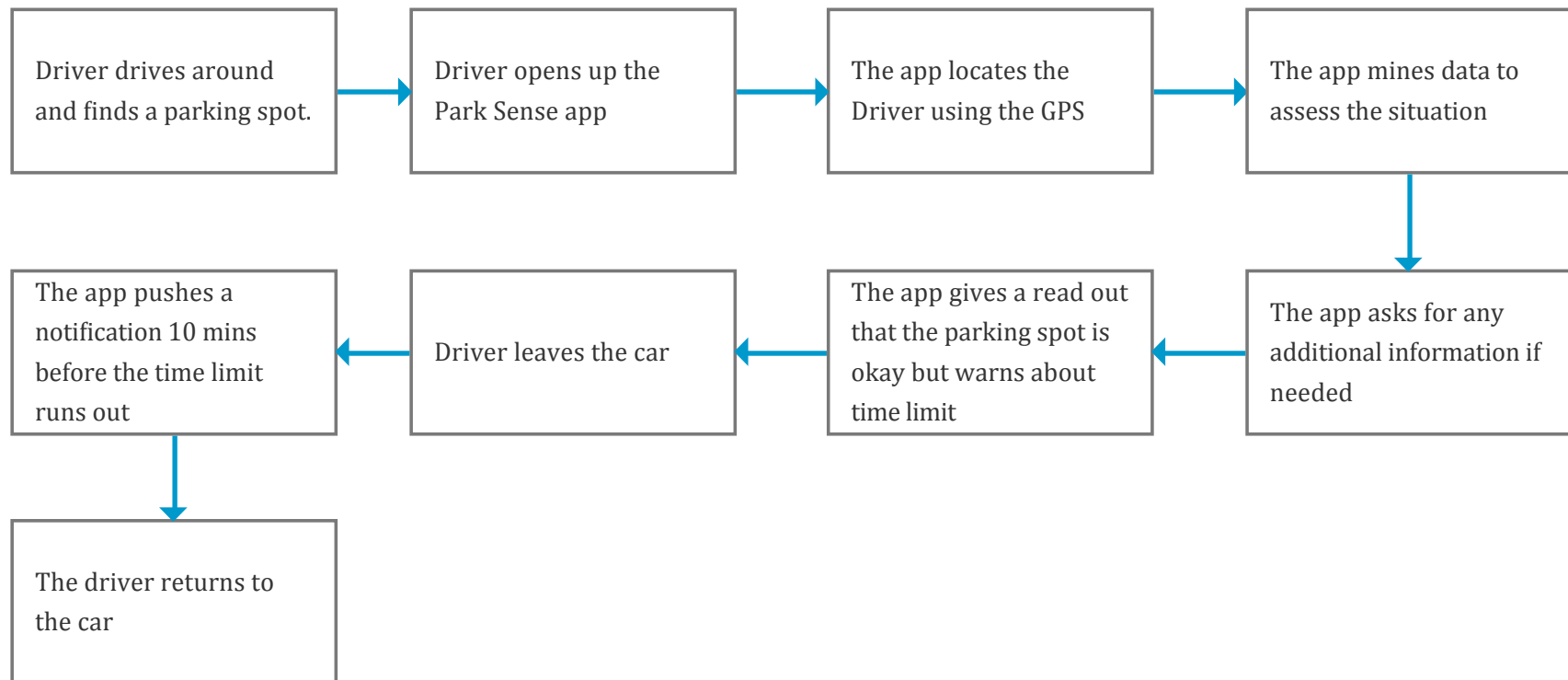
Flowchart - Parking (Not Okay)



Flowchart - Metered



Flowchart - End of Alloted Time

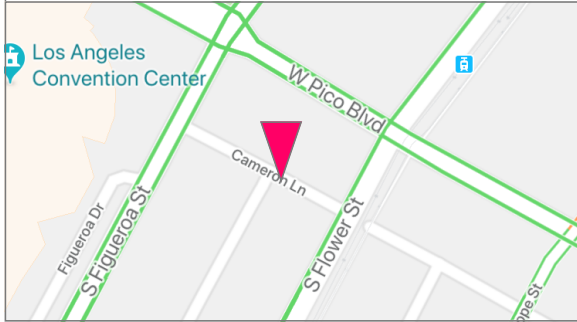


Wireframes

Check Status

ParkSense

Current Location



Check Parking Spot

Status
Search
Profile

Parking Okay

ParkSense

Location: 175 Mission St.

Is this parking spot ok?

YES

Free

Things to keep in mind

There is a 2 hour limit.
Set up a notification reminder.

This street is on a slope. Please turn your wheels appropriately.

Status
Search
Profile

Parking Not Okay

ParkSense

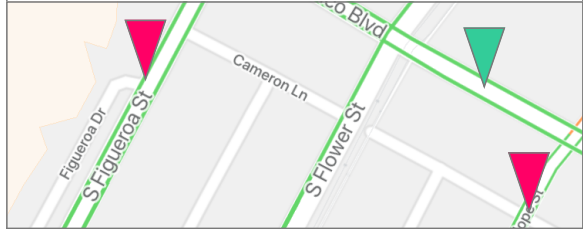
Location: 175 Mission St.

Is this parking spot ok?

NO

Off-Hours

Search these places instead!



Status
Search
Profile

Wireframes

Parking Not Okay

ParkSense

Location: 175 Mission St.

Is this parking spot ok?

NO

Off-Hours

Search these places instead!

Status
Search
Profile

Parking Not Okay (Continued)

ParkSense

Search these places instead!

Union Square Garage
 Parking Garage - Paid
 0.5 mi · 333 Post St
 6AM - 11PM **Map**

14th and Noor
 Street Parking - Free
 0.6 mi · 123 14th St
 6AM - 11PM **Map**

Mission & Sutter
 Street Parking - Paid
 0.7 mi · 473 Mission St **Map**

Status
Search
Profile

Wireframes

Additional Questions

ParkSense

Just a few questions...

Is the sidewalk
painted **YELLOW?**

Yes

No

Status
Search
Profile

Parking Search

ParkSense

Filter

Available Now

Include Garages

Only F

Union Square Garage

Parking Garage - Paid
0.5 mi · 333 Post St
6AM - 11PM **Map**

14th and Noor

Street Parking - Free
0.6 mi · 123 14th St
6AM - 11PM **Map**

Mission & Sutter

Street Parking - Paid
0.7 mi · 473 Mission St
6AM - 11PM **Map**

Zenanli Parking

Parking Garage
0.8 mi · 344 18th St
6AM - 11PM **Map**

Presidio & Jackson

Street Parking - Free
0.9 mi · Presidio St
6AM - 11PM **Map**

Status
Search
Profile

Notification

5:15

PARKSENSE
now

Your parking space is about to expire
in 10 mins. Make sure to attend to it
soon!

Feedback Notes

Got some useful feedback from some of the class discussion. Here is a list of some of the feedback or suggestions given to me:

- Traffic data to see which places are crowded.
- If a parking spot is not okay, having a more complete view of alternatives whether it's in the map or the distance to the nearest parking.
- Having colored pins to designate different types of parking spots such as metered, garage, and street.
- Having a way to telling if a parking area has accessibility options.
- Be able to input a destination in advance at the beginning of a trip.
- Having a color-coded heat map to show which areas are more crowded than others.

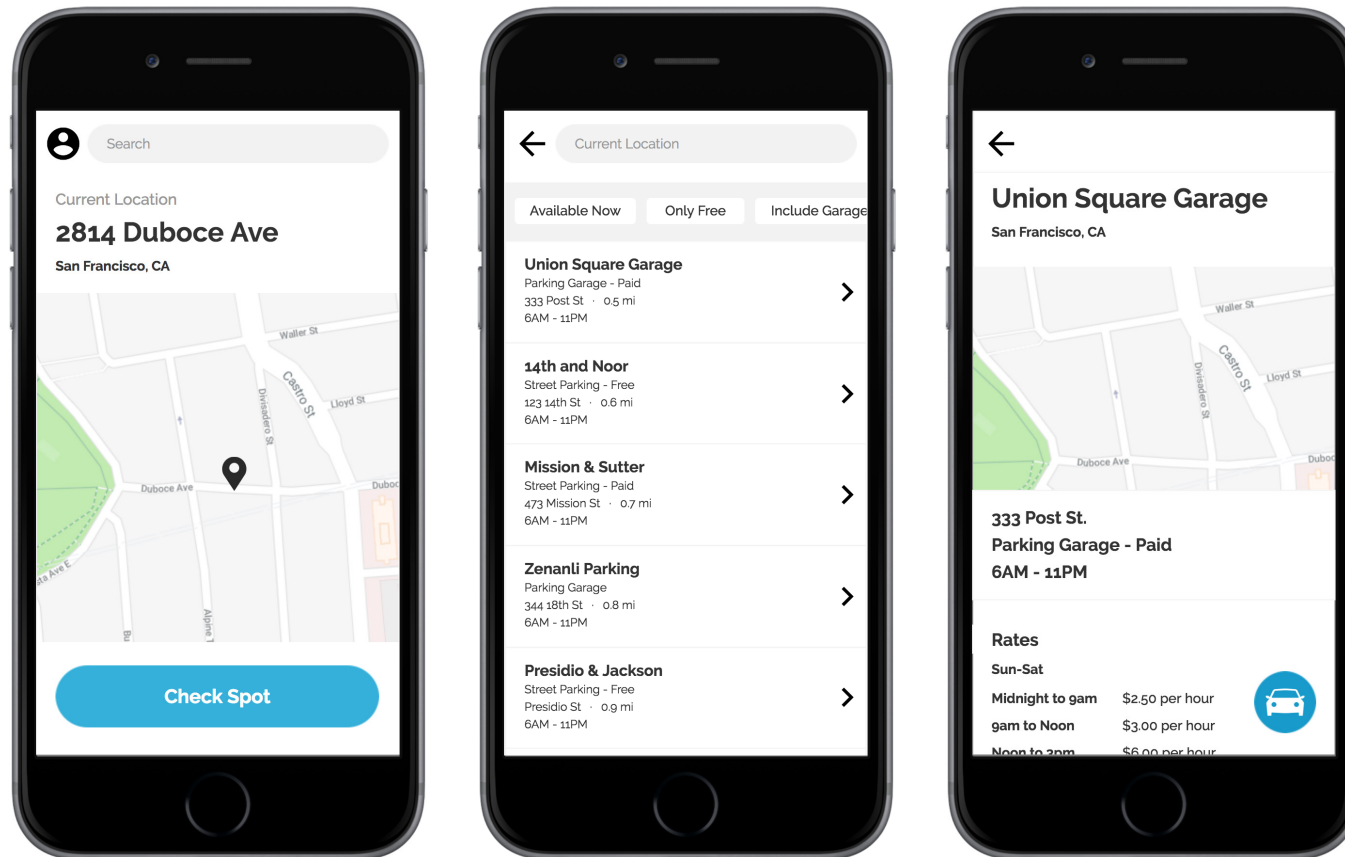
So with these mind, I think my main takeaways from this feedback are the concepts of pre-planning and specificity. Even though I conceptualized this app working to analyze an area in the moment, it might be extremely useful for people to pre-plan their trips so they don't bother to go to an area that doesn't have suitable parking anyway.

In addition, there can be more specificity that will allow users to make more informed decisions. For example, different types of parking spots (paid, free, metered) can be better distinguished. Also, accessibility markers could be very important to those with disabilities.

Part 3

Prototype

Prototype Images

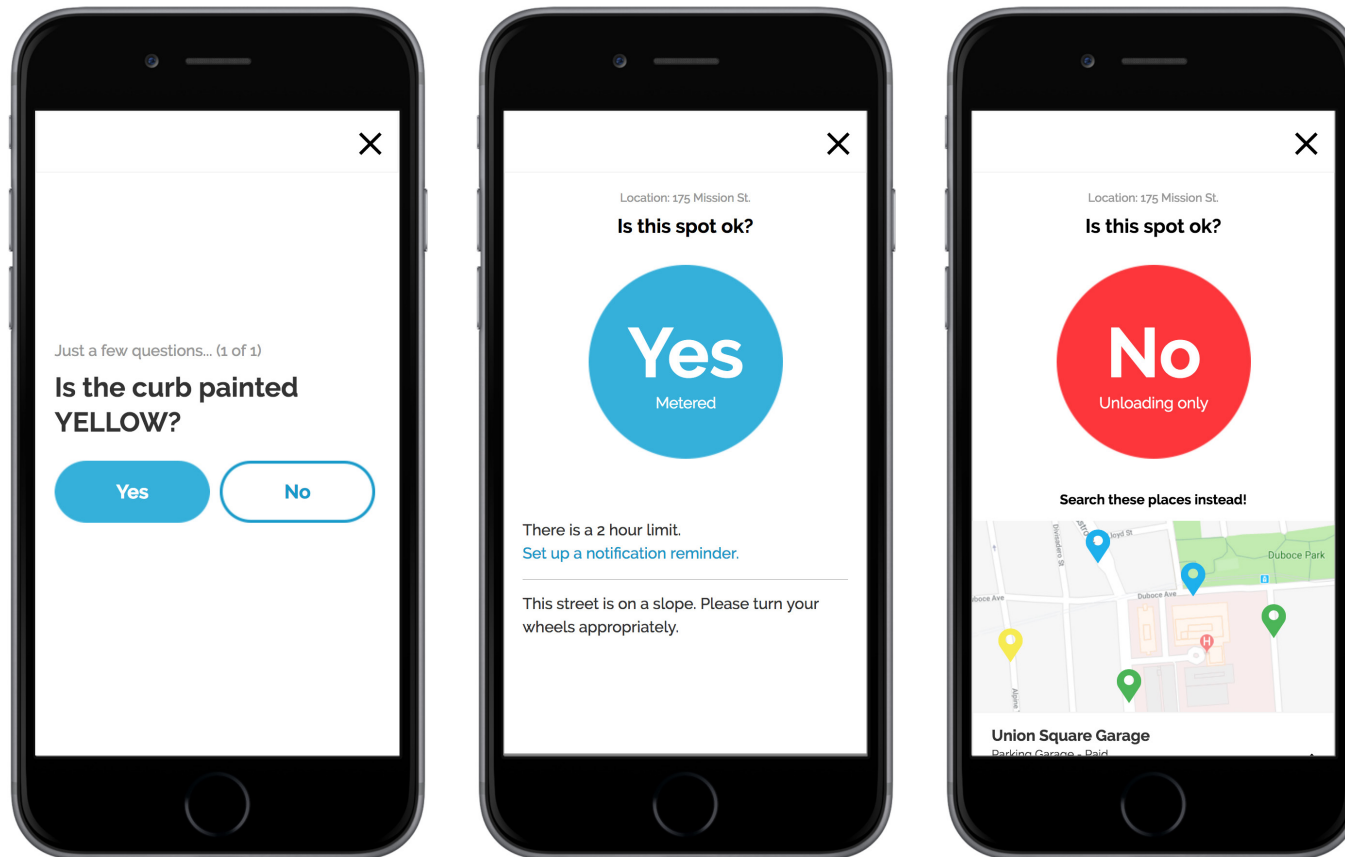


Prototype Link: vtn6ny.axshare.com/main.html

For this prototype, I'm using Axure not only to mockup the visual design, but to also figure out the interactions going from screen to screen. My initial goals are to ensure that I have the base functionality figured out without worrying too much about adding every single feature that I could think of. This way, I can refine the most typical experience rather than spinning plates on too many user flows.

Right now, the main user flows are to check one's current parking spot or to search for parking beforehand. If they are searching for parking, they can find a listed parking area and use a button to send it directly to their maps app.

Prototype Images



Prototype Link: vtn6ny.axshare.com/main.html

Things I still want to figure out is setting a visual language that could distinguish different parking types like metered, garage, and permit. In addition, having an experience that would help a driver while they are parked. Also, I would like to explore if this app could use functionality where a driver could pay for parking from this app.

I'm also thinking about ways that this app could be more personalized. Some ideas might include creating settings to indicate parking preferences or saving local permits so the driver doesn't have to specify them every single time.

User Testing

Participant: Robbin

For the first testing session, I showed Robbin my prototype app and asked her questions around her behavior and thoughts on parking. She has grown up in the suburbs of Daly City, but frequents San Francisco now that she's an adult.

One of her biggest frustrations with parking is running back to her car to repay the meter. She does like using a San Francisco based app that allows her to pay with her phone. She cited remote payment as her top parking app feature.

She mostly gets confused about street signs, curb colors, and spaces that don't have meters. These make her unsure if she's parking in the right areas. Many times, she simply defers to friends if they know if it's okay to park there.

One concern about the app was the GPS position. It could give an inaccurate position, thus giving inaccurate information. One street might have different rules than the street next to it.

The times she has gotten tickets is when she couldn't see the sign and ended up on a space for longer than the allowed duration. She has also been worried with rules about how close a car should be on a curb or if a car is inadvertently blocking a garage if only a little.

Her parking preferences include spaces that are large enough to fit her family's truck, angled lines rather than parallel, free opposed to pay, and spaces that are not in a scary neighborhood. She doesn't really care about parking type (garage, street, etc) as long as it's close to the destination.

She is usually good about remembering where to park. Sometimes she takes a picture.

Thinks a notification 15-30 minutes before a meter runs out is reasonable. Plus remote payment can prevent awkward situations of leaving a social setting to attend to your car.

Participant: Nirel

Nirel is a San Francisco resident who grew up in Los Angeles and attended college in Davis. Though she's accustomed to driving, she would rather take public transportation or Lyft when going to places in San Francisco.

Would like to see some sort of peak hours for each parking location like in Yelp to get an idea if a place is crowded or not. However, she doesn't know if it's possible to know if an app can guarantee a parking space.

She really likes the questions when checking a space. She said it gives her peace of mind when parking in a location.

Prefers garage parking over metered or free street parking since she likes to feel like her car is safe. Attendants and enclosed areas make her feel safer. She would love to see warnings showing if a parking location has had reported break-ins. Other warnings that she would like to see are for national holidays or special events like a parade.

Nirel says that she's most confused by curb colors. Signs are usually easier for her to figure out, but has been tripped by broken signs, small signs, or signs that are too far apart. She tends to be on the cautious side and won't take a lot of risks.

She made comments about some situations that are more permanent like owning a motorcycle, having a large vehicle, or living on a street with street cleaning.

She liked the filters in the search. Would think it would be helpful to find spots that are not very visible to most people. She got a bit confused over the term "available now," thinking that it meant that a specific spot is available.

Commented that she'd rather have location pins color coded for parking type.

User Testing

Participant: Vince

Vince often drives in San Francisco for work and has lived in Vallejo, Sacramento, and Hawaii. Rates San Francisco as one of the worse places to drive and park due to the number of parking signs, curb colors, events, and construction.

Has a preference for well-lit, centrally-located garages with an attendant. Even though it might not actually be safer, he feels safer parking in these places. He responded very well to the idea of a warning that informs him of break-ins in the area.

Often confused by street design saying that it's often not intuitive. For example, a curved curb is ambiguous as to whether someone can park there.

Concerned about time and ease of use for the app. He doesn't want to fiddle around with an app if he's driving or is distracted. Ideally, he would like voice commands and read-outs in order to keep his hands free.

When searching for parking, he first considers cost and then considers proximity to his destination. For him, \$20 is a reasonable maximum to pay for all-day parking.

Though he is wary of apps using user data, he does see a benefit of having user-saved vehicles, permits, and preferences. He even suggested recommendations based on past choices.

Mentioned that he would use a parking pay app but would more likely use a parking finder app if they had to be mutually exclusive. For paid parking, he tends to be on the conservative side and tends to overpay for parking.

Sees that sometimes street signs are too spread apart or curb colors are not very clear.

Was once towed in Sacramento due to a parking attendant telling him that it was okay to park in a reserved parking space at night.

Participant: Rea

Rea has lived in San Jose, San Francisco, Davis, and South San Francisco. She drives often to work and in her personal life.

She has received a ticket once in San Jose for parking outside of a street parking's allowable hours. She wasn't aware of the street sign and didn't think to check before leaving her car. Even though the app says parking there is okay, she thinks that there could be some type of warning that the allowable hours are going to expire soon.

Rea prioritizes distance from her destination and then considers the cost. She doesn't necessarily mind about the type of parking (garage, street, etc.) or size of parking. She would also like to know what types of payment are available.

When searching for a parking spot, she would like to know if there is a special event that could affect the price. Or if there's a way to calculate cost beforehand. Also, when searching within the app, she thinks that all parking should be in view by default and that a map should be visible.

She is also concerned about parking in a bad neighborhood, especially in alleyways. For her, safe parking is usually in open, well-lit areas. Also, garages with security make her feel safer. She suggested the idea of a safety rating to go with each parking detail page.

Rea is most unsure about a street parking space if the curb color is faded. For this reason, the questions might require an "I don't know" answer. She is more likely to take a risk on such a space if she is in a hurry.

She was a little confused by the parking area labeled "Mission & Sutter." She believes that something like 100-190 Mission makes more sense.

Testing Report

Vehicle Safety

Besides getting a ticket or getting towed, some of the subjects reported that they were concerned about break-ins and dangerous neighborhoods. Therefore, there could be a warning that informs the users about how their current location might run the risk of theft or damaged property. I would have to be careful though since people could react negatively, even paranoid to any sort of theft report even if a theft in their situation would be unlikely.

Vehicle Profiles

Since there are many parking situations that factor the vehicle that a person uses rather than their location, it might be best to include ways to add vehicle or permit profiles. For example, a motorcycle user might want to find parking spots specifically for motorcycles without having to add that detail every time they try to find a spot. Similarly, if a person has a city parking permit, they should be able to save that permit so the app can remember it.

Feature Creep

Although I think it would be great to add as many features that would help the user experience, I need to also show restraint and discern which features to add. An app that tries to do everything will probably not be very good, so I should make strategic decisions about what it can and can't do. For example, should this app be able to allow for mobile payments? Should it allow for directions? Should it use some sort of deep learning algorithm in order to figure out open parking spots?

Parking Availability/Peak Hours

One source of confusion was the label "Available Now" which sends off the message that there are specific spots that are open as if the app could tell the status of all parking spots. In retrospect, I should have named it "Open Hours" or something similar to suggest that the parking area is currently in open hours to accept cars. However, this does not mean that there is a space open. On a different note, some of the participants responded well to the idea of a "Popular Hours" graph like in Yelp which would show hours are busiest.

Search Filters

I think one area that needs a lot of fine-tuning is the search filters based on the user feedback. What I would like to do is to make all parking areas visible by default. Then I will put the more common filters on the top of the page and then provide a separate view for more specific filters.

"I don't know"

For some questions, the user might not be able to answer. Therefore, I could include an option to respond "I don't know" to a question. Since this leaves the checking process without a definitive answer, it would also need a conclusion screen that accounts for that. For example, having a screen that says "Maybe."

Part 4

Final

Revised Proposal - *ParkSense*

For this project based on a digital artifact, I propose an application named “ParkSense.” The main purpose of this app is to inform drivers who have found a parking spot whether they are allowed to park there or not. Given that street signs and sidewalk colors regarding parking are often confusing, this app can give a simple indication if the driver is safe or is in danger of getting a ticket or possibly towed. In order to do this, the app could retrieve the time of day and the driver’s location to sort through an information base of laws and policies. This can not only prevent drivers from getting in trouble but also prevent parking in areas that are a severe hindrance to building owners, delivery people, and emergency workers like firefighters.

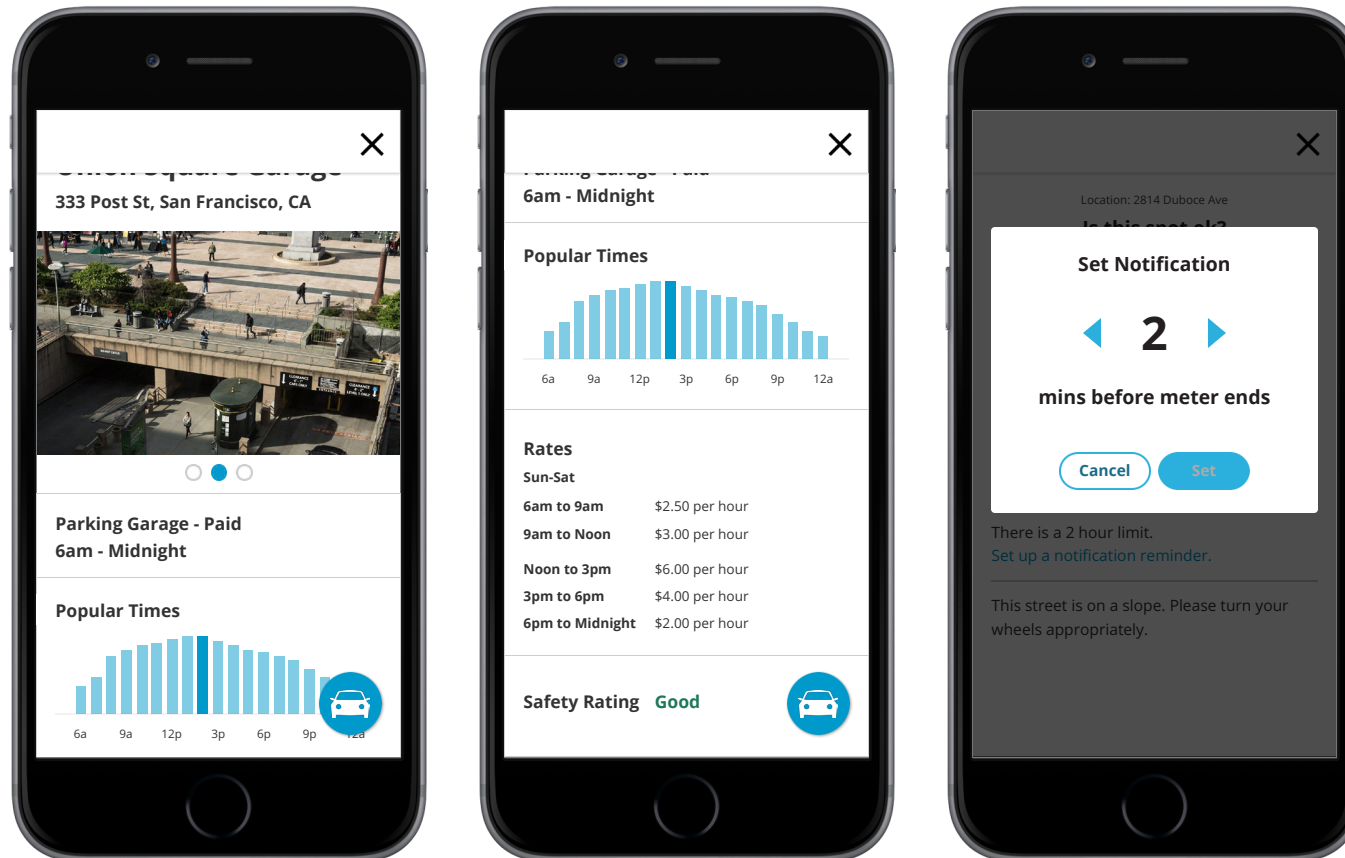
My main motivation for selecting this idea is having lived in a metropolitan city and often going to downtown areas of other cities. Though not in excess, I’ve gotten my fair share of parking tickets, not being aware of procedures like street cleaning or permit parking. As such, I’ve become very reluctant to park in unfamiliar areas out of fear of unintentionally disobeying a parking rule. Therefore, I expect that the audience for this app would have much the same context and motivations. Most likely, this app would be for an urban-dwelling crowd since suburban and rural areas less frequently have to deal with complicated rules regarding parking.

In addition to checking one’s current spot, the app can also allow a driver to

preplan their trip and discover parking locations beforehand. Since many drivers have preferences regarding what type of parking they prefer, they can sort and filter through parking locations based on parking type, cost, peak hours, and safety rating. To add to this, my research has informed me that safety is a big issue with drivers. Therefore, I propose to add safety ratings based on car break-ins that can let a driver know beforehand if they are parking in a dangerous spot.

Because this app aims to provide a more hassle-free approach to parking, ParkSense provides features that allow a driver to pay for parking and set timely reminders that their parking period is going to end. Several testing participants cited the convenience paying and reloading their parking payment through a mobile application. Therefore, this app seeks to provide a smooth transition between parking discovery, parking analysis, and parking payment.

Revisions

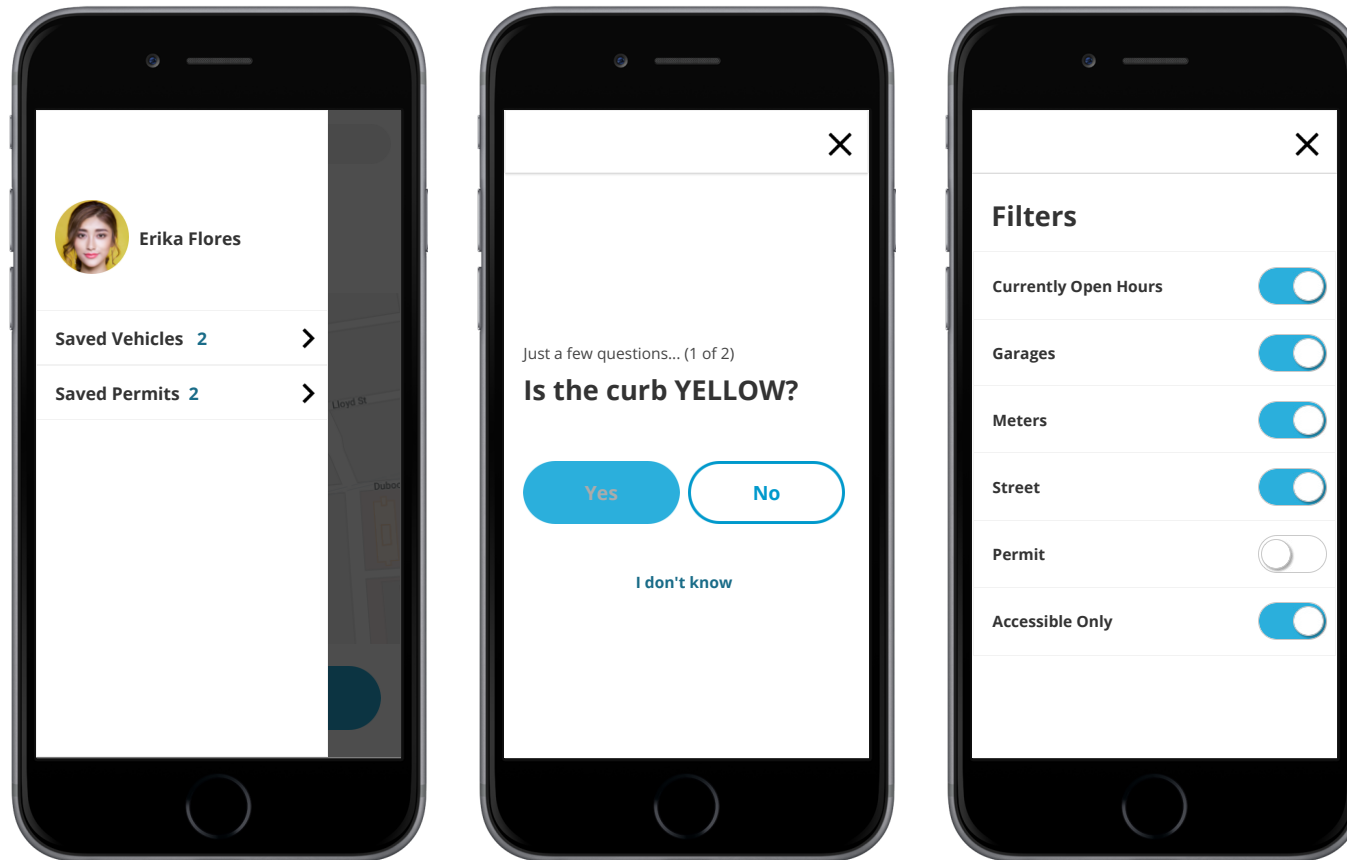


There were several features that I thought were necessary for the parking discovery process. One was the inclusion of "Popular Times" to inform the driver when a parking area is likely to be crowded.

Secondly, a simple safety rating could help a driver avoid being in a dangerous area where they could experience a theft. In a way, getting things stolen might be a worse experience than getting a ticket.

I didn't want to be too specific about break-ins or crimes since that might make users too anxious and panicky. So, I think it's best to have a safety rating that would only warn a driver when it's necessary.

Revisions

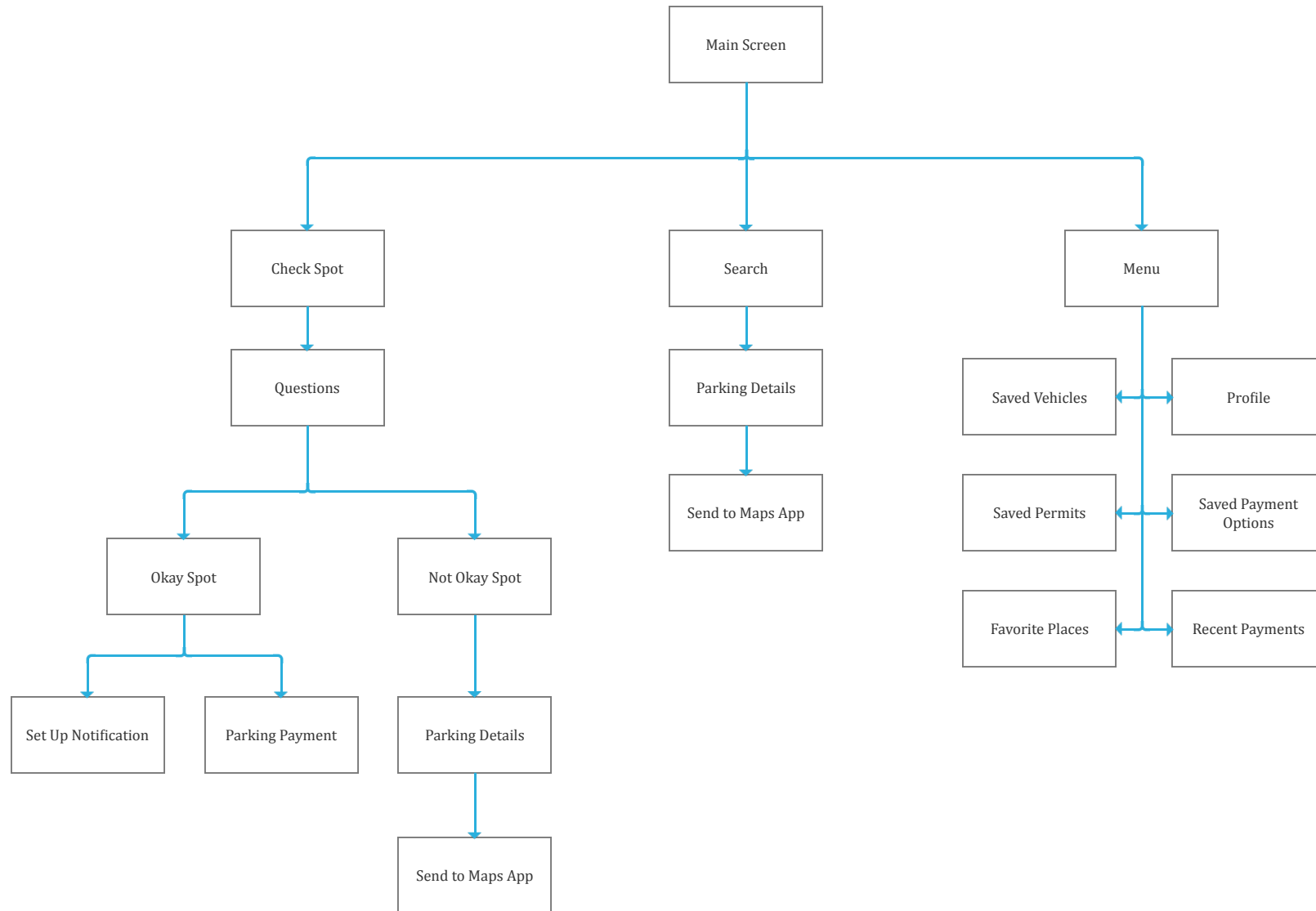


Throughout the testing process, I received various feedback that pointed to the usefulness of a user profile. With a feature like Saved Vehicles or Saved Permits, the driver can more easily find parking that has motorcycle parking or requires a permit that they already have, for example.

Also, I wanted to simplify the filtering and sorting functionality since the logic can get out of hand. Therefore, I have decided to give filters its own view in order to make it more coherent.

Other features that I'm planning to include are payment options (when available), recent/favorite parking places, and an outcome if the driver can't answer a question.

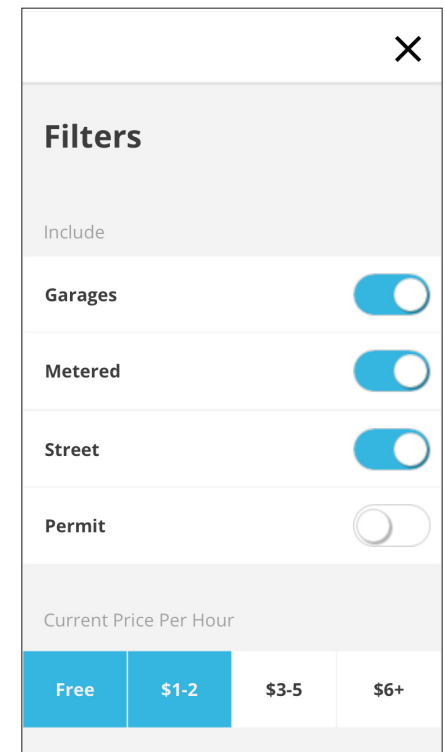
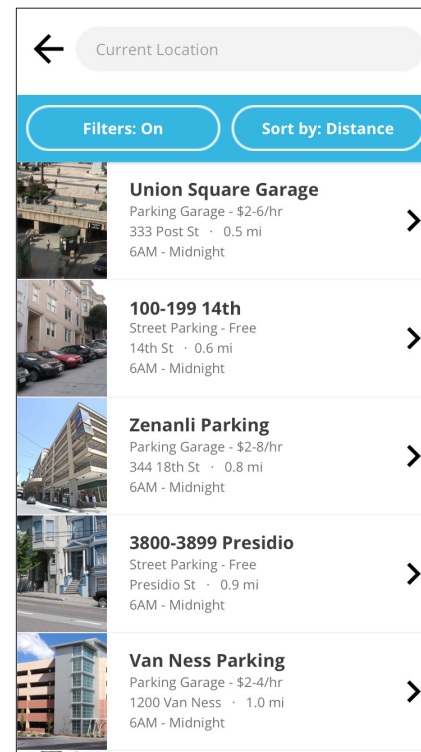
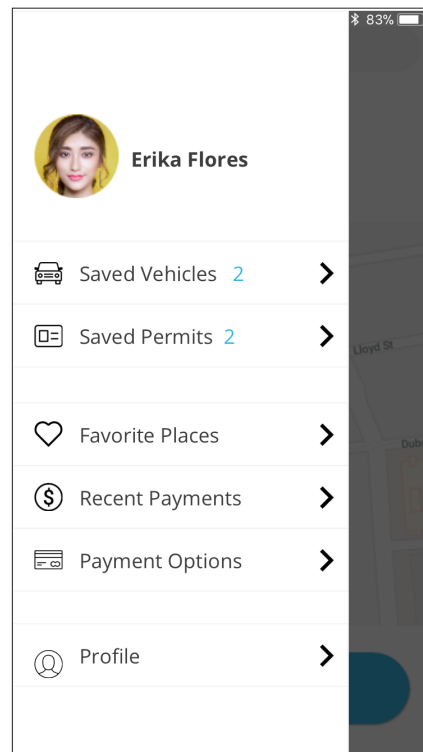
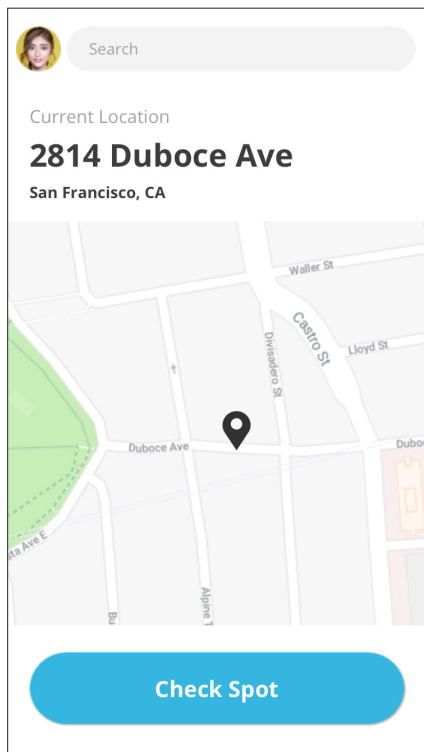
App Map



Final Screenshots

Prototype link (view on desktop): vtn6ny.axshare.com/main.html

Prototype link (view on mobile): vtn6ny.axshare.com/mobile.html



Final Screenshots


Prototype link (view on desktop): vtn6ny.axshare.com/main.html

Prototype link (view on mobile): vtn6ny.axshare.com/mobile.html

♡
✕

Union Square Garage


333 Post St, San Francisco, CA



○
●
○

Parking Garage - \$2-6/hr
6am - Midnight

Payment Options
Cash, Credit

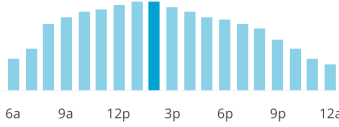


Features

♡
✕

Valet, Covered, Accessible

Popular Times




Rates

Sun-Sat

6am to 9am	\$2.50 per hour
9am to Noon	\$3.00 per hour
Noon to 3pm	\$6.00 per hour
3pm to 6pm	\$4.00 per hour
6pm to Midnight	\$2.00 per hour

Safety Rating Good



✕

Just a few questions... (1 of 2)

Is the curb YELLOW?

Yes

No

I don't know

✕

Location: 2814 Duboce Ave

Is this spot ok?

Yes
Metered

Pay with Mobile

There is a 2 hour limit.
[Set up a notification reminder.](#)

This street is on a slope. Please turn your wheels appropriately.

Final Screenshots

Prototype link (view on desktop): vtn6ny.axshare.com/main.html

Prototype link (view on mobile): vtn6ny.axshare.com/mobile.html

←

Pay with Mobile

Spot Number 10

Payment Method Visa ****3856 [Change](#)

Hours (\$2.50 / hr) 3

Total **\$7.50**

[Pay Now](#)

AT&T Wi-Fi 3:35 PM 83%

Location: 2814 Duboce Ave

Is this spot ok?

Thank you!

Your payment processed successfully.
A receipt has been sent to
erika.flores@gmail.com

[OK](#)

There is a 2 hour limit.
[Set up a notification reminder.](#)

This street is on a slope. Please turn your wheels appropriately.


←

Recent Payments

Wednesday, March 7	Union Square Garage	\$7.00
	333 Post St	
Tuesday, March 6	100-190 14th St	\$2.50
	123 14th St	
Monday, March 5	Zenanli Parking	\$6.45
	233 18th St	

←

Profile

 [Change Profile Photo](#)

Name Erika Flores

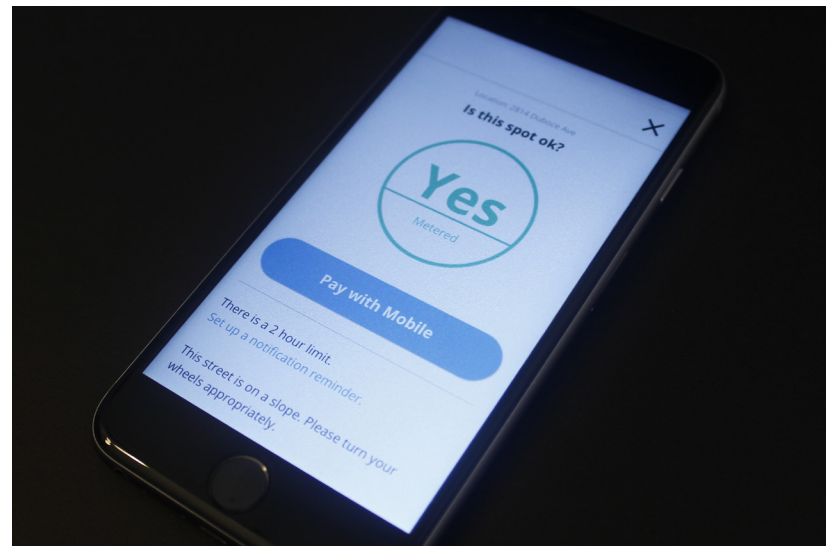
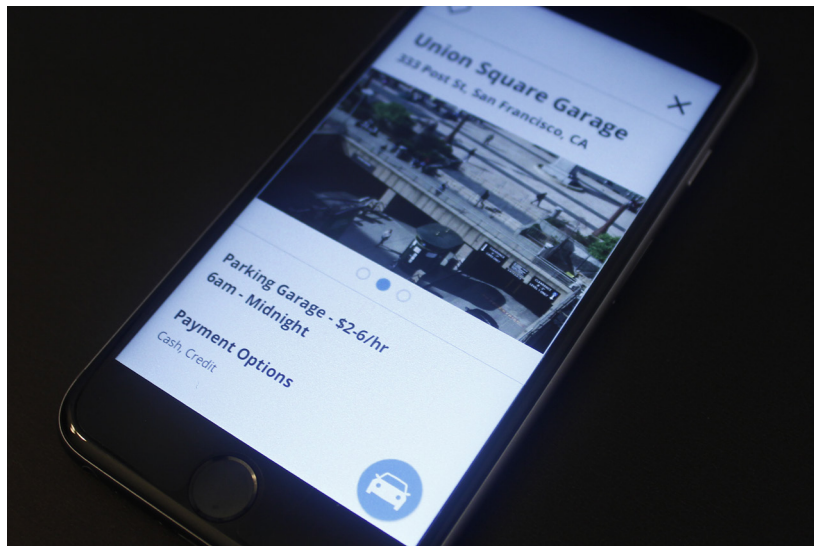
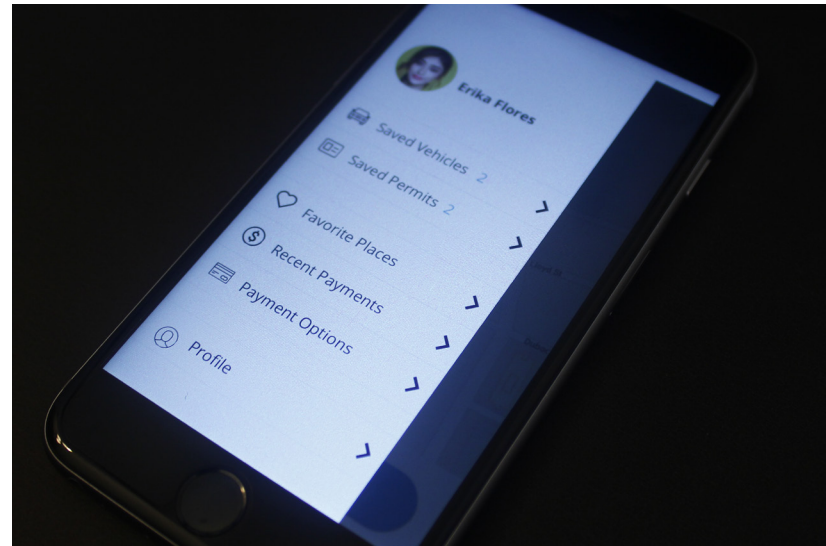
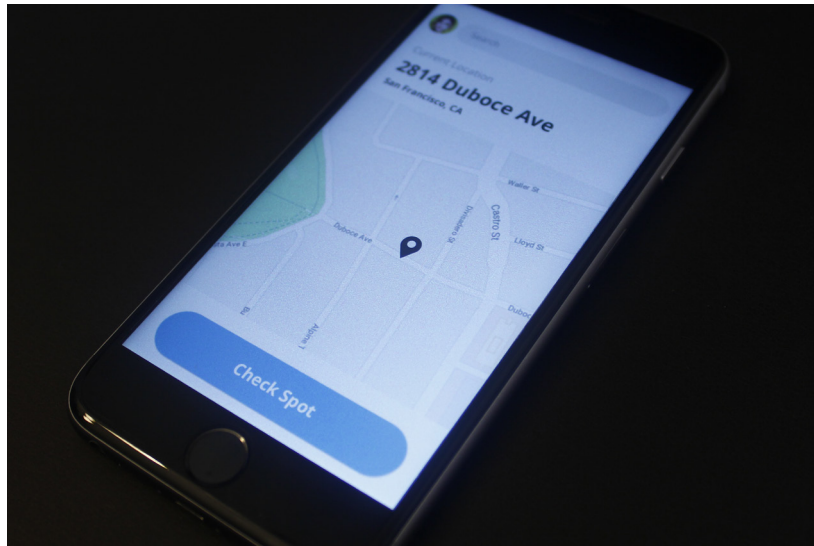
Email erika.flores@gmail.com

Phone 415-835-9203

Photos

Prototype link (view on desktop): vtn6ny.axshare.com/main.html

Prototype link (view on mobile): vtn6ny.axshare.com/mobile.html



Reflection

When I began this project, I was mostly trying to solve a problem for myself. Determining whether it's okay to park in a particular space was something that I was specifically concerned about. However, through the multiple revisions and feedback, I began to understand how to better integrate my original idea into the lives of others. That way, this app wouldn't be just for me, but rather for a whole group of people with different needs.

So for *ParkSense*, I learned that there are other features were likely necessary. Many of the people that gave me feedback had needs that couldn't be met just through a checking mechanism. Once people knew they could park at a spot, they did have other concerns like price, distance, safety, and payment. For some, the type of parking mattered just as much as whether there was parking at all.

While I don't think an app needs to or should do everything, I think having an app that provides a diverse range of utility without sacrificing user experience can be a good thing.