CGT 256 Fall 2020

Project One - Waze

Design Documentation

Team 8

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OVERVIEW

The team was tasked by Waze with finding a way to break into the college campus market. The objective was to understand the needs of drivers on the Purdue campus and use this knowledge to integrate a design feature into the current Waze app.

The root problem that the team attempted to solve was the parking availability on Purdue campus. The team interviewed 4 Purdue students for background and insights. The team also analyzed 15+ interviews produced by other teams to create an interview synthesis.

Using the interview data, the team created a persona and a scenario to define a design solution to the root problem.

The team received feedback on the developed scenario and considered the next steps.

MEET THE TEAM

Alex Lederman is a Junior at Purdue University studying UX Design.

Katie O'Brien is a Junior at Purdue University studying Web Programming and Design and Data Visualization.

Jessica Townsend is a Senior at Purdue University double majoring in Web Programming and Design and Virtual Product Integration.

Liam Russell is a Junior at Purdue University studying Web Programming and Design.

Brandon Nguyen is a Junior at Purdue University studying Web Programming and Design.

PROJECT TIMELINE

Date	Event
August 27, 2020	Discord group created
August 28, 2020	Team decided on focusing on campus drivers
August 31, 2020	Team completed interviews
September 1, 2020	Team completed interview summary slides
September 8, 2020	Team completed interview synthesis slides and began working on scenarios
September 11, 2020	Team completed KWHL
September 15, 2020	Team completed scenarios
September 18, 2020	Team completed project presentation video
September 20, 2020	Team reviewed and provided feedbacks for other teams, vice versa Team submitted design document
September 21, 2020	Team completed team evaluations Project 1 concluded and team prepares for Project 2

KWHL CHART

K What We Know	W What We Want to Know	H How Will We Learn It	L What Have We Learned
- Wayfinding on campus is a struggle for many students (notably between classes) - Car traffic on campus is centered on parking permit holders - Waze already has the infrastructure to process real-time traffic data - Waze allows users to report about incidents such as 'Road closed' or a car stopped on shoulder. - Waze shows whether a road has heavy traffic or bumper-to-bumper traffic - Waze can be used on mobile or desktop - Waze is pretty popular (over 7 million ratings) - There's a lot of services that help solve wayfinding problems such as Google Maps and Waze.	- Are students' class schedule data accessible? - How many parking passes are issued every year? - How many parking spots are available to students, who make up a majority of on-campus drivers? - Where are the busiest areas on campus, and at what times? - Can Waze keep track of parking capacities on campus? - How many Purdue students know about Waze? - Who are Waze's competitors? Have they implemented something that resolves the parking problem? - Is Waze easy to use for drivers? - Is Waze enjoyable to use for drivers? - How much average time is spent on Waze by drivers?	- We will conduct interviews to see how traffic/parking accessibility affects students' daily commutes. - We will ask other students where the most congested areas of campus are and what times are the most busy. - We will ask the University about how many parking passes are issued each year, and how many parking spaces they have available - We will interview and see how many students have used Waze, if they use other map apps, and how they like the app - We will personally use the Waze app to gather insights - We will search or ask for any open API that the University provides (schedule data, parking data) - We will investigate the current parking areas on campus - We will research the company behind Waze app	- There's a parking problem on campus - Several areas on campus are most congested or hard to navigate - Busiest times are morning (as people arrive) and afternoon (as people leave) - Not many students use Waze, the ones who do like it but want to have more features. - Some students don't use any apps to navigate campus, and the ones who do typically use Google or Apple maps. - A lot of students park illegally, and their car isn't moved soon enough to make room for other students - Students wish parking passes were cheaper and more accessible - Student parking is far from main campus

RESEARCH

The team interviewed 4 Purdue students who drive on Purdue campus. The team first used screening questions before asking the following questions. The team asked each student with the following questions:

1. How long does it typically take for you to find a parking spot on or near campus?
2. Have you ever gotten a parking ticket while you were in class?
3. How do you find information on campus parking regulations?
4. What are your personal tips for campus parking?
5. How would you make campus parking easier?
6. What is one thing you would change about campus parking?
7. What do you do if you get lost while driving on campus?
8. How would you describe the everyday traffic on campus?
9. How would you describe the everyday traffic on campus?
10. What areas on campus do you think are congested?
11. What areas do you think the campus should add roads?
12. What roads on campus do you think should be restructured?

The team has gathered the following insights and the interviewees:

1. Enjoy using the Waze app, but wishes there were more features
2. Use Purdue maps or Google maps for wayfinding around campus
3. Find information on campus parking regulations by looking at posted signage
4. Never gotten a parking ticket
5. Want campus parking to be more accessible as well as much cheaper
6. Think that there is a major congestion problem on campus
7. Say that parking near classes has always been a struggle without a parking pass
8. Say that when lost on campus, it's almost always easier to use a navigation app than the signage (or lack thereof) around campus
9. Say that campus traffic is almost always congested during the morning and afternoon when people are getting to/leaving from class
10. Say that parking that isn't metered and without a pass has a time limit of two hours throughout the week, which makes it hard for students with classes that take longer (such as labs).
11. Say that parking would be easier if people without parking passes would stop parking in the restricted areas.
12. Think that West State St. and the Chauncey area are particularly congested
13. Think that the campus should add roads around WALC and the Engineering Mall area

INTERVIEW SYNTHESIS

The team created an interview synthesis gathered from the team's own insights and other teams' insights:

1. Hard to find a parking space. Most students take class in the same area (PMU - CL50 - PAO), thus parking lots near those areas are usually full
2. Student parkings are too far from the main campus. Not convenient
3. Too many people in lots illegally parked
4. Signage around campus is easy enough to follow with a parking pass, but without one it is almost impossible to find metered parking.
5. A lot of parking is reserved for Purdue faculty and staff
6. Parking lots are not maintained by Purdue
7. Wants campus parking to be more accessible as well as cheaper
8. Waiting time for traffic lights in some area may be too long
9. Large congestion problem on campus
10. When lost on campus it's almost always easier to use a navigation app than the signage (or lack thereof) around campus.
11. Uses waze to travel long distances but barely uses waze on campus
12. Does not use waze app for traffic
13. Illegally parks often for convenience
14. Paid for pass but never used it
15. Parking passes are too expensive
16. Their biggest tip for maneuvering campus parking was to get to campus early in order to get to class on time.
17. It is sometimes difficult to find conveniently located parking and you sometimes end up walking farther than you intended.

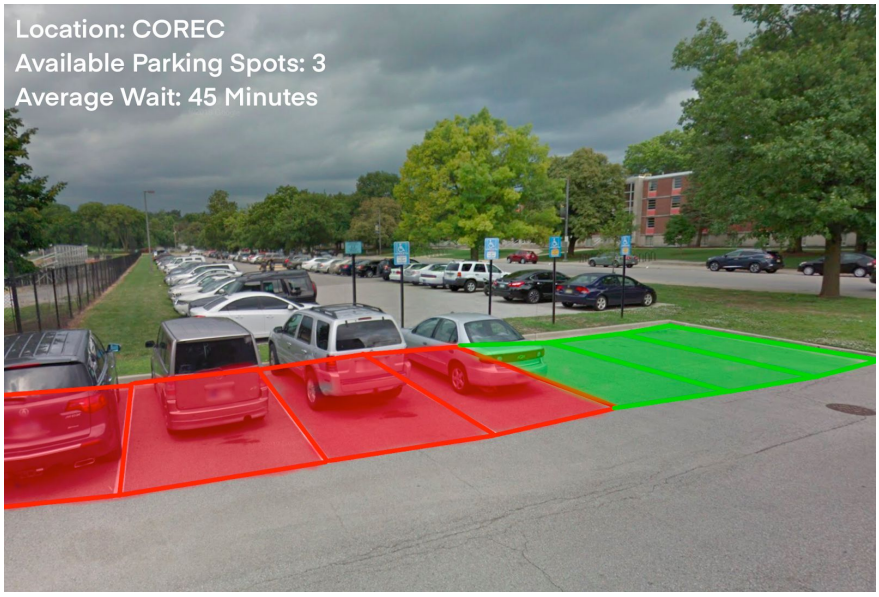
Root Problem: The availability of parking spaces on campus is limited. Even if there are open parking spaces, they are hard to find.

AFFINITY DIAGRAMMING

Created in https://miro.com/app/board/o9J_knFDXWI=/

IDEATION AND DESIGN REQUIREMENTS

Ideation - Use computer vision to improve campus parking experience



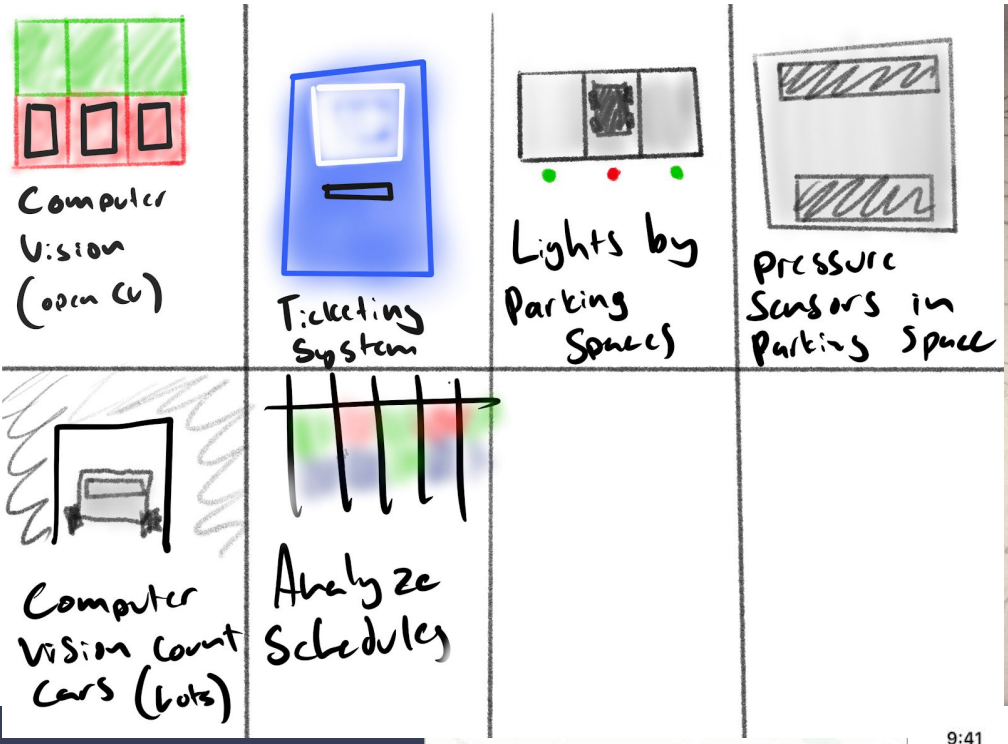
Design Requirements

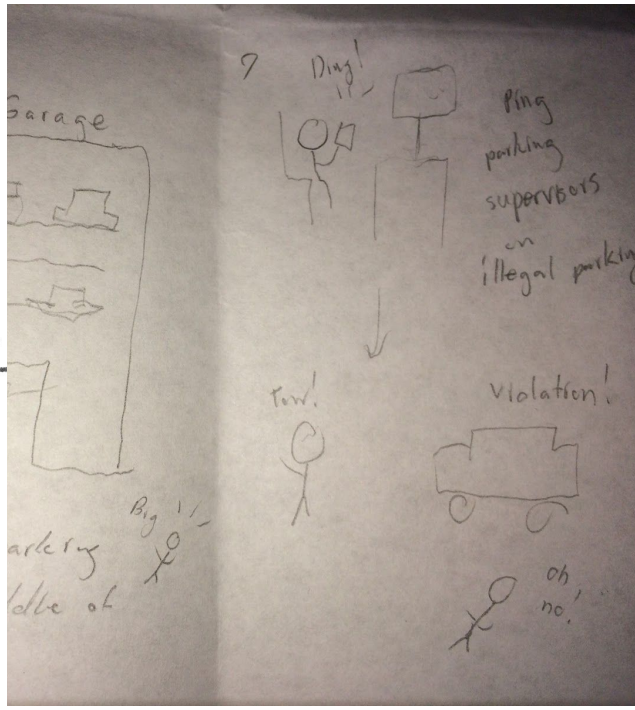
- Has to connect to Waze (mobile/desktop/wearable)
- Using information that's already available
- Still functions well if not everyone who drives to campus uses it
- Users can customize what kinds of places that they can park (parking pass, street parking)
- Personalized based on where user is driving from, what building they need to get to, and how far they have to walk from where they parked
- The user must be able to find availability of open parking spaces remotely.
- The user must be able to understand the wait time for an available parking space.
- The user must be able to find availability without adding time to their commute. (through navigating the app, etc.)
- The app should be able to find parking availability for people without parking passes.

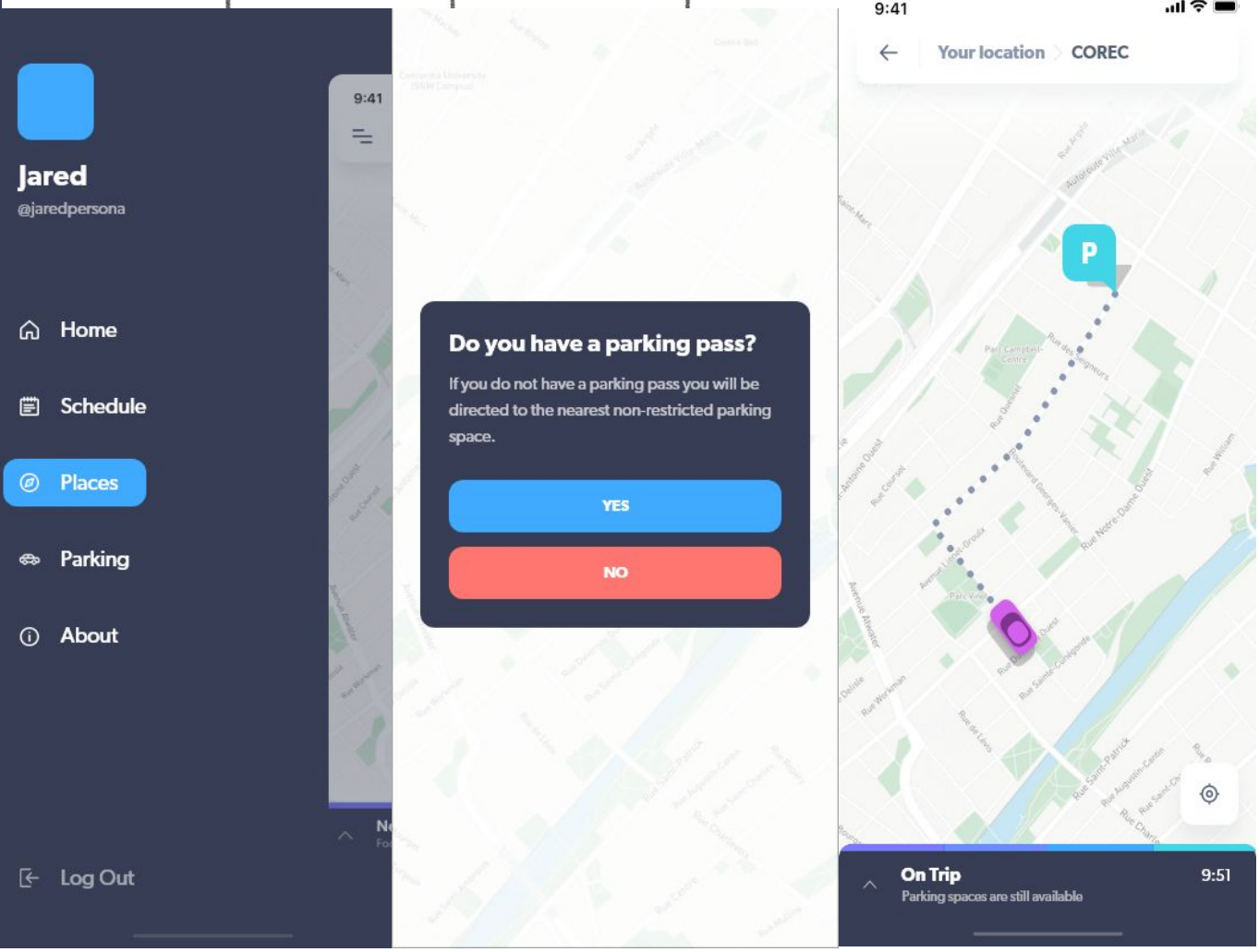
Pain Points

- The user struggles to find parking near their classes.
- The user is late to class because it takes a long time to find a parking spot.
- The user doesn't know where they can park with/without a parking pass.

SKETCHES & MOCKUPS







SCENARIO

Photo by Warren Wong on Unsplash

Jared, 24, out-of-state junior in mechanical engineering. He currently lives in an off-campus studio apartment, which is approximately a 20-minute drive from campus. Jared currently holds a C parking permit.

Jared typically spends 30 minutes getting to class from his apartment. He is frustrated that he has to spend his valuable time every day looking for parking spaces on campus. Jared's average weekday is in the following order: attending all of his classes, studying at WALC, stopping by Au Bon Pain for some grub, and then finally ending the day by going home to either hang out with his roommates, play video games, or just turn in early for the day.

Jared needs a reliable parking space on campus. He has used the Waze app before to find parking spaces. However, the app lacks a feature to keep track of the capacities of both the parking lots and the parking garages. He would normally drive to a parking space early to see if there are any available parking spots. However, he often finds himself driving back to his apartment and walking to class instead because of the lack of available parking spots. Therefore, Jared needs a feature that would find him available parking spots that would be near to his classes and that it should show parking spots available for those with parking passes and those without parking passes. It would also be convenient for Jared if he does not have to spend a lot of time navigating through this feature and that it should show an estimated wait time for an available parking spot.

Persona Overview

Name	Jared
Age	24
Occupation	Student (out-of-state, junior)
Housing	Off-campus, 20 minute drive from campus
Attitude	Practical, Hopeful, Involved
Needs	Stability, Simplicity, Consistency
Values	Reliability, Balance, Friendships,
Typical Day	Study, Hang out with friends, Video games
Frustrations	Campus parking, Weather, Traffic

SCENARIO, Part 2

Based on the scenario, the team developed the following tasks and steps.

Tasks and Steps

- TASK: The user needs to drive their car to an available parking space near their classes.
    - STEPS:
        1. The user needs to enter the destination in the Waze app.
        2. The user needs to specify if they have the appropriate parking pass in the app.
            a. If the user does not have a parking pass, it will redirect the user to the Purdue parking website to buy the appropriate parking pass before continuing to step 3.
        3. The user needs to enter if this trip is planned for now, or the future. (Parking wait times)
            a. If the user selects planned for now, the user will proceed to step 4.
            b. If the user selects for the future, the app will tell the user that it will remind them (sending notification) that they have an upcoming trip. The user will not proceed to step 4 until they get the notification
        4. The user needs to take action based on feedback for parking availability in the Waze app. Some parking lots may have more open spaces than others.
- TASK: The user needs to find parking availability without spending additional time on their commute
    - STEPS:
        1. The user opens the Waze app.
        2. The user selects “create an account”.
        3. The user enters their class schedule with locations and times for each class, and what kind of parking pass that they have, if any.
        4. The user selects their notification preferences.
        5. The user saves that information on the account.
        6. Waze tracks the user’s location, and the user will receive a notification before they need to leave for class (based on notification preferences).
        7. The user enters the Waze app, and clicks “start commute”

- TASK: The user needs to figure out how long it takes for parking availability to open up in a specific lot.
    - STEPS:
        1. The user opens the Waze app.
        2. The user navigates to the Purdue campus on the map, or searches for the location.
        3. The user selects “show parking lots”.
        4. The user selects the parking lot from the map.
        5. The user sees an estimate on screen about when a parking spot will open up in the selected lot.

FEEDBACK AND NEXT STEPS

The team has found that parking is a real problem on Purdue campus. The team interviewed 2 representative users on the scenario and received the following feedback:

1. “This makes it easier to find parking, although it does not increase the physical amount of spots.”
2. “I would have liked for the parking spot to be based on where my classes are.”
3. “This looks promising. It reminds me of what it looks like at airports.”
4. “I would definitely use an app if it lets you park and get to classes quickly.”

Based on this feedback and if the team had more time, the team would have done the following:

1. Create more high-fidelity prototypes
2. Perform usability testing
3. Perform heuristic evaluations
4. Reiterate on existing designs / solutions
5. Test connection and camera for one parking lot
6. Refine the design solution
7. Collect more data (do more interviews, etc.)
8. Contact Waze for their thoughts on the design solution and data
9. Design for campus-wide use

TEAM CONTRIBUTIONS

Tasks	Contributors
Interviews	Alex Lederman, Katie O'Brien, Jessica Townsend, Brandon Nguyen
Sketches	Alex Lederman, Katie O'Brien, Jessica Townsend, Liam Russell, Brandon Nguyen
Mockups	Alex Lederman
Scenarios	Alex Lederman, Katie O'Brien, Jessica Townsend, Liam Russell, Brandon Nguyen
Affinity Diagramming	Alex Lederman, Katie O'Brien, Jessica Townsend, Liam Russell, Brandon Nguyen
KWHL Chart	Alex Lederman, Katie O'Brien, Jessica Townsend, Liam Russell, Brandon Nguyen
Design Document	Alex Lederman, Katie O'Brien, Jessica Townsend, Liam Russell, Brandon Nguyen
Presentation Slide Deck	Alex Lederman, Katie O'Brien, Jessica Townsend, Liam Russell, Brandon Nguyen
Presentation Video	Alex Lederman, Katie O'Brien, Jessica Townsend, Liam Russell, Brandon Nguyen