Husky Parking Pal

Crows GPS - GPS/Navigation Systems

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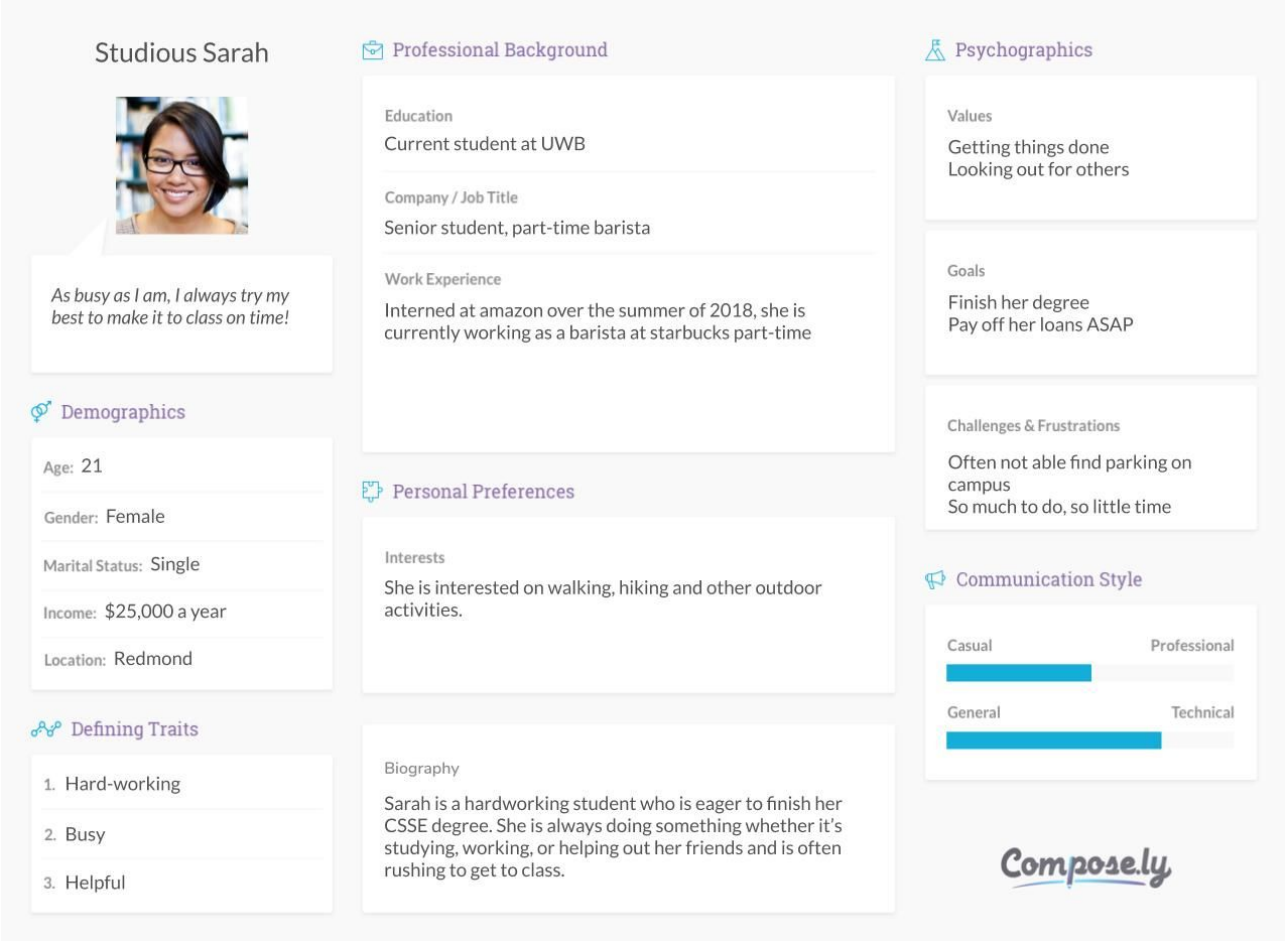
Project Description

Husky Parking Pal is a GPS application that assists users with parking at the University of Washington Bothell. The app supports users with in-advance alerts, parking spot navigation and reservation, digital payment services, and vehicle location recall. Husky Parking Pal enables drivers to have an trouble-free, end-to-end experience while parking at UWB.

Persona



In addition to UWB students, other potential users/personas include UWB faculty who regularly commute to campus via their personal vehicle or carpool.

Main Scenarios

Scenario 1:Reserve a parking space on the UWB campus

Actors: Individuals commuting to UWB in a personal vehicle

Pre-Conditions: User owns the Husky Parking Pal app and has pre-inputed their net-ID and vehicle information. User is checking how busy UWB campus traffic is before going to UWB in their personal vehicle.

Scenario:

1. The user opens Husky Parking Pal application on their smartphone
2. The system opens up to display a map with primary routes, each with an estimated time of arrival, from the user's current location to their campus, UWB. Additionally, there is a bar graph along the bottom of the screen that forecasts how busy campus traffic is and will be based on past data.
    a. If the user wants to go to a different UW campus, the user can use the side menu bar to change their destination
3. Based on the estimated time of arrival if they were to leave now, the campus will be at its peak in traffic, and finding a spot in time for their scheduled activities will be unlikely. The side menu bar has options for the user to choose from: "Available Parking" and "Reserve a Spot"
    a. If the user selects "Available Parking," the map view will zoom into the UWB campus to show the number of available spots above each lot.

        i. “Available Parking” allows the user to see how much parking is currently available on campus parking lots.
    b. If the user selects “Reserve a Spot”, the map view will switch to a menu that allows the user to pay to reserve a parking spot on campus for a particular time period
        i. “Reserve a Spot” prompts the user that reserving is an additional pay service on top of the existing parking payments/permits the first time this option is chosen
4. The user chooses “Reserve a Spot” and as prompted, inputs the time and date that they want to reserve a spot for and select the North Parking Garage as their preferred parking lot location
    a. If there are no spots available for reservation at that time and place, the user is given the option to input a different time and location
5. The user selects “confirm” to reserve that spot
6. The system displays two payment options for the user to =-pay for the reservation: “Pay by Phone” and “Pay at Station”
    a. If the user chooses “Pay by Phone” the user inputs their card/payment information
        i. The system uses the pre-inputted vehicle information (license plate) as required by the campus parking payment process
            1. If the user is driving a different vehicle than the one specified on the app, they can input the info on this screen, or add a new vehicle to the application
        ii. The system will send an email to the user with their payment receipt and confirmation

    b. If the user chooses “Pay at Station” the user will pay and input their vehicle information (license plate) using the pay stations on campus
7. The user selects “Pay at Station” and a confirmation of their reservation is sent to their email and updated on the “My Reserved Spots” on the side bar
    a. “My Reserved Spots” allows the user to view the time, date, and location of the spot(s) they reserved
    b. If the user tries to reserve another spot with the same vehicle during an already reserved time, the reservation will be rejected and the user is given the option to re-input a different time, date, and vehicle.

Post Condition: The user successfully receives an email confirming their reservation and the user’s “My Reserved Spots” page is properly updated with the correct reservation date, time, and location.

Scenario 2: Finding a Parking Spot During Busy Time

Actors: User in personal vehicle

Pre-Conditions: User arrives on campus in their vehicle but is having trouble finding a parking space.

Scenario:

1. The user says “Find parking” to the app
2. The app asks to confirm that the user wants to find parking
3. If the user says “Yes”, the app finds the nearest free parking space and starts the navigation system
4. The user follows the directions of the app
    a. At any time during the navigation, if the user says “Cancel navigation”, the app will ask to confirm the cancellation

        i. If the user said “No”, the app will continue the navigation (step 4)
        ii. If the user said “Yes”, the app will cancel the navigation
    b. If the user arrived at the directed parking spot, the app will asked if they successfully arrived
        i. If the user says “No”, the app will find another free spot and continue the navigation (step 4)
        ii. If the user says “Yes”, the app will stop the navigation
5. The app will display a prompt to the user to rate their navigation experience, where the user can choose a rating if they choose
    a. If the user chooses a high rating (4 or 5 stars), the app will display a thank you message
    b. If the chooses a lower rating (3 or less), the app will give the user a few options to describe what was wrong with their experience, a submit button, and a cancel button
        i. If the user selects one or more of these options and then the submit button, the app will display a thank you message and accept the rating and the user feedback
        ii. If the user selects “cancel”, the system will accept the rating but not receive any additional feedback
    c. If the user chooses to cancel the rating, no rating will be submitted

Post-conditions: The app’s system will receive any feedback and/or rating left by the user.

User Requirements Specifications

Table 1: Functional Requirements of Parking Application

Req-ID	Requirement
FR-01	The system must give live directions to any parking space chosen and/or confirmed by the user.
FR-02	The system must visually represent all campus parking lots and spaces on a map.
FR-03	The number of available spots for each lot must be shown on the map.
FR-04	Users must be able to reserve a parking spot given the time, date, and preferred lot that the user wants to reserve for.
FR-05	System must correctly update the “My Reserved Spots” page with the time, date, and preferred lot of the new reservation.
FR-06	Users should be given the option to pay for hourly parking and paid reservation parking via the app The system must send a confirmation and receipt of digitally paid hourly parking and reservation parking to the user’s linked email.
FR-07	The system must have access to the user’s current location, NetID, vehicle information
FR-08	The system should show the nearest parking space available.
FR-09	The system must be able to give directions through both audio and text.
FR-10	The system must not allow users to reserve more than one space at a time.

Table 2: Non-Functional Requirements of Parking Application

Req-ID	Requirement
NFR-01	The application should have a 98% online availability rate.
NFR-02	The app should refresh every 5 seconds when in use (system updates available spot numbers and freed up spots as well).
NFR-03	Sending confirmation of payment emails should not take more than a minute.
NFR-04	The app should recognize audio input from at least five feet away from the source
NFR-05	Navigation estimated time of arrival is updated in real time upon various criteria, such as traffic or weather
NFR-06	The system should handle the user's information securely to protect their privacy.
NFR-07	System software updates should not take more than 1 hour.
NFR-08	The app should not use more battery life than other GPS/navigation apps when running