

SMART PARK

“RU Ready to Park Smart?”

Demo 1: User Documentation



Github: <https://github.com/swetha-5689/SmartPark>

Group 3

Disha Bailoor, Neha Nelson, Param Patel, Swetha Angara,
Nicholas Meegan, Thomas Murphy, Charles Owen, Jeffrey Samson,
Aniqa Rahim, Brian Ogbebor

Table of Contents

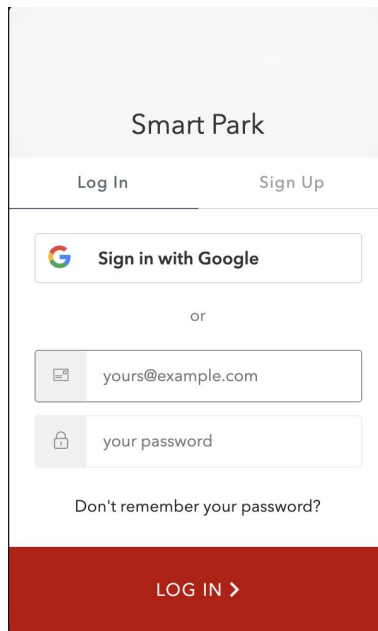
Customer Group User Documentation	3
Signup	3
Login	3
Reservations	4
Billing	5
Google Assistant	5
Manager Group User Documentation	6
Login	6
Home Page	6
Statistics Page	7
Calendar Page	7
Garage View	8
Reservations	8
Edit Layout	9
Overview	9
Pricing Admin Panel	9
View/Edit Live Price Model	9
Compare Historic Model with Results	11
Elevator Group User Documentation	13
Elevator Front End	13
Simulation	14
Spot UI	16

Customer Group User Documentation

Welcome to SmartPark! Here the user can login or create an account for the SmartPark website. To Run the front end proceed to this link: <https://boiling-river-38785.herokuapp.com/>

Signup

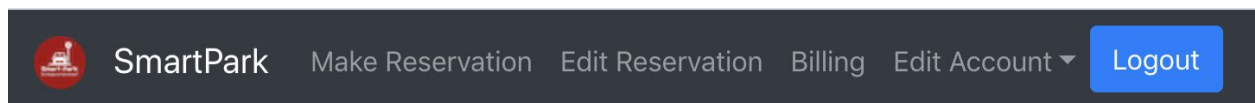
Put in an email and password to be able to login.



The image shows a mobile-style login and signup form for 'Smart Park'. At the top, the text 'Smart Park' is centered. Below it are two tabs: 'Log In' (selected) and 'Sign Up'. The 'Sign Up' tab is active, showing a 'Sign in with Google' button with the Google logo. Below this is the word 'or'. Then there are two input fields: one for email (containing 'yours@example.com') and one for password (containing 'your password'). Below the password field is a link that says 'Don't remember your password?'. At the bottom of the form is a large red button with the text 'LOG IN >'.

Login

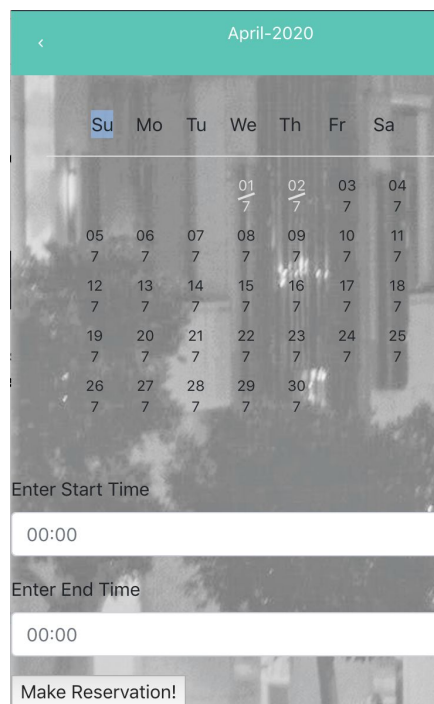
Once they are Logged in, the user can now access their account where they can make/edit reservations, edit their account in which they can add new vehicles, credit card information and change account password and pay off their bill.



Reservations

The User can click on the 'Make a Reservation' button. This page is not completed yet, however, the user can scroll through months and select a date. After the pages are integrated with the back end, the user should be able to choose a date, enter the start and end time to make a reservation that will all be saved

In order to Edit a reservation, currently this page is blank, but once completed User should be able to access the reservations they have created and be able to change the date and time.



< April-2020

Su	Mo	Tu	We	Th	Fr	Sa
			01 7	02 7	03 7	04 7
05 7	06 7	07 7	08 7	09 7	10 7	11 7
12 7	13 7	14 7	15 7	16 7	17 7	18 7
19 7	20 7	21 7	22 7	23 7	24 7	25 7
26 7	27 7	28 7	29 7	30 7		

Enter Start Time

00:00

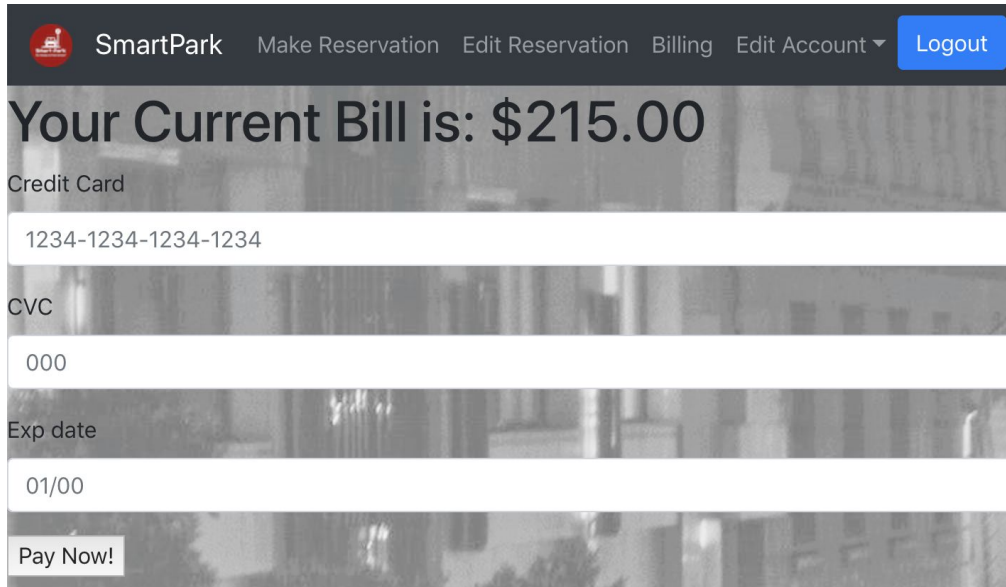
Enter End Time

00:00

Make Reservation!

Billing

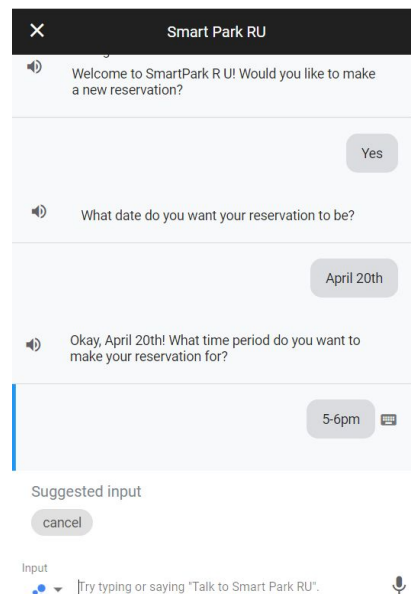
For the Billing page the user should be able to see the total amount owed. They can enter their credit card number CVC, and expiration date and click Pay Now. Once the amount owed is successfully paid the user should receive an email confirmation.



The image shows a web interface for the SmartPark application. At the top is a dark navigation bar with the SmartPark logo and links for 'Make Reservation', 'Edit Reservation', 'Billing', 'Edit Account', and a 'Logout' button. The main content area has a large heading 'Your Current Bill is: \$215.00'. Below this are three input fields: 'Credit Card' with the value '1234-1234-1234-1234', 'CVC' with the value '000', and 'Exp date' with the value '01/00'. At the bottom of these fields is a 'Pay Now!' button.

Google Assistant

The User can create reservations hands-free using any Google Assistant smart device. The User tells SmartPark the date of their reservation and the duration of their reservation. SmartPark confirms your reservation by repeating it back to you.



The image shows a Google Assistant conversation interface for 'Smart Park RU'. The conversation starts with a welcome message: 'Welcome to SmartPark R U! Would you like to make a new reservation?'. The user responds with 'Yes'. The assistant then asks: 'What date do you want your reservation to be?'. The user responds with 'April 20th'. The assistant then asks: 'Okay, April 20th! What time period do you want to make your reservation for?'. The user responds with '5-6pm'. Below the conversation, there is a 'Suggested input' section with a 'cancel' button. At the bottom, there is an 'Input' section with a microphone icon and the text 'Try typing or saying "Talk to Smart Park RU".'

Manager Group User Documentation

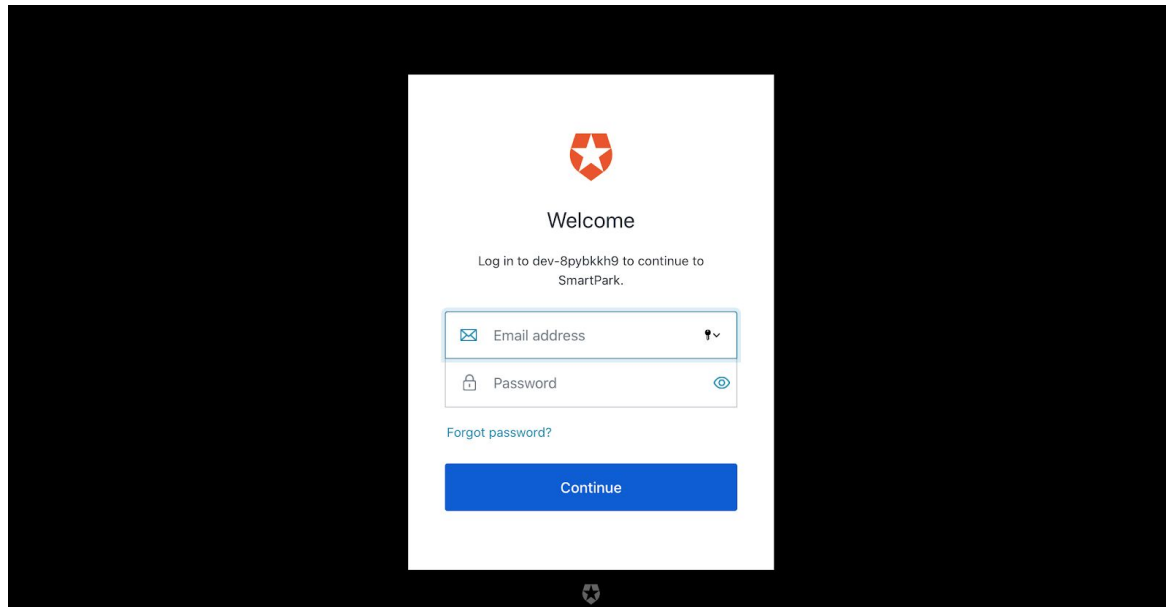
Login

First a manager is required to enter their login credentials.

Example:

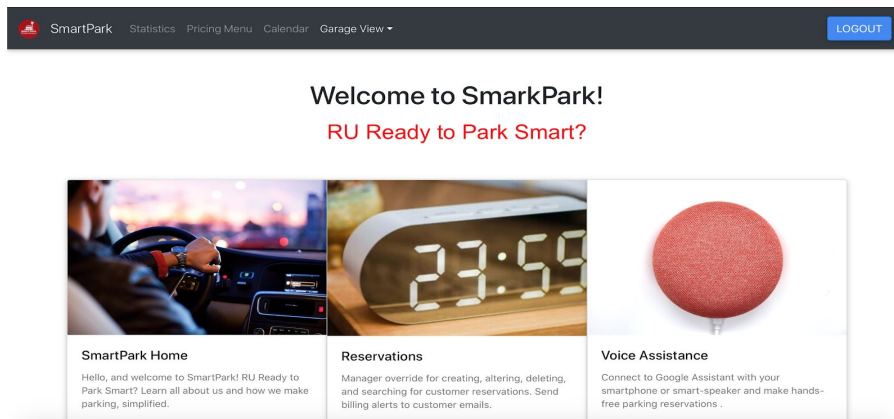
Email: jeffrey@example.com

Password: SmartPark2020



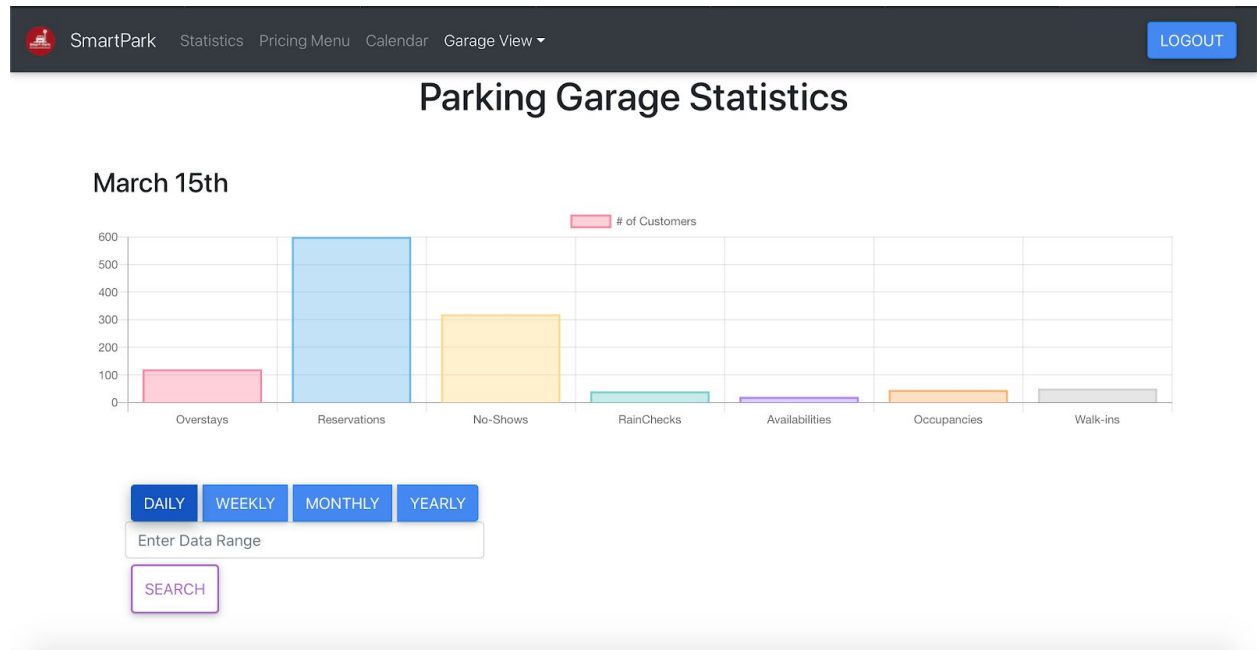
Home Page

Once a manager logs in they will be directed to the home page where they can go to other pages with other features.



Statistics Page

This is our statistics page and here you can view business statistics on a daily, weekly, monthly, and yearly time frame. You can also search for a specific data range to get a more accurate and relevant business model.



Calendar Page

Our calendar page can store events that would require parking and probably cause an influx of business. Also, you can have events related to your business such as staff meetings.

The calendar page has a dark header with the SmartPark logo and navigation links: Statistics, Pricing Menu, Calendar, and Garage View. A blue LOGOUT button is in the top right. The page is divided into two main sections: "TODAY:" and "SCHEDULE".

TODAY:

- 9:00am St. Patrick's Day Parade** (with a red close icon)
Location: Highland Park
Description: Expect high demand for walk-ins, reservations, and a large number of overstays.
- 3:30pm TEDx** (with a red close icon)
Location: RAC
Description: Expect students to walk-in to garage.
- 5:00pm Staff Meeting** (with a red close icon)
Location: Room 202
Description: Staff Parking

At the bottom of the "TODAY:" section is a blue button labeled "ADD EVENT".

SCHEDULE

It is going to be busy that today. You have 3 events today.

Sunny
23°C

Today will dry and sunny, becoming warm in the afternoon with temperatures of between 20 and 25 degrees.

Garage View

The garage view is a drop down menu to see the garage in three different aspects: with regards to reservations, a general overview, and to edit the layout of your garage.

SmartPark

Statistics

Pricing Menu

Calendar

Garage View

LOGOUT

Username

Search

Reservations

Overview

Edit Layout

First Name	Last Name	Username	Reservation Type			Reservation End Time	Confirmation Number	Action
Neha	Nelson	n_nelson	Guaranteed	false	March 18th 2020, 10:00:00 - March 18th 2020, 1:00:00	March 18th 2020, 1:00:00	129652	<div>DELETE</div> <div>BILL</div>
Neha	Nelson	n_nelson	Guaranteed	false	March 31st 2020, 3:13:51 - March 31st 2020, 3:13:51	March 31st 2020, 3:13:51	129653	<div>DELETE</div> <div>BILL</div>
Jeffrey	Samson	j_samson	Confirmed	false	March 31st 2020, 3:14:47 - March 31st 2020, 3:14:47	March 31st 2020, 3:14:47	129242	<div>DELETE</div> <div>BILL</div>

Reservations

The reservations page allows the manager to see the current scheduled reservations and customer details like name, username, type of reservations etc. Here we can physically bill or delete reservations.

SmartPark

Statistics

Pricing Menu

Calendar

Garage View

LOGOUT

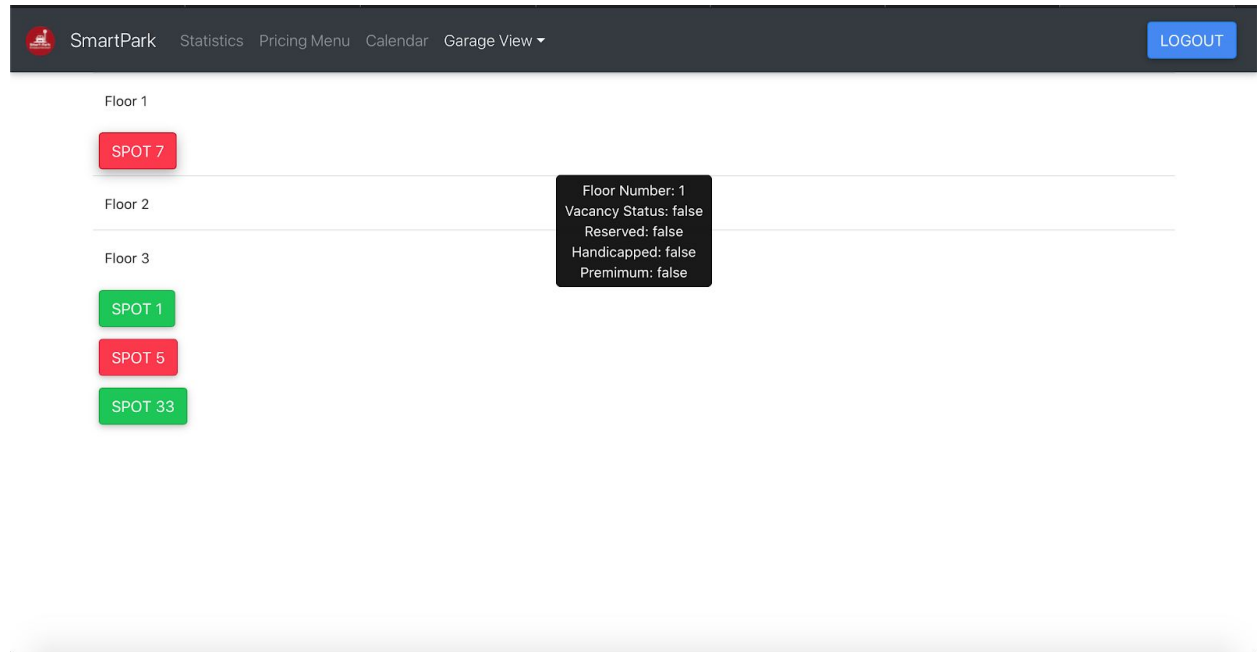
Username

Search

First Name	Last Name	Username	Reservation Type	Paid Status	Stay Period	Reservation End Time	Confirmation Number	Action
Neha	Nelson	n_nelson	Guaranteed	false	March 18th 2020, 10:00:00 - March 18th 2020, 1:00:00	March 18th 2020, 1:00:00	129652	<div>DELETE</div> <div>BILL</div>
Neha	Nelson	n_nelson	Guaranteed	false	March 31st 2020, 3:13:51 - March 31st 2020, 3:13:51	March 31st 2020, 3:13:51	129653	<div>DELETE</div> <div>BILL</div>
Jeffrey	Samson	j_samson	Confirmed	false	March 31st 2020, 3:14:47 - March 31st 2020, 3:14:47	March 31st 2020, 3:14:47	129242	<div>DELETE</div> <div>BILL</div>

Edit Layout

This page is not yet completed but if you hover over the spot number you can see the popup in the middle of the screen with all the spot information. After more development the users will be able to list their garage configurations and see their garage in real time.



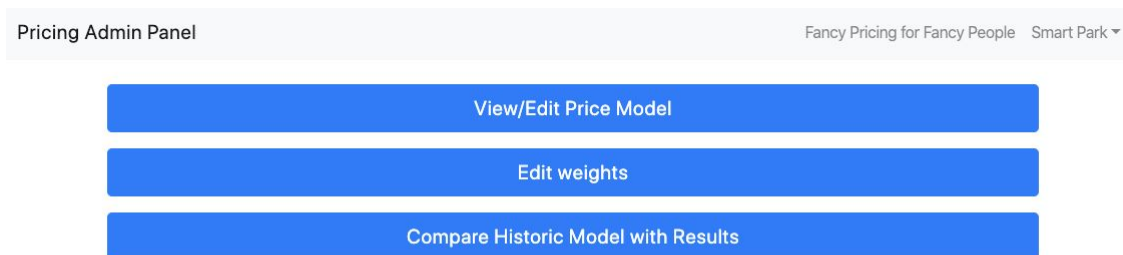
Overview

Under development.

Pricing Admin Panel

View/Edit Live Price Model

Welcome to the Pricing Administration Panel. Here, you can update the Live Price Model for your garage. The price model is intended to be an easy to understand, easy to use function to incorporate dynamic pricing principles into your parking garage rates and fees.



Under the **View/Edit Live Price Model** option, you'll find access to the user defined fields you'll use to define pricing and a simple graph that displays projected revenue.



The premise of the model is that you, the administrator of the system, may enter your standard hourly parking base rate first. This is the value from which all subsequent inputs work off of. So, if the normal hourly rate for parking in your garage is \$6/hr. That's the rate we'll start off entering in that field. You can always come back and change this value after you've experimented.

The base rate multiplier will determine the maximum rate that you would ever like to charge as an hourly rate. For instance; if your base rate is \$6/hr and you would like to charge a maximum of \$8.40/hr when the garage is starting to reach capacity, you would enter a multiplying factor of 1.4.

Ex: Base Rate * Multiplying Factor = Maximum Rate Charged

Ex: \$6/hr. * 1.4 = \$8.4/hr

Next, you can set the threshold values. The minimum threshold is the percentage of occupancy you want to wait for before the dynamic pricing "kicks in". For instance, if you don't want to charge a higher rate until the garage is at least 60% occupied. You would enter the value: 60, into this field.

The maximum occupancy threshold is the percentage of occupancy you would like the maximum rate applied to. For instance, if you want the maximum rate applied to those parking when the occupancy is 70% and above you would enter the value: 70, into this field.

The rate will scale from base to maximum over the range of occupancy between the two values you input and stop scaling thereafter.

The described inputs are shown as an example below.

Revenue based on admin defined values: \$10191.60

Base Rate: \$6/hr

Rate Multiplier: 1.4

Min. Occ. Thresh: 60%

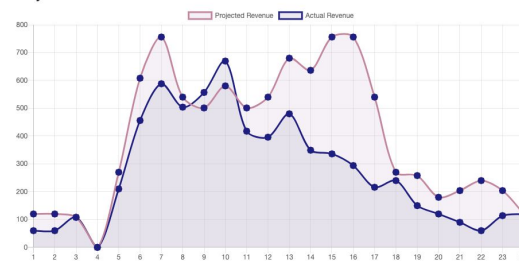
Max. Occ. Thresh: 70%

Make Live

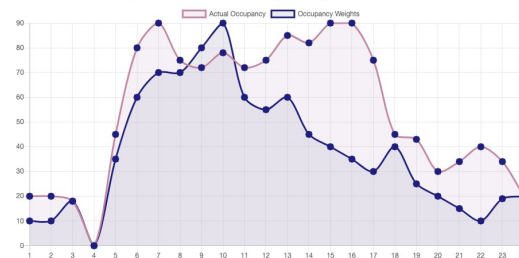
Compare Historic Model with Results

As the administrator you will want the ability to view the historic results of your price model. This feature is found by pressing the **Compare Historic Model with Results** button.

Projected vs. Actual Revenue



Actual Occupancy Rate vs. Occupancy Weights



select a date to review:

020-03-01

Projected Revenue for the Day: \$9488.88

Actual Revenue for the Day: \$6595.20

Base Rate: \$6/hr

Rate Multiplier: 1.4

Min. Occ. Thresh: 60%

Max. Occ. Thresh: 90%

Under this portion of the Pricing Admin Panel you will find a simple “date picker”. Clicking on the date picker will bring up a calendar. On this calendar you can easily select the date of interest.

After selecting the date you’d like to see historic price model performance for the graphs and revenue fields will automatically populate. The first photo of this section is an example of what you will see.

The top graph presents you with an overlay of the projected revenue for the day in question along with the actual revenue the garage generated on that same date. This projection was created with the values you input for the price model. The graph charts revenue in dollars on the X axis and hour of the day on the Y axis.

The bottom graph presents you with an overlay of the actual occupancy percentages by hour and the assumed occupancy weights on the date in questions. The occupancy of the garage in percent is charted on the X axis, and the hour of the day is charted on the Y axis.

Elevator Group User Documentation

Elevator Front End

In this brief user documentation, a walkthrough of necessary components and how to use the SmartPark elevator system is gone into detail.

In order to begin using the front end of the elevator terminal, four devices need to be connected: the camera in the elevator, the back end software, the weight sensor hub (which connects all of the weight sensors together in one spot), and the license plate scanner in the elevator terminal. If these devices are not connected, a boot failure screen will display. To advance to the main elevator terminal, please ensure these devices are connected. (If you are using developer mode, press the respective buttons in order to advance the screen. See the “dev mode” or “demo mode” section of the documentation for more details.)

After the devices are properly connected, the main elevator screen is displayed. Once this screen is displayed, using the camera, the elevator terminal system begins searching for vehicles that are going to enter the elevator terminal. When a vehicle is found, the customer is prompted to enter the elevator. From there, the elevator terminal scans the license plate of the customer. If the license plate scan is successful, then the success is displayed and a reservation number is searched for through the database for that license plate number. If the reservation is found and the garage is not full, the customer's spot is displayed on the screen and is taken to that floor. The elevator then returns to the ground level, ready to accept another customer.

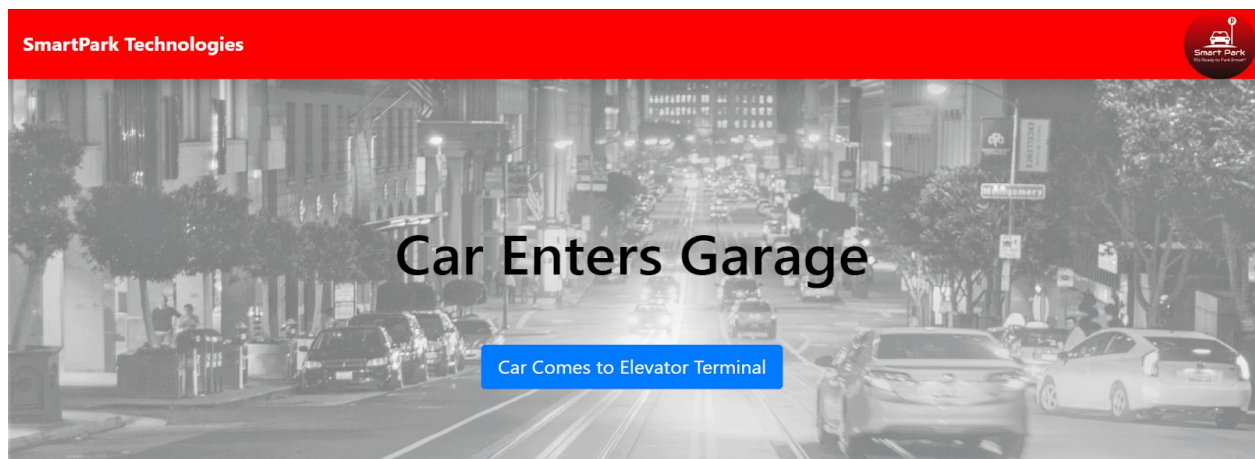
However, if the license plate could not be scanned, however, then the customer is asked whether they have a membership number or not. The membership number is a unique number given to the customer when the reservation was made. After being prompted, the customer has the choice to enter the membership number if they have one or exit the elevator to create an account on the walk-in terminal. A reservation is then searched for using the membership number.

These consist of a few of the branching paths that the elevator terminal is able to take. Each path can be explored in depth by using the elevator terminal's built in demo mode. NOTE: In order to access the demo mode, a variable in the devMode.jsx file needs to be edited. This should only be done with authorized SmartPark staff, and most garage owners should not edit the code under any circumstances. The demo mode can be accessed through the SmartPark website for managers under the simulation tab.

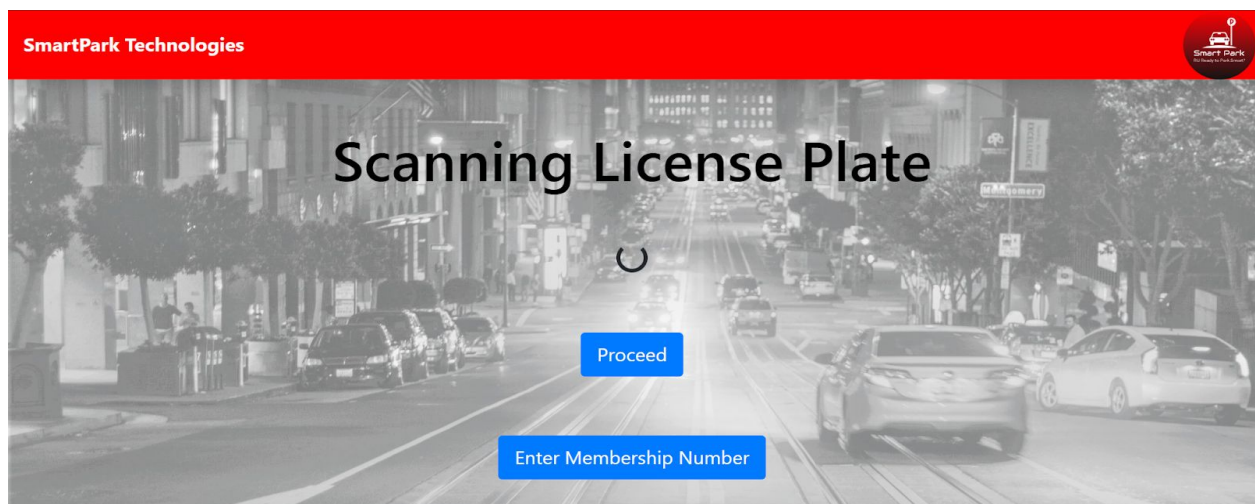
When demo mode is enabled, button inputs can be used in order to test the scenario that the garage owner wishes to see. Setting the buttons will simulate what would take place if a vehicle had entered the elevator under the given conditions. Moreover, plans to simulate multiple cars entering the elevator planned to be added in a future release.

Simulation

The simulation is mostly to outline the different scenarios that the elevator group has to account for when the customer approaches the elevator terminal. So the home page looks like this:

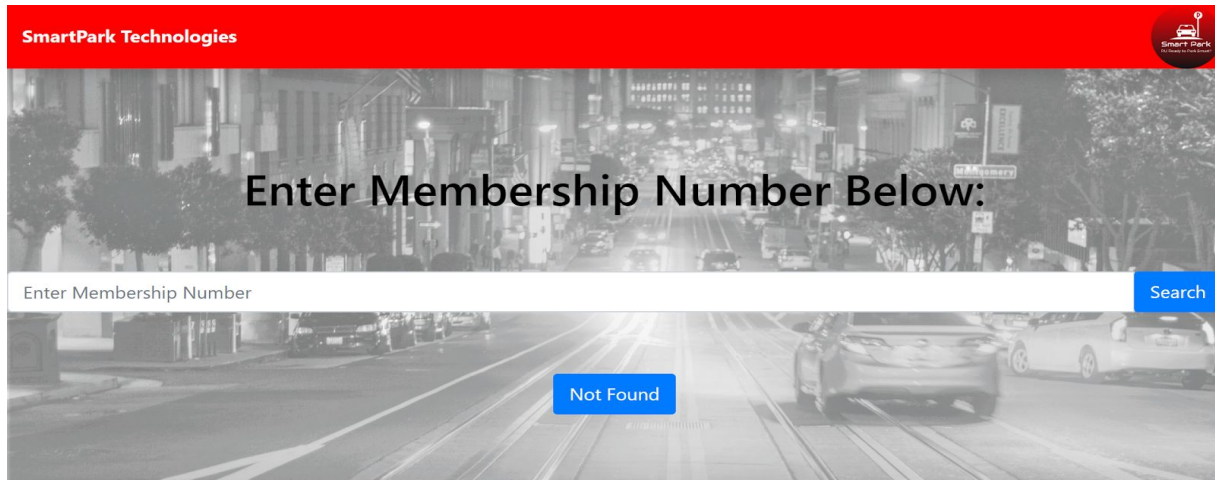


The interactive button on the home page simulates the scenario for when the user approaches the elevator terminal. Clicking that button leads us to the Scanned.js page:



This page is simulated for the license plate scanner, when the Proceed is selected, it leads to the success page, when the spot is found. This is for when the license plate is

successfully scanned. If the license plate is not able to be scanned due to faulty license plate or a faulty scan, then it leads to this page:



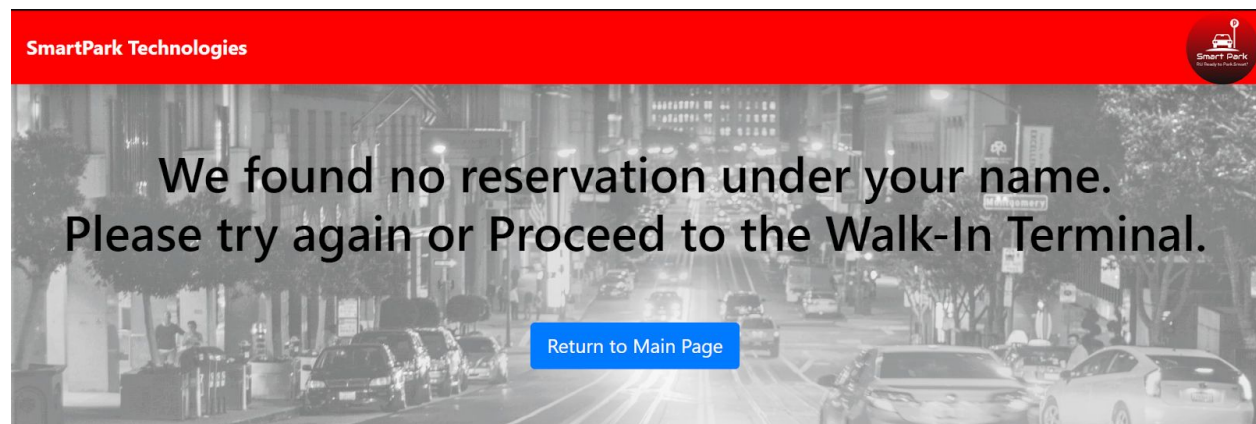
SmartPark Technologies

Enter Membership Number Below:

Enter Membership Number [Search](#)

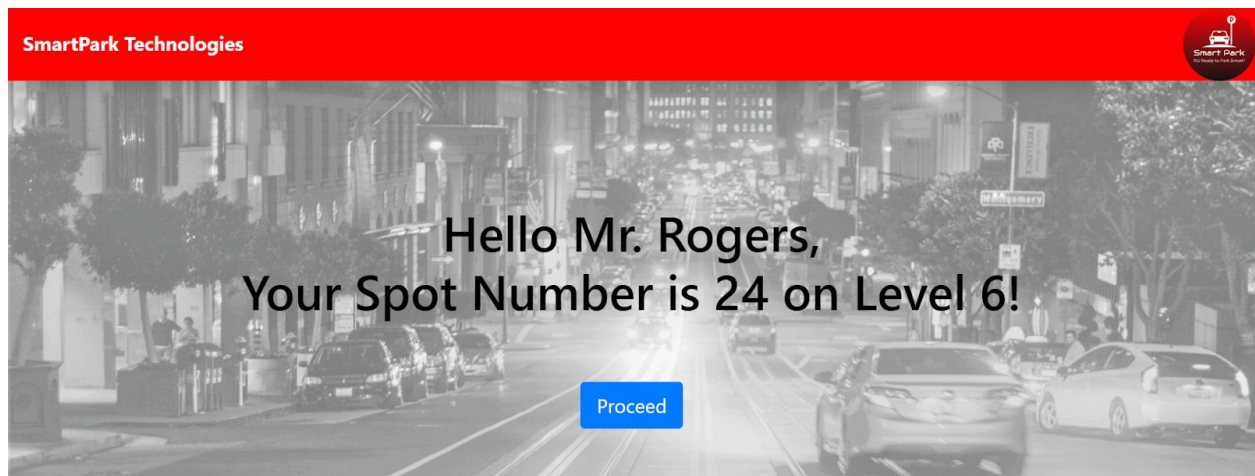
[Not Found](#)

This is for the Not Scanned Scenario, when the user is asked to manually input the membership number in the Text Box and then when the Search button is pressed there is a backend search conducted on the database with the reservation information. Search leads to the success page. However, when the membership number is not found in the backend, and thereby not finding the reservation leads to this page:



This is the failure page which loops back to the main menu through the button, and informs the customer to leave the elevator so that they can be treated as a Walk-In customer.

The success page looks something like this:



This page also loops back to the home page, through the proceed button.

Spot UI

This is the front end UI for the backend of the elevator group. It is the spots on the floor layout of the parking garage. We used a definite set of spots to model it in this UI; we will be able to change the number of floors and spots per floor in the next demo.

Spots				
A1	A2	A3	A4	A5
A6	A7	A8	A9	A10
B1	B2	B3	B4	B5
B6	B7	B8	B9	B10
C1	C2	C3	C4	C5
C6	C7	C8	C9	C10
D1	D2	D3	D4	D5
D6	D7	D8	D9	D10
E1	E2	E3	E4	E5
E6	E7	E8	E9	E10

In this the boxes represent the spots on the floor. There is space between the rows of the spots to allow mobility for the users. The user and the manager can look at this layout to see what the floor plan garage looks like. This layout will also be used to figure out which spots are occupied and otherwise by the manager.