Automated Parking Space App

The Automated Parking Space App is an application that is meant to help Wits staff, students and visitors find parking in the various parking lots found on campus.

The Details About the App

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# Terminology

Admin – the administrators that are responsible for keeping the parking space information up to date.

User – staff, students and visitors that use the parking lots on campus

Classifier – the part of the app that is used to determine whether a parking space is free or not.

# The Main Idea

Finding parking space can be a hassle and add unnecessary delays to plans made for the day. It can also waste petrol as one may have to drive to different parking lots before finding a spot to park in. The Automated Parking Space application is meant to help make that process easier. Staff, students and visitors may use this application to find parking space where they can park.

Cameras will be put up at the parking lots on campus. The application will use that footage to update the user on where parking space is available.

## The Process

* Video footage will be taken from cameras watching the parking lots.
* Footage of the parking lots will be received from the cameras by the admin.
* Admin marks the different parking bays on the footage received.
* The marked footage is then fed to the classifier by the admin.
* The classifier gives, as output, which parking spaces are taken, and which ones are free.
  + Output given in terms of ones and zeros.
* Server will store information given by the classifier
* User will open application and select which parking lot they would like to park in.
* Application will show the user how many spots are free and which ones are open
* Admin can check log to see how many cars are in a certain parking lot at a given time.

# Admin Web App

The admin side of the application will be a functional web application. The web app should only allow authorized administrators to log into it. From there, the admin can carry out their duties.

## Features

The main features of the web app are:

* Authentication
* Receiving image/video footage from cameras
* Mark parking bays
* Crop images
* Send images/video footage to classifier
* Gather stats (log) from server

# User Mobile App

The user side of the application will be a mobile application. The app should be appealing enough for users to use and must also be easy to use. Anyone who has the mobile app can use it.

## Features

The main features of the mobile app are:

* Show list of parking lots
  + Group them in terms of who’s allowed to park there.
  + Show how many parking spaces are available.
* Show vacant parking spots
* Select parking spot
  + Expires after 2 minutes
  + Has time widget for eta.
* User refresh for an updated parking data
* Heat maps for parking lots

# Server

The server will be used to store data about the parking spaces available in all the parking lots. Admin must be able to retrieve this data from the server. The server will also send this data to the user mobile app so that the user can see where they can park. Along with this data, the server must store information about the administrators for security purposes.