Smart Parking Navigation System

User Tutorial

Detailed guide on the usage of the Smart parking navigation system web application:

# Introduction:

The Smart Parking Navigation System (SPNS) was developed in order to enhance the ability to navigate through closed off, GSP disabled parking lot environments. The underground parking lot is populated by cameras capable of capturing clear images of passing vehicles and processing the images in order to recognize license plate numbers. These number plates are then sent via Azure SignalR service to the web application in which the number of the vehicle is stored locally for each user and then updates his location on the map.

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# Registering:

The SPNS user doesn't have to register or create an account for the application services.

In order to use the service, in the front gate of the parking lot, a camera will capture the drivers license plate and create a QR code which will be displayed on a screen by the gate.

The user will then scan the QR code using his/her mobile phone and will instantly be granted access to the application’s front page.

Due to the SPNS aim to be targeted at underground parking lots, it is advised to provide a second QR code by the gate which will allow users to connect to a local wifi network and use the application through it.

# Application Functionality:

## The Map:

**The map** - the map contains information of the parking sections, entries, exits and the driver location.

**Zoom and floors** - the amp zoom can be controlled by finch gesture on the mobile touch screen of the device. Switching between floors of the parking lot is controlled by the “+” and “-” buttons or the top left corner of the map. These can be used manually while the navigation system will automatically switch the user map to the correct floor and location when he drives by a camera.

**Occupancy** - the occupancy map can be located in the top right corner of the map, it will display the live current occupancy of each section of the parking lot and will update every couple of seconds simultaneously to all users.

## The Menu:

**Navigation assistance** with the web application can be used to help orientation around the parking lot and guidance with the help of the cameras positioned at important intersections inside the lot.

**Automatic** - will find the lowest occupancy section near the driver and will guide the driver to it.

**Manual** - lets the user choose a floor and section he priorly knows he wants to arrive at and will guide him to it.

**Exit** - finds the closest exit point from the parking lot and will navigate the driver to it.

Save parking location - big parking lots will have some number system/ colored sections, this can be stored in the application for convenience.

**Change the number plate** - if the cameras were to incorrectly read and post a wrong number plate for the user - he will have the ability to change it manually in order to keep getting updates from the system.

# Auxiliary Applications:

The application contains convenient access to popular applications which can be used after parking the vehicle - **Parking lot fee**: Pango. Or exiting the lot - **Navigation outside the parking lot:** Google and waze.