Parkodle

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Index

INTRODUCTION

Our Idea

In most of the big cities in the world, one of the most critical problems is to find a free parking spot. In that chaotic environment, it would be very helpful an assistant for find it easily.
This assistant can be Parkidle!

What is Parkidle:

Parkidle is a mobile application developed for Android OS that shows to the users empty parking spot around them.
The application shows to the user a map with the empty parking spot left by other users, both free and paid park. The app uses a Google technology called "**Activity Recognition API**" to understand what users are doing; our technology can collect the exact position where the user took its car and share it with everyone else as a simple marker on the map.

Parkidle was born inside the Google Technologies for Cloud and Web Development 2018.

Who we are

Our team is composed by four members:

Alessio Cesaretti

Backend and Frontend developer, studying Computer Engineering at Sapienza University of Rome.

Andrea Misuraca

Backend and Frontend developer, studying Computer Engineering at Sapienza University of Rome.

Simone Silvestri

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It was a great challenge to present and improve milestone after milestone our product, trying to present an application that solves real solutions in the smartest and technological way.
Like a real startup, we had problems to extends the number of users, the difficulties to test the product and to validate them. In the good atmosphere of the workshop, was born an application that is fully automated and really offer a different and an unseen solution to this problem.

Evolution from the first steps to the final submission:

The problem of parking in big cities is a theme that concerns us in the first person because we live in Rome and, to be fair, isn't the most vehicle-optimized city in the world.
In this case we can say that our solution comes from everyday suffering and stress bound to find parking.

First Milestone

Already from the first milestone, we want to tell the story of the common driver and also build the main scenario for a clear application's use case. Regarding the technology, we started initially with a third part service (Predict.IO) that uses the same Google's services that will see in the most advanced phases of our project. Also, for us, was important the initial feedback that arrived from the first survey we made, surely was a boost for us to continue and improve the idea.

Second Milestone

In the second milestone, we collected the best feedback regarding features for the user to implement them by making the application closer to users. We started to evolve Parkidle about the automation of the detection, also continuing to monitor performance and making the application more stable.

Third Milestone

The idea is definitively formed from the technological point of view, we finish the background services and also formed a plan to have an increase in users. The project is definitely done, the experience was complete.

Final submission

We improve the service by focusing on the public release, arranging the repositories and the social pages of the application.

Project

Aimed Necessity

Finding parking spots is a crucial point in our life, especially in big cities like Rome where the average time to find a single spot is 10 minutes.
Parkidle takes action in this situation facilitating the research and showing people free parking spots on the map.

Our clients identification

Our project could serve a lot of clients, but we know that at the beginning it's important to select a specific target, so we identified it.
The early adopters are the students of the universities in Rome (Sapienza, Luiss, Roma3) because they are very familiar with social networks and they share a restricted area in which parking is a struggle.
In the future we plan to enlarge the community to every driver in Rome.

Our Partners

From the very beginning of the project we tried to contact some companies that operate in the mobility field, but still we couldn't get an engagement.

Why Parkidle?

Parkidle is not for sure the first parking application, maybe we are the thousandth, but we think that we can be the best. We are going now to analyze how Parkidle places itself between other services.

There are a lot of alternatives but there are a few points to prefer Parkidle:

- **Automation**: using our algorithm we can predict if the user is leaving a parking spot without him doing anything;

- **Battery and data saving feature**: we use the lightweight MQTT technology that won't finish your data;

- **Precision**: Other app just estimate the number of parking spot in a zone, but we can show you the spots accurately using the GPS.

Manual Reporting apps

Their weakness is the users' laziness, because no one wants to open the app while driving and click the "report button". When you use the application, you can see only 3-4 parking spots reported in the whole country.
Obviously, the automatic detection guarantees a better service.

Private Parking apps

These apps only show the position of private paid parking spots, so the number of the users is very little, since no one wants to pay for a parking spot.
Our app will have a larger community.

Business Model

Parkidle is a mobile app, made by four Rome based students, so we planned to implement Ads based on location, making agreements with small-medium business for sponsorship them and to gain the users privileges such as discounts, to cover those paid service, like AWS, web-APIs and licenses.

This is our mainly solution to give Parkidle as a **free service** to all user out there.

Use Cases:

Case 1: student needs to park near its university

One main use case, thinking about our early adopters, is clearly the needs for the students to don't lose time.The student itself can check the application for some free parking spots near there, reducing the possibilities to be late to the lesson.

Case 2: Saturday night

Going out, on Saturday night, with a car in the central places in Rome means deal with the climax point of this whole problem.
With Parkidle, you have a support to choose efficiently which roads to take, seeing in real time which parking are going to being freed.

We want to say hi to Michele for that time he can't achieve to reach us after going around for 1 hour and half, searching for some places to leave the car.

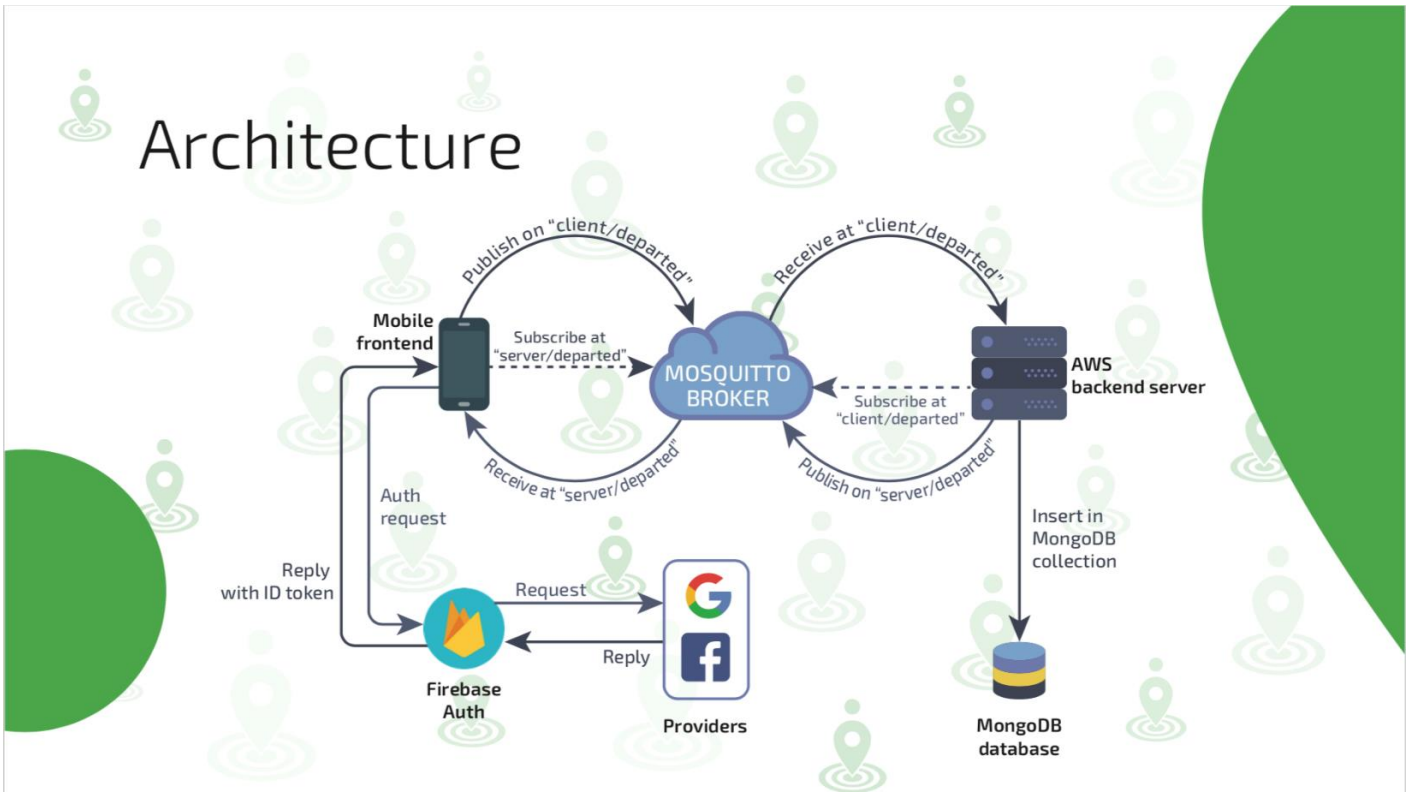
Feedbacks

We did several survey about idea validation and how this should be implemented in the application, starting from what functionalities they expect to find there.

[inseerire immagini survey??]

User feedbacks lead us in the right path and, at the moment, our closed alpha testers group (around 100) is searching for us bugs and indirect problems not due to the application.

Technology



General Communication Architecture Schema

Parkidle code is public on our GitHub repository: https://github.com/ParkIdle/ParkIdle-Android

Structure

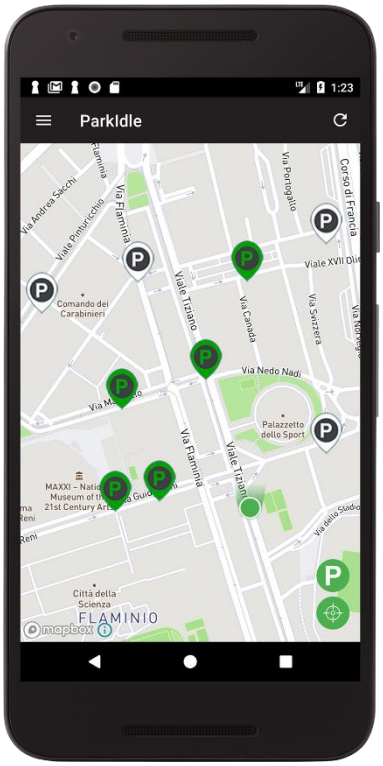
- **Mobile-app (Android)** - Front end for the user
- **Server** - Back end for us to handle the communication between the users with the MQTT Broker and to store the events in our MongoDB database
- **MongoDB database** to save all the messages about the events shared by the users, using them soon to provide a kind of "event previsioning"
- **Mosquitto Broker** hosted on our server to handle the MQTT Protocol communication between users and server
- **Firebase** Authentication to let user authenticate with Google or Facebook

Third parties services (API)

- **Mapbox**: free maps service for a maximum of 50.000 requests/month. It includes also a navigation API
- **Google Activity Recognition Client**: accurately detect users' activity using low power signals from multiple sensors in the device
- **Bugfender**: remote logger to get fast remote access to applications' log files on users' devices
- **Crashlytics**: lightweight crash reporting solution, used as a Firebase extension

App Overview

Login with Google or Facebook



The main screen consists in a real-time **Map** with the empty parking spot markers.

4 colors based on marker's life-time:

- **White** (0-5 mins)
- **Green** (5-10 mins)
- **Yellow** (10-20 mins)
- **Red** (more than 20 mins)

shows the nearest parking spot

centers the camera on user's location

Clicking on a marker will pop up an info window

- Marker's life time
- Airline distance
- Navigate button