

Family Parking Project

**Google Technologies for Cloud and Web Development Workshop**

**Engineering in Computer Science**

**La Sapienza University**

**Abstract**

**Family parking** system is a new solution to solve the problem of sharing a car among members of a family. In such a case, where there is more than one member using the same car in a family, the problem of finding the last parking position where the last one who used the car parked is a real problem for all the other members sharing this car. Family parking system introduces a new solution to this problem with a set of clever features that are interesting to each family to use in their daily life activities. Using google maps, the system will flag the last position where the car was parked, and this flag will be reachable to all the other members sharing the car. At the same time, this flag will be updated once one of those members uses the car and parks it again. This modification on the flag can be done manually, or automatically using the clever detection feature of FamilyParking app that will be able to automatically detect the parking of the car in order to put a new reachable shared flag, or to detect the movement of the car in order to remove this shared flag.

***Keywords:*** Google maps, flag, family, manual parking, automatic parking.

**Team members**

Informatics engineer graduated from La Sapienza University, Rome, Italy. Master student in computer science at La Sapienza University. Freancesco has a very good experience as an Android programmer. Thus, his main responsibilities in the project were defining the needed technologies for developing, optimizing the algorithm of automatic parking, and Android programming.

***Francesco Nobile***



Informatics student at La Sapienza University, Rome, Italy. Georgia is the reason behind the idea of family parking app to be found. She is the idea finder and her responsibilities in the project were: taking part of developing the iOS version of the application, leading the group meetings with her suggestions about the perfect implementation, evaluating the application through distributing it to real users.

***Giorgia Ramponi***



Software engineer graduated from the Aleppo University, Syria. Master student in computer science at la Sapienza University. Because of his experience as a creative researcher at Nawatt Ltd, Obaida was mainly responsible for the documentation, preparing, collecting and representing the user tests, preparing the presentations, speaking on behalf of the group during the milestones’ presentations and doing some programming tasks.

***Obaida Hanteer***

Informatics engineer graduated from La Sapienza University, Rome, Italy. Master student in computer science at La Sapienza University. Nazzarenohas a very good ability to learn quickly and he is always eager to every new in the technology. His responsibilities were: analyzing, developing and testing the server side of the app with python, initializing the Github account and introducing it to the team to know how to use it.

***Nazzareno Marziale***



Informatics student at La Sapienza University, Rome, Italy. Mauro has a very good awareness about the latest tools and technologies in mobile and web programming. His responsibilities were: mainly developing the iOS version of the application, initializing the application website, following the google analytics and study those statistics to build a knowledge about the user’s use of the app, and organize the meetings with the mentor.

***Mauro Piva***



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**Chapter 1 Introduction**

**1.1 Preface**

There is no doubt that the winning idea in the current era of the rapid continues development of the technology is not always the idea with the super creative features and the very exclusive properties, instead it is the one which simply solves one of the users real problems and satisfy his needs sufficiently no matter how simple it is. Thus, the importance of any new idea depends mainly on the importance of the user problem this idea solves. The evaluation of this idea, as a result, will be mainly based on how sufficiently the real application of this idea will solve this problem to the user. For example, a simple idea like "Whatsapp" with no new real invention in the idea, comparing to the previous messaging systems, to gain over than 600 million active users by October 2014**[1]** means that no matter how simple the new idea is, the most important is to satisfy user needs cleverly and distinctly and to know how to add attracting features that cannot be found with the other competitors products. In this domain, family parking application is a simple application that solves one of the most important and frequent problems within the family life which is finding the positon where the family shared car is parked.

**1.2 What is FamilyParking System?**

FamilyParking system mainly is a new solution to solve the problem of sharing a car among the members of a family. In such a case, where there is more than one member using the same car, the problem of finding the last parking position where the last one who used the car parked is a real problem for all the other members sharing this car. FamilyParking system introduces a new solution to this problem with a set of clever features that are interesting to each family to use in their daily life activities. Maybe it is the new positive member of each family having this problem, the member who will have a very accurate memory, and a very developed monitoring system that let him always ready to answer every other member of the family when he ask “where is the shared car parked now?”. To make things more clear, we can imagine, initially, FamilyParking application as an application with a very simple interface working over Google maps application with two main buttons:

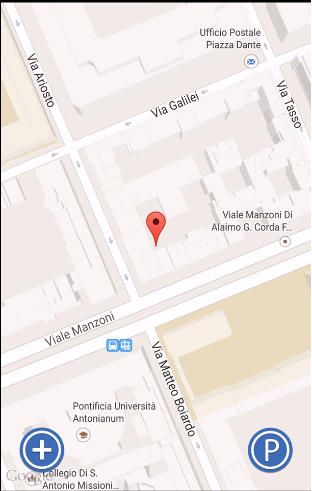
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* **Parking button** which will be used by the current driver of the car once he parks the car as a way to inform the application that the current position where the parking button is pushed lately is the position that should be saved as the last place where the car was found, and this is the position that should be, in some way, published to the other members of the family who are willing to use the car in order to help them finding the car position easily.



* **Add member button** which can be determined, somehow, as non-functional part of the application since it is used just to add members to the family group to whom the last parking position should be broadcasted.

Indeed, with such an application, the automatic parking detection is one of the most important and golden features that should be performed. This feature could be defined as the core part of familyParking system where it can detect automatically the action of car parking and then broadcast this position to the other members of the family. So it is not required for the user to rmember always pushing the parking button whenever he parks the car, because the application itself will try to detect that and do the parking on the application without the user interference.

**1.3 FamilyParking users**

Indeed, the idea behind familyParking was found after studying of some real users’ problems when they spoke about their daily sufferings and time wasting just trying to locate the position of their cars in the morning since their cars are shared with their family members. According to that, some statistics where done to expect who are the people that will be interested this app, and is it really worthy to invest in familyParking.

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**1.3.1 Expected users**

Since the idea was born in Rome, and planned to be launched in Rome for now initially, the following statistics were done in order to expect the number of users for such an application.

The most recent statistics done in 2014 showed that the population of Rome reached 2,869,461**[2]**. Knowing that the average of family members in Italy is 4 we can assume that the number of families in Rome is roughly equal to 717.365.

Supposing that each family of those has at least only one car and not all families in Rome use the smartphone. It could be considered that the expected users for the current phase when it is launched just in Rome will be, expectedly, more than 0.5 million families.

Speaking about some worldwide statistics, since the minimum platform used in developing the project with android is 4.0.3, then 91.8% of android system users are expected users for FamilyParking app in future [3]. And since the minimum platform used in developing the project with iOS is 4.0.3, then 91.8% of iOS system users are expected users for FamilyParking app in future **[4]**.

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**1.3.1 Real users**

**1.3.2.1 First use case**

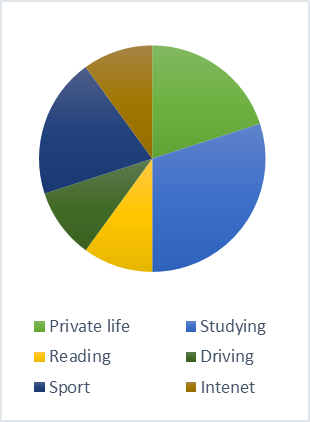
**Background**

**Lifestyle**

**Motivations**

**Maurizio**

**Student**



20 years old

Bachelor student

Doesn’t have a car

Being punctual all the time

Being one of the top students

Having a good personality

Always late to his lectures

Some problems with the family because of the shared use of the family car

Maurizio is an Italian student in the English literature department. He usually wakes up every day at 7:00 am, takes his breakfast, do his shower quickly and then go to his University.

Maurizio is a very punctual guy, he likes to sit always in the first row in his lectures to be closer to the professors. To do that he should arrive to the university around 8:00 am, and since the transportation in Rome doesn’t follow a regular schedule, he used to use his mother car.

Maurizio used to return back home in the afternoon in order to return the car back to his mother since she uses it for going to her job in a clothes store. She is working for the afternoon shift where she start her job around 3:00 PM. They always finds problems when to find the car parking where the last one used the car parked it.

**Frustrations**



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**1.3.2.2 Second use case**

Bob has a car which is shared with his son, Michel, and yesterday was the birthday of Michel’s girlfriend, so Michel spent the whole night there and returned back home quite late. Since the place where Michel used to park the car for his father was busy that night, he parked the car in a new position where the father didn’t used to park his car in.

The next day, it was raining heavily and Bob, who works as a sales manager at NLTD corporate, should arrive his job very soon since there is a new contract with a new customer.

Bob checks the position where he used to find his car parked, but it is busy with another car. The son Michele is sleeping now, so the father simply picks his smartphone and opens “FamilyParking” application and try to check the parking position of the shared car. He easily found a flag fixed on a Google maps like interface, and he simply follows that flag and reached his car.

**1.4 Competitors’ Analysis**

Indeed, the competitors for the FamilyParking software, when they are seen as one package, are integrating each other to perform what FamilyParking is performing , and studying each one them has shown that each competitor can serve as part of the functionalities performed by FamilyParking, but none of them offer the whole package together. With an additional main feature that is performed by FamilyParking without being found before with any of the competitors which is the automatic parking detection. The following are the main competitors with a description of how FamilyParking differs from each one.

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1. **WhatsApp :**

WhatsApp is an [instant messaging](http://en.wikipedia.org/wiki/Instant_messaging) app for [smartphones](http://en.wikipedia.org/wiki/Smartphones) that operates under a [subscription business model](http://en.wikipedia.org/wiki/Subscription_business_model). In addition to text messaging, it can be used to send images, video, and audio media messages. Locations can also be shared through the use of integrated mapping features. Using WhatsApp for sharing a car position could be a visible solution and accurate one, but in this way it is not so social and immediate since a lot of manual things should be managed.



1. **Google now :**

Google now an [intelligent personal assistant](http://en.wikipedia.org/wiki/Intelligent_personal_assistant) developed by [Google](http://en.wikipedia.org/wiki/Google). It is available within the [Google Search](http://en.wikipedia.org/wiki/Google_Search) mobile application for [Android](http://en.wikipedia.org/wiki/Android_(operating_system)), and iOS, as well as the [Google Chrome](http://en.wikipedia.org/wiki/Google_Chrome) web browser on personal computers. The problem with this software is that it is not accurate, and using it to do the same functionality of FamilyParking has proved low level of sociality and immediacy.



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**Chapter 2 Application Versions**

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