# Project proposal
# Service Oriented Software Engineering SOSE

# Medical Transportation

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**Abstract**

Recently, human relies on the internet more than any time. Web services are the solution for every aspect in our lives. Messenger, social media, e-shopping and much more activities depending on internet to be achieved. And to cope with the recent activities, more web services are created to ease the human lives. In this proposal we will introduce a new web service which is Medical transportation MT. MT is used in case of emergency so patients can reach the closest hospital by posting the medical readings and location. The composition of Google location web service and transportation web service in order to locate the closest hospital within the patient location and provide transportation to this hospital. More details is provided in the description bellow.

# 1    Introduction

According to the statistical information, latency of arriving to the hospital is the main result of dying. Related to that, in this application, we look for implementing a medical transportation management service for monitoring two rates: blood pressure and blood sugar for the patients, in case it exceeded the normal levels, we will display a nearest hospital and taxi to quickly pick up the patient.

This proposal will introduce a new web service to ease the patient transportation in case of emergency. Is this system we have the following main classes which is used in different scenarios as explained later in section 1.1.

1. Person. We will declare two entities from the person class; the doctor and the patient. The doctor can post, put, delete and get data from the patient entity. However, the patient only can get data about his health status and post his location.



Figure 1.1: The person representation

2. Google maps will provide us the location of the nearest hospital in case of emergencies. When the location of the patient is provided. Therefore, Google map will give a list of closest hospitals. When the closest hospital is decided.

Figure 1.2: The Google WS representation

3. The taxi API, should take in two addresses.

- The patient location so the taxi hurry to this address.
- The destination of the patient so the taxi driver him to the closet hospital.



Figure 1.3: The taxi WS representation

## 1.1 Proposed Scenarios

As we were thinking about the project, we thought of two main scenarios, which are:

1. Case 1 : In case of emergency, when the blood pressure, heart rate or blood sugar measured to be high, this will invoke the Google API to find the closest hospital within the range of the patient area. When the hospital is found, this will provide the taxi with the two required addresses for the taxi driver.
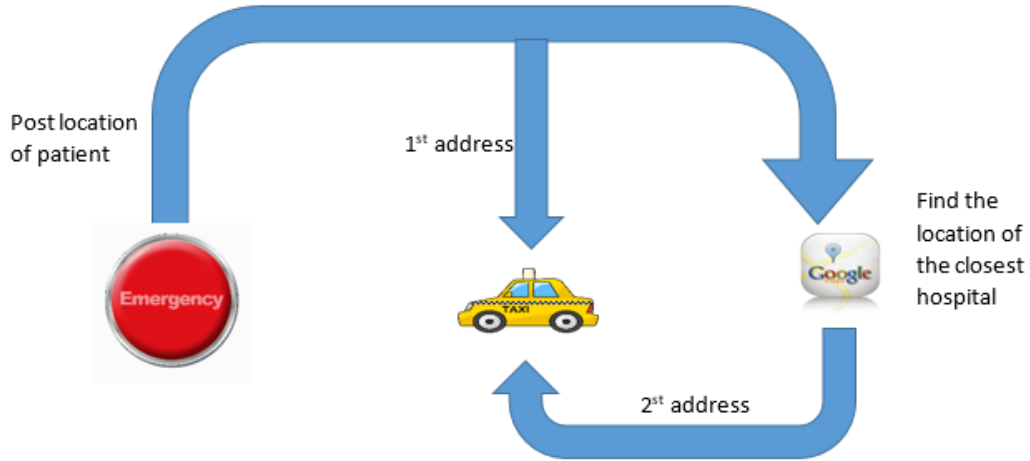
Figure 1.4: First scenario

2. Case 2: The reading of the blood pressure, blood sugar or heart rate is sent to the patients' doctor. The patient post the readings on his account and invoke the doctor with the reading. If the doctor decides that the situation needs a hospital, then the taxi API is invoked with the patient address and the closest hospital.
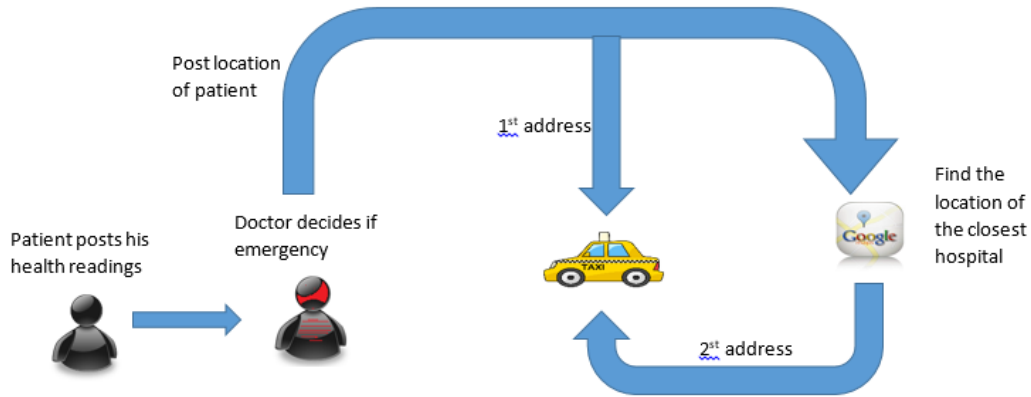


Figure 1.5: Second scenario

# 2 The objectives

We can summarize our objectives as the following:

1. Creating our own transportation web service, in order to find the closest taxi to the patient. so we can play the role of service provider.

2. Designing a composition web service that will be an added value to other composition web services.

3. Reusing of existing web services such as Google places map.

4. Composite service publishable as a web service.

# 3   Description

The patient will measure the blood pressure and sugar level in blood, if one of these values exceeds the normal range, this will invoke an alarming system by displaying available hospital based on the users location (latitude and longitude) related to Google places API. To make sure that the patient reaches the closest hospital, our transportation web service will be invoked by providing the address of the patient and the closest hospital. Which will display the nearby taxis for better service.

# 4   Data Flow

Indeed, implementing a medical transportation management service needs to pass data among services to provide requiring inputs for the next service. In this project, in response to an incoming data from patient measurement, we have to invoke Google place service so from one side the sensor detection information invokes our composition logic. In this case patients emergency reading of sugar or pressure are indicated needing to go to the hospital will be passed information about his location and info. In response displaying availability nearby hospitals nearby based on a specific radius that will expand by multiplying the radius with ten if there is no hospital on the map. In decision point, patient must be decided which hospital he wants to pick up. Eventually, this will be invoked transportation web service by passing patients location and information. Fig**??** illustrates the structure of composition web service.

API that we will consume:

1. Google place API :Returning data using Asynchronous service operations is processed in real time. Processing on the sending system does not continue until it receives a response from the receiving system.

   https://maps.googleapis.com/maps/api/place/nearbysearch/json?location=-33.8670

2. Transportation Web service: In this project we will be implemented an API by using laravel.
   Related to sensor detection we will be implemented a function that will be invoked for every 10 seconds and randomly generated two numbers blood pressure (70-170) and (70-500)

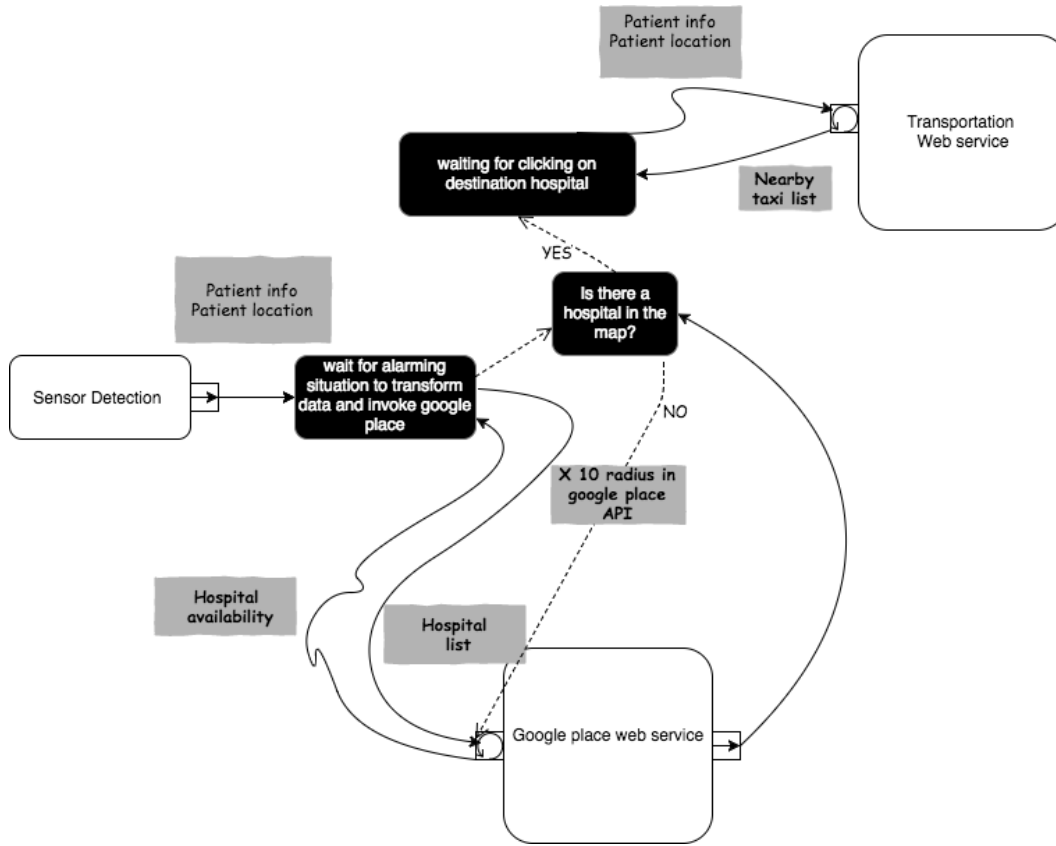# 5 The structure of the web Composition service



Figure 5.1: The structure of the web Composition service

# 6 Class Diagram
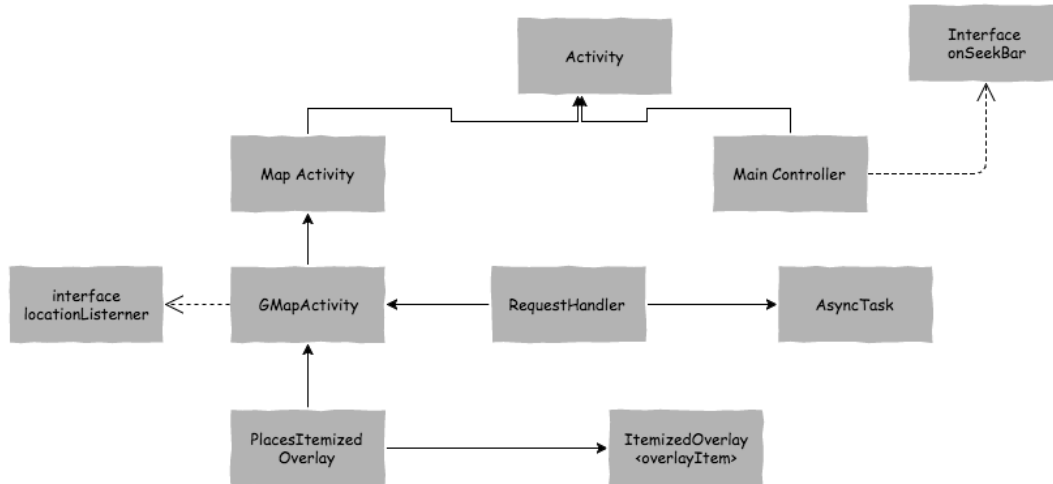
## 6.1 Class diagram of Google place



Figure 6.1: The class diagram of the Google place

## 6.2 class diagram for transportation web service



(a) General class diagram
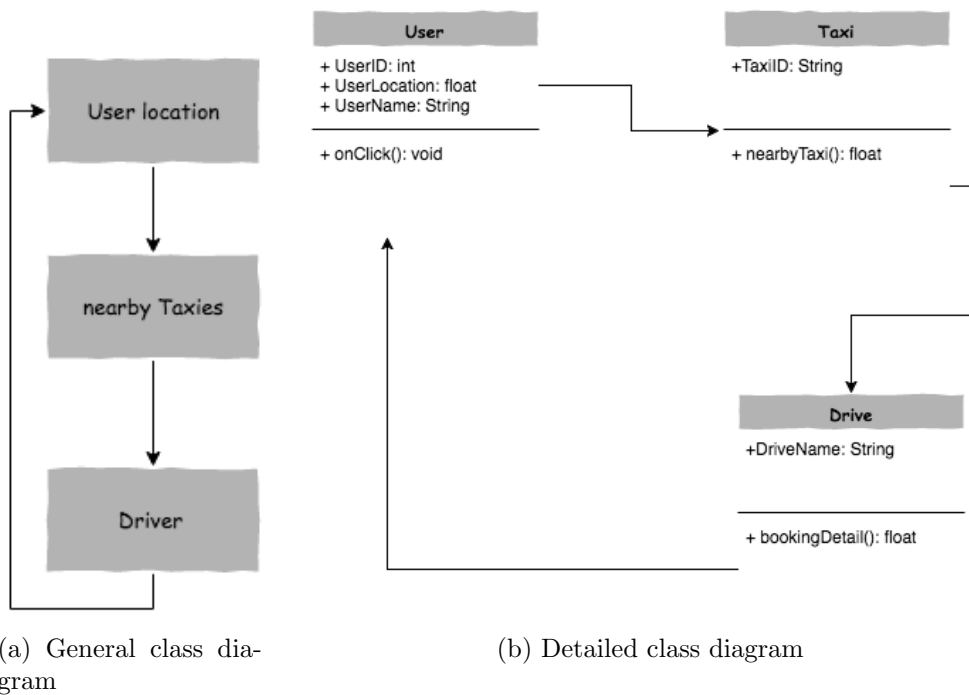
(b) Detailed class diagram

Figure 6.2: class diagram for transportation web service
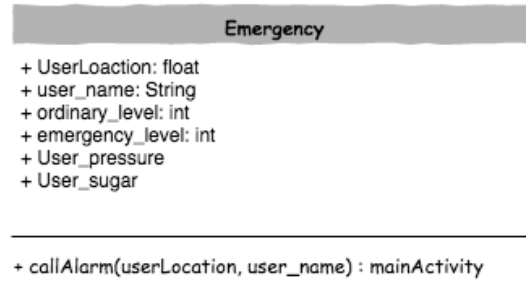
## 6.3 Emergency



Figure 6.3: The class diagram of emergency
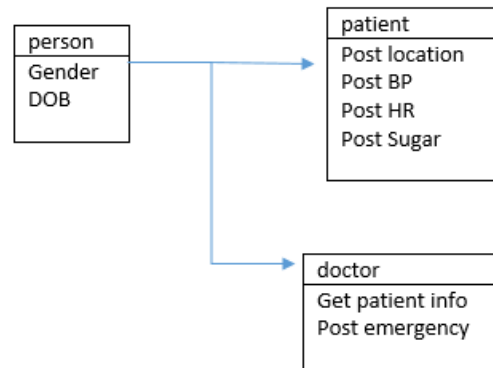
## 6.4 Person



Figure 6.4: The class diagram of the person class

# 7 Technologies

In this project we will create the basic HTML structure that hold our web app. And also we will use the following technologies:

1. JavaScript:we will begin using java-script in the web application for consuming two web services.

2. Larveal to create an API for transportation web service.

3. All the data will be represented in json.

# 8    Conclusion

In this proposal, we suggest consuming two web services to implement Medical Transportation MT management service through applying the composition logic principle and concept. By implementing MT, patients -especially in case of emergencies- will be less worried about the transportation and knowing the closest hospital. MT will provide address of the closest hospital and will provide the contact info about the closet driver as well.