**PROMPT**

Which topic did you choose to apply the data science methodology to? **(2 marks)**

* HOSPITAL

**PROMPT**

Next, you will play the role of the client and the data scientist.

Using the topic that you selected, complete the Business Understanding stage by coming up with a problem that you would like to solve and phrasing it in the form of a question that you will use data to answer. **(3 marks)**

You are required to:

1. Describe the problem, related to the topic you selected.
2. Phrase the problem as a question to be answered using data.

For example, using the food recipes use case discussed in the labs, the question that we defined was, "Can we automatically determine the cuisine of a given dish based on its ingredients?".

1 - Big cities with population of 4.6 million have numerous hospitals but only a few are operational 24h hours. These hospitals rotate so that all of them are 24h operation status a few times a month. The current system of two major hospitals in 24h shift is not very efficient for such a population. At the same time the rest of the hospitals are only maned to take care of their existing patients (i.e. have limited capabilities  during the night).  
  
2 - How should be distribution of the emergencies based on the status of the patient, so that the two major hospitals will not have to deal with all the emergencies and therefore improve the healthcare system. In addition to that, the correct use of the number of ambulances.

**PROMPT**

Briefly explain how you would complete each of the following stages for the problem that you described in the Business Understanding stage, so that you are ultimately able to answer the question that you came up with. **(5 marks)**:

1. Analytic Approach
2. Data Requirements
3. Data Collection
4. Data Understanding and Preparation
5. Modelling and Evaluation

You can always refer to the labs as a reference with describing how you would complete each stage for your problem.

1. Development of a predictive model and machine learning

2. Data Requirements: Mainly data bases and historical data. Classification of emergency calls based on the importance of the emergency

3. Data collection: Data from the emergency response (number of ambulances to each of the hospital, patient status, time for response, time from pick up to hospital, diagnosis) Data from all hospitals (number of personal active/inactive and their specialisation). Geospatial information of the city.

4. Data preparation: Geo locate all hospitals. Make database of the stuff availabilities for each hospital. Categorise the emergencies based on the importance (consultancy from doctors is required). Make database for each hospital with the average travel time for the ambulances from different locations.

5. Modelling and Evaluation: The predictive model in combination with machine learning aims to distribute the patients in the various hospitals in a way to prioritise the average to most severe cases to one of the two hospitals (closest one) and the below average to the other hospitals. moreover a more efficient way to distribute the ambulances based on the emergences. Test cases for various standby hospital combination should be run to test the efficiency of the model and the training of the artificial intelligence.