HOSPITAL SELECTION

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Introduction

Problem

Some Time when a person he / she does not know that place very well so it is very hard for him to find an hospital at the time of emergency some time person may get know the name of the hospital from another person but he does not know about the quality of that particular hospital so in this project we make hospital recommendation system where user will put the detail of the level of quality of hospital and as per his/her quality level we recommended hospital to him .

Now by using ***Foursquare location*** this API is used to show the location of those recommended hospital in the world map so by using foursquare API we can explore that particular address to see nearby places where we can take shelter or can take food

So here our main target are those people who have transferable job and who need hospital at the time of emergency . this project will help them to find good hospital as per his quality factor and he also able to find nearby food and rest places

Background

Finding a hospital is different than to find a good hospital some time we are not able to find best hospital at the time of emergency in google map because in google map we can not provide some parameter such as Meets criteria for promoting interoperability of EHRs ,Mortality national comparison footnote, Safety of care national comparison footnote, Readmission national comparison etc so for that we created an project where we can use these feature to recommend a new hospital for our user

Data

Here wea are using the data set that have all the quality factor based on the previous record of the people the data set contain the following things

- Faculty Id
- Facility Name
- Address
- City
- State
- ZIP Code
- County Name
- Phone Number
- Hospital Type
- Hospital Ownership
- Emergency Services
- Meets criteria for promoting interoperability of EHRs
- Hospital overall ratingn
- Hospital overall rating footnote
- Mortality national comparisonn
- Mortality national comparison footnote
- Safety of care national comparisonn
- Safety of care national comparison footnote
- Readmission national comparisonn

- Readmission national comparison footnote
- Patient experience national comparisonn
- Patient experience national comparison footnote
- Effectiveness of care national comparison footnoten
- Effectiveness of care national comparison footnoten
- Timeliness of care national comparisonn
- Timeliness of care national comparison footnote
- Efficient use of medical imaging national comparison footnote
- Location

Among The above factor there some factor which decide the quality of the hospital among above features the feature which determine the quality of hospital is given below

- Emergency Services
- Meets criteria for promoting interoperability of EHRs
- Hospital overall ratingn
- Hospital overall rating footnote
- Mortality national comparisonn
- Mortality national comparison footnote
- Safety of care national comparisonn
- Safety of care national comparison footnote
- Readmission national comparisonn
- Readmission national comparison footnote
- Patient experience national comparisonn
- Patient experience national comparison footnote
- Effectiveness of care national comparison footnoten
- Effectiveness of care national comparison footnoten
- Timeliness of care national comparisonn
- Timeliness of care national comparison footnote
- Efficient use of medical imaging national comparison footnote
- Location

User have to provides thes data and among these data our recomender system will recomende the hospital suppose hospital recomendaded by our model is of Hospital Type Psychiatric then all the hospital of these type will be shown in the map by using ***Foursquare location***

Methodology

Data Cleaning

Before exploring data first clean the data so that it can be used for machine learning technique so before exploring the data first import some important library which will help in analyse the data

The library are given below

```
import pandas as pd
import os
import numpy as np
```

pandas library help to ploting the function and help to analyse and clean data os library to import the data from your P.C

To clean the data we have to apply folloeing steps

1) now in the data frame there are some data which are not used for predicting the type of hospital so lets drop those coloumn and save it in our Watson storage so that we can use it later the coloumn that we have to drop are given below

   'Mortality national comparisonn'

   'Safety of care national comparisonn'

   'Readmission national comparisonn'

   'Patient experience national comparisonn'

   'Effectiveness of care national comparison footnoten'

2) Now drop those value which have nan value as decision tree classifier not able to predict value for those
3) Conver categorical value into numerical value

Model To Predict the Value of hospital type

Discission tree

To predict the type of hospital I am using the decision tree classifier in decision tree each internal node corresponding to a test each branch correspond to a result of a test each node assign a classification
So to apply this first chose an attribute from your data set which is are following for ou case

```
'Emergency Services'
'Hospital overall rating footnote'
'Mortality national comparison footnote'
'Safety of care national comparison footnote'
'Readmission national comparison footnote'
'Patient experience national comparison footnote'
'Effectiveness of care national comparison footnoten.1'
'Timeliness of care national comparison footnote'
'Efficient use of medical imaging national comparison footnote'
```

Calculate the significance of a attribute in splitting the data

Split the data and then based on the value of the best attribute chose that feature to predict the model

Visualised the location

Before visualised the result append the location as per address and import some important library

```
import requests
import folium
import matplotlib.cm as cm
import matplotlib.colors as colors
import json

from urllib.request import urlopen
from geopy.geocoders import Nominatim
from pandas.io.json import json_normalize
from sklearn.cluster import KMeans
from bs4 import BeautifulSoup
```

1) folium library is used to to visualised the map
2) matplotlib is used to plot the graph
3) json is used to read the json file
4) urlopen to use foursquare api where I wil give the following link

```
url = 'https://api.foursquare.com/v2/venues/search?client_id=ZUWO
AQTQEIPGE0YB0RCGUZFEFT5QR13XGJWR0IA3RDWLEU14&client_secret=EB44FE
KX5WFX05JEIWJKHG2ZFSMUKLOOECTPNRVYJDTXUCMS&ll=40.7149555,-74.0153
365&oauth_token=ZXF0CRQEV0YSULND1TMZVE0YY3LVNVA5A1T5XWBJBICDAA4B&
v=20180604&query=Italian&radius=500&limit=30'
```

5) json_normalised convert json file to data frame
6) KMEAN used for clustering nearby places of the particular hospital type

To visualised the result do the following steps

1) enter your four square credential
2) Explore the first area where hospital type Critical Access Hospitals to explore the first are useuser_wish.loc[0,'latitude']
3) Convert the json file into data frame
4) Use folium map to visualised the result

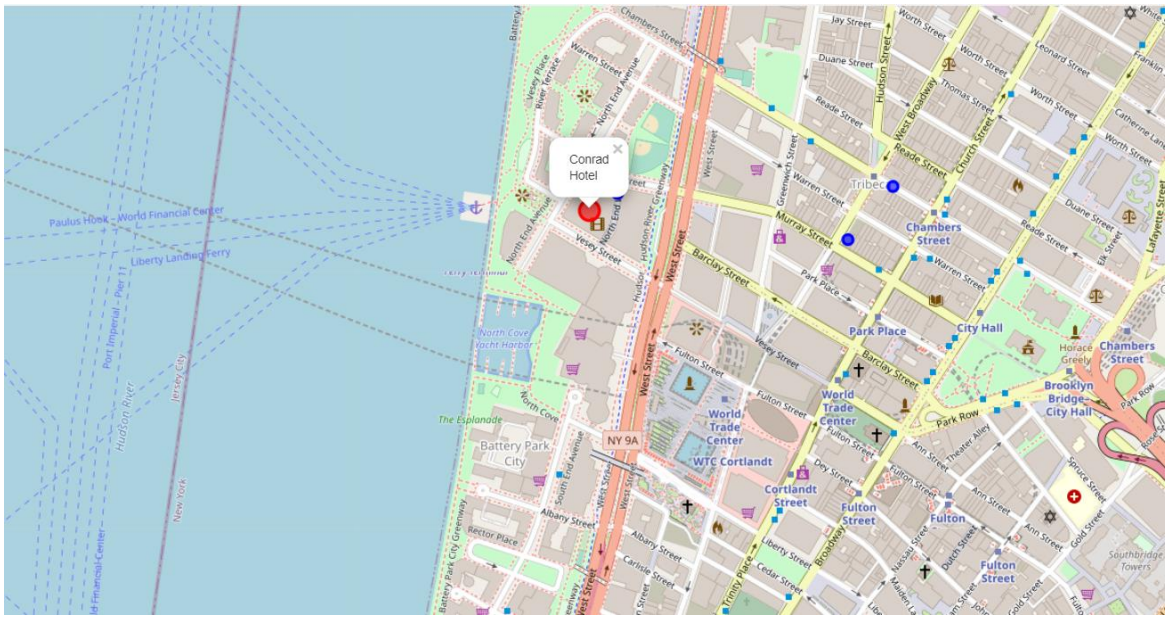
Result

Predict the value based on the user input of quality factor

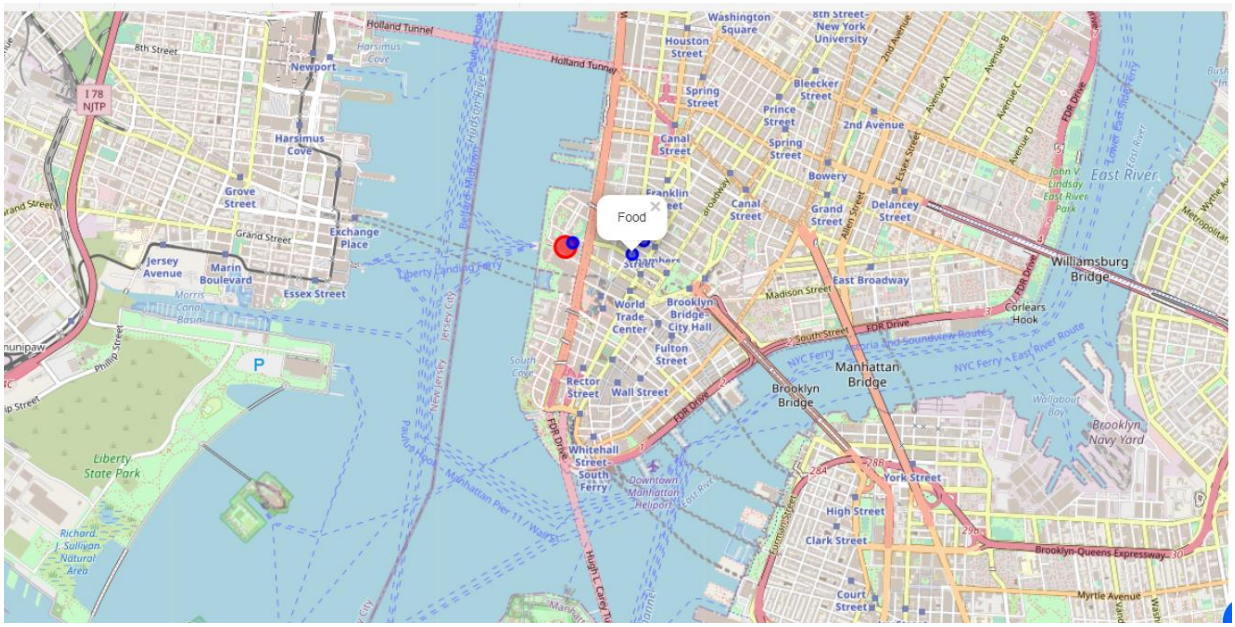
```
       dtype=object)

In [42]: from sklearn import metrics
         import matplotlib.pyplot as plt
         print("DecisionTrees's Accuracy: ", metrics.accuracy_score(y_testset, predTree))

         DecisionTrees's Accuracy:  0.9444444444444444

         we get an acuaracy of 0.944 which is an good so we can proceed with our model

         user put the quality level that tell what type of model needed to use

In [43]: XTEST=[[0,2,4,7,5,15,4,7,8]]

In [44]: P=drugTree.predict(XTEST)
         P[0]

Out[44]: 'Critical Access Hospitals'
```

Nearby Places in Hospitals

Nearby place in hospital to take rest



Nearby place in hospital to take food



Discussion

In this project we explore the data of hospital set where different rating according to national standard is given so we chose it as an feature to predict the type of hospital in as per those hospital and we get an accuracy of 0.97 for our selected variable which is an strong indication to used this model to predict our hospital type after predicting the type of hospital we have to get the nearby places in hospital which we get in new York odiously we will get in new work as our hospital is also in the new work so there we find rest places and foodies .This Project can be extended to a AI level so that once I select the hospital the hospital stored my data and when I reached there then a display board should display my appointed doctor and his cabin number and the time when he will be free

Conclusion

In this project we explore the data where we find the hospital type as per user and we explore that area first we get an accuracy of 0.97 then we proceed with our data set and find the hospital type here in this case we find a hospital type of critical type hospital and then analysed its surrounding place to get know the best place to halt and take food .