

Repeat_Assignment_2

December 6, 2018

```
In [1]: import geopy
        from geopy.geocoders import Nominatim
        from geopy.distance import distance
        import numpy as np
        import time
        import matplotlib.pyplot as plt
        import pandas as pd
        from shapely import wkt
        import csv
        from pathlib import Path
        from shapely.geometry import Point, Polygon, LinearRing

In [2]: #import functions (Assignment_2_Functions.py) we write in group_assignment2
        import os
        os.chdir('../group_assignment2')
        from Assignment_2_Functions import *

In [3]: #Use csv files obtained from "Split_Alameda.ipynb"
        stations_west = pd.read_csv("../group_assignment4/Intermediate_data/stations_10miles_west.csv")
        stations_east = pd.read_csv("../group_assignment4/Intermediate_data/stations_10miles_east.csv")
        grid_west = pd.read_csv("../group_assignment4/Intermediate_data/grid_10miles_west.csv")
        grid_east = pd.read_csv("../group_assignment4/Intermediate_data/grid_10miles_east.csv")

0.1 Find weighted average inverse distance from each station to the points in West Alameda

In [4]: #get a list of tuples that contains the latitude and longitude of the weather station.
        loc_stations_west = list(zip(stations_west['LATITUDE'], stations_west['LONGITUDE']))

        #get a list of tuples that contains the latitude and longitude of all the grid points
        loc_alameda_west = list(zip(grid_west.lat, grid_west.lon))

        #get the weighted average inverse distance for each station
        weg_avg_inv_dist_west = idwa(loc_stations_west, loc_alameda_west)

        # save the inverse distance for future assignment
        stations_west['INVDIST'] = weg_avg_inv_dist_west
        stations_west.to_csv("../group_assignment4/Intermediate_data/stations_west_invdist.csv")
```

```
In [5]: weg_avg_inv_dist_west[:10]
```

```
Out[5]: [0.13052754699170543,  
         0.17628894930951855,  
         0.1793290515943717,  
         0.0995320520874453,  
         0.1207823744761952,  
         0.10049962500159414,  
         0.17855538449942115,  
         0.12045439993736488,  
         0.10294081516534073,  
         0.1200338073361301]
```

0.2 Find weighted average inverse distance from each station to the points in East Alameda

```
In [6]: #get a list of tuples that contains the latitude and longitude of the weather station.  
        loc_stations_east = list(zip(stations_east['LATITUDE'], stations_east['LONGITUDE']))  
  
        #get a list of tuples that contains the latitude and longitude of all the grid points  
        loc_alameda_east = list(zip(grid_east.lat, grid_east.lon))  
  
        #get the weighted average inverse distance for each station  
        weg_avg_inv_dist_east = idwa(loc_stations_east, loc_alameda_east)  
  
        # save the inverse distance for future assignment  
        stations_east['INVDIST'] = weg_avg_inv_dist_east  
        stations_east.to_csv("../group_assignment4/Intermediate_data/stations_east_invdist.csv")
```

```
In [7]: weg_avg_inv_dist_east[:10]
```

```
Out[7]: [0.13654014267859033,  
         0.06952286134173637,  
         0.14646207275085119,  
         0.06540539645344705,  
         0.07583201266587469,  
         0.0591293303122611,  
         0.13204083877537,  
         0.07539343722826528,  
         0.05559901791579316,  
         0.058811542348867894]
```