In [1]:

```

import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)
import seaborn as sns
import matplotlib.pyplot as plt
import joblib

```

In [3]:

```
import sklearn
sklearn.__version__
```

Out[3]:

```
'0.24.2'
```

In [4]:

```
path = "data\T1.csv"
```

In [5]:

```
df = pd.read_csv(r"C:/Users/DELL/Desktop/New folder/T1.csv")
```

In [6]:

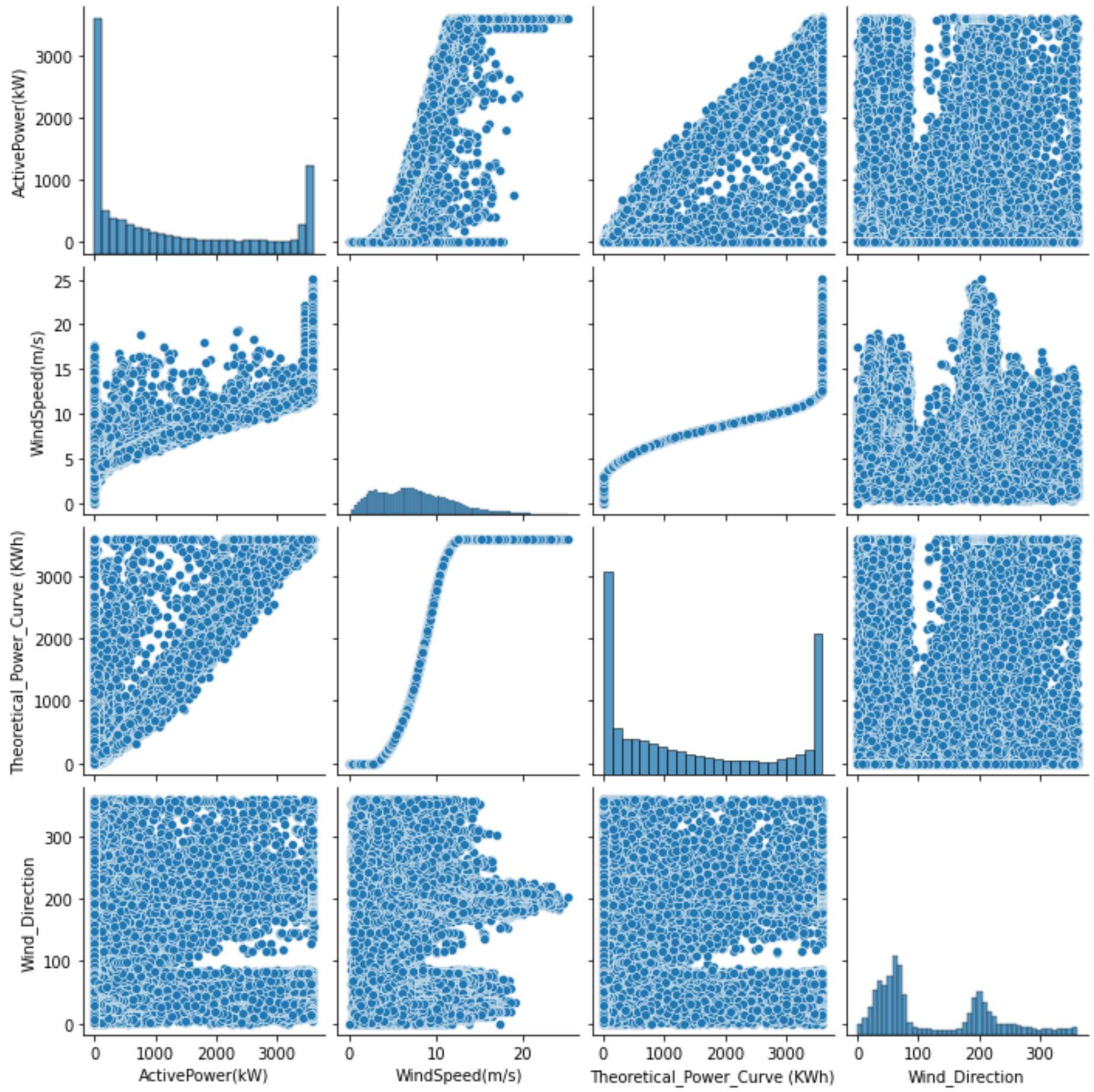
```
df.rename(columns={'Date/Time':'Time',
                   'LV ActivePower (kW)':'ActivePower(kW)',
                   "Wind Speed (m/s)":"WindSpeed(m/s)",
                   "Wind Direction (°)":"Wind_Direction"},
                    inplace=True)
```

In [7]:

```
sns.pairplot(df)
```

Out[7]:

```
<seaborn.axisgrid.PairGrid at 0x2778b627850>
```



In [8]:

```

corr = df.corr()
```

In [9]:

```
plt.figure(figsize=(10, 8))
```

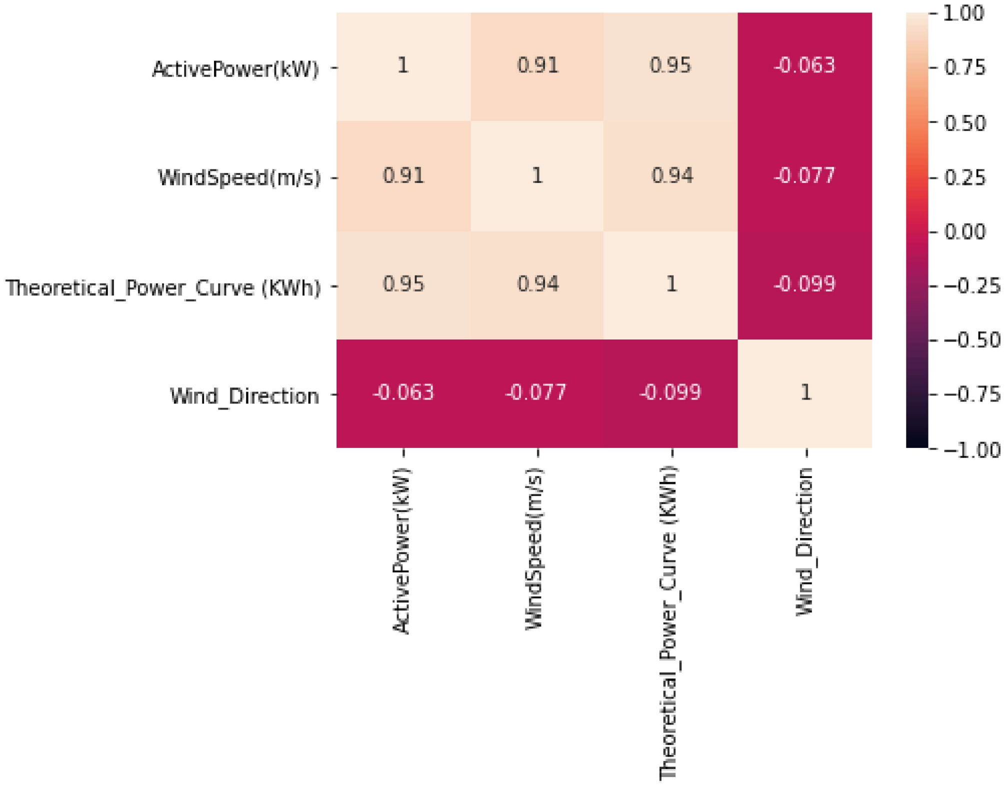
Out[9]:

```
<Figure size 720x576 with 0 Axes>

<Figure size 720x576 with 0 Axes>
```

In [10]:

```
ax = sns.heatmap(corr, vmin = -1, vmax = 1, annot = True)
```



In [11]:

```
bottom, top = ax.get_ylim()
```

In [12]:

```
ax.set_ylim(bottom + 0.5, top - 0.5)
```

Out[12]:

```
(4.5, -0.5)
```

In [13]:

```
plt.show()
```

In [14]:

```
corr
```

Out[14]:

	ActivePower(kW)	WindSpeed(m/s)	Theoretical_Power_Curve (KWh)	Wind_Dir
ActivePower(kW)	1.000000	0.912774	0.949918	-0.0
WindSpeed(m/s)	0.912774	1.000000	0.944209	-0.0
Theoretical_Power_Curve (KWh)	0.949918	0.944209	1.000000	-0.0
Wind_Direction	-0.062702	-0.077188	-0.099076	1.0

In [15]:

```
#df.drop(['Wind_Direction'],axis=1,inplace = True)
df["Time"] = pd.to_datetime(df["Time"], format = "%d %m %Y %H:%M", errors = "coerce")
df
```

Out[15]:

	Time	ActivePower(kW)	WindSpeed(m/s)	Theoretical_Power_Curve (KWh)	Wind_Direction
0	2018-01-01 00:00:00	380.047791	5.311336	416.328908	259.994904
1	2018-01-01 00:10:00	453.769196	5.672167	519.917511	268.641113
2	2018-01-01 00:20:00	306.376587	5.216037	390.900016	272.564789
3	2018-01-01 00:30:00	419.645905	5.659674	516.127569	271.258087
4	2018-01-01 00:40:00	380.650696	5.577941	491.702972	265.674286
...	...	...	...	...	...
50525	2018-12-31 23:10:00	2963.980957	11.404030	3397.190793	80.502724
50526	2018-12-31 23:20:00	1684.353027	7.332648	1173.055771	84.062599
50527	2018-12-31 23:30:00	2201.106934	8.435358	1788.284755	84.742500
50528	2018-12-31 23:40:00	2515.694092	9.421366	2418.382503	84.297913
50529	2018-12-31 23:50:00	2820.466064	9.979332	2779.184096	82.274620

50530 rows × 5 columns

In [16]:

```
y = df['ActivePower(kW)'] #'Theoretical_Power_Curve (KWh)'
```

In [17]:

```
X = df[['Theoretical_Power_Curve (KWh)','WindSpeed(m/s)']]#'ActivePower(kW)'
```

In [18]:

```
from sklearn.model_selection import train_test_split
train_X, val_X, train_y, val_y = train_test_split(X, y,random_state = 0)
```

In [19]:

```
from sklearn.ensemble import RandomForestRegressor
```

In [20]:

```
from sklearn.metrics import mean_absolute_error,r2_score
```

In [21]:

```
forest_model = RandomForestRegressor(max_leaf_nodes =500, random_state=1)
```

In [22]:

```
forest_model.fit(train_X, train_y)

```

Out[22]:

```
RandomForestRegressor(max_leaf_nodes=500, random_state=1)
```

In [23]:

```
power_preds = forest_model.predict(val_X)
```

In [24]:

```
print(mean_absolute_error(val_y, power_preds))
```

```
162.90876721041633
```

In [25]:

```
print(r2_score(val_y,power_preds))
```

```
0.9015207981707475
```

In [26]:

```
joblib.dump(forest_model, "power_prediction.sav")
```

Out[26]:

```
['power_prediction.sav']
```

In [27]:

```
import requests
apikey="43ce69715e2133b2300e0f8f7289befd"
resp=requests.get("http://api.openweathermap.org/data/2.5/weather?q=London&appid="+apik
print(resp.json())
resp=resp.json()
temp=resp["main"]["temp"]
humid=resp["main"]["humidity"]
pressure=resp["main"]["pressure"]
humid=resp["wind"]["speed"]
print(temp,humid,pressure,humid)
```

```
{'coord': {'lon': -0.1257, 'lat': 51.5085}, 'weather': [{'id': 801, 'main':
'Clouds', 'description': 'few clouds', 'icon': '02d'}], 'base': 'stations',
'main': {'temp': 287.74, 'feels_like': 287.45, 'temp_min': 286.22, 'temp_ma
x': 289.09, 'pressure': 1011, 'humidity': 84}, 'visibility': 10000, 'wind':
{'speed': 0.89, 'deg': 261, 'gust': 4.47}, 'clouds': {'all': 20}, 'dt': 1627
541969, 'sys': {'type': 2, 'id': 2019646, 'country': 'GB', 'sunrise': 162753
2389, 'sunset': 1627588434}, 'timezone': 3600, 'id': 2643743, 'name': 'Londo
n', 'cod': 200}
287.74 0.89 1011 0.89
```

In [28]:

```
import numpy as np
from flask import Flask, request, jsonify, render_template
import joblib
import requests

```

In [29]:

```
app = Flask(__name__)
model = joblib.load('power_prediction.sav')
```

In [30]:

```
@app.route('/')
def home():
    return render_template('intro.html')
```

In [31]:

```
@app.route('/predict')
def predict():
    return render_template('predict.html')

```

In [ ]:

```

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In [ ]:

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In [ ]:

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In [ ]:

```
```