SVR_Admission_Predict_Dataset

November 1, 2022

1 SVR

1.0.1 Dataset : Admission_Predict

1.0.2 Link : https://raw.githubusercontent.com/srinivasav22/Graduate-Admission-Prediction/master/Admission_Predict_Ver1.1.csv

1.0.3 Objective : Build a Model that cal predict the Chance of getting addmission using SVR algorithm

[1]:
```
# importing libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

[2]:
```
# Data Ingestion
data = pd.read_csv("https://raw.githubusercontent.com/srinivasav22/
 ↪Graduate-Admission-Prediction/master/Admission_Predict_Ver1.1.csv")
```

2 EDA

[3]:
```
data.head()
```

[3]:

	Serial No.	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research	Chance of Admit
0	1	337	118	4	4.5	4.5	9.65	1	0.92
1	2	324	107	4	4.0	4.5	8.87	1	0.76
2	3	316	104	3	3.0	3.5	8.00	1	0.72
3	4	322	110	3	3.5	2.5	8.67	1	0.80
4	5	314	103	2	2.0	3.0	8.21	0	0.65

[4]:
```
data.dtypes
```

[4]:
```
Serial No.            int64
GRE Score             int64
TOEFL Score           int64
University Rating     int64
SOP                 float64
LOR                 float64
CGPA                float64
Research              int64
Chance of Admit     float64
dtype: object
```

[5]:
```
data.shape
```

[5]:
```
(500, 9)
```

2.0.1 Observation & Conclusion:

1. Here Chance of Admission is our Dependent Feature
2. All the Features are Numerical, so we don't need to sagregate the Features
3. We need to check for Null values, Outliers.
4. Also need to decide if Standardization is required or not.

2.1 Null values

[6]:
```
data.isnull().sum()
```

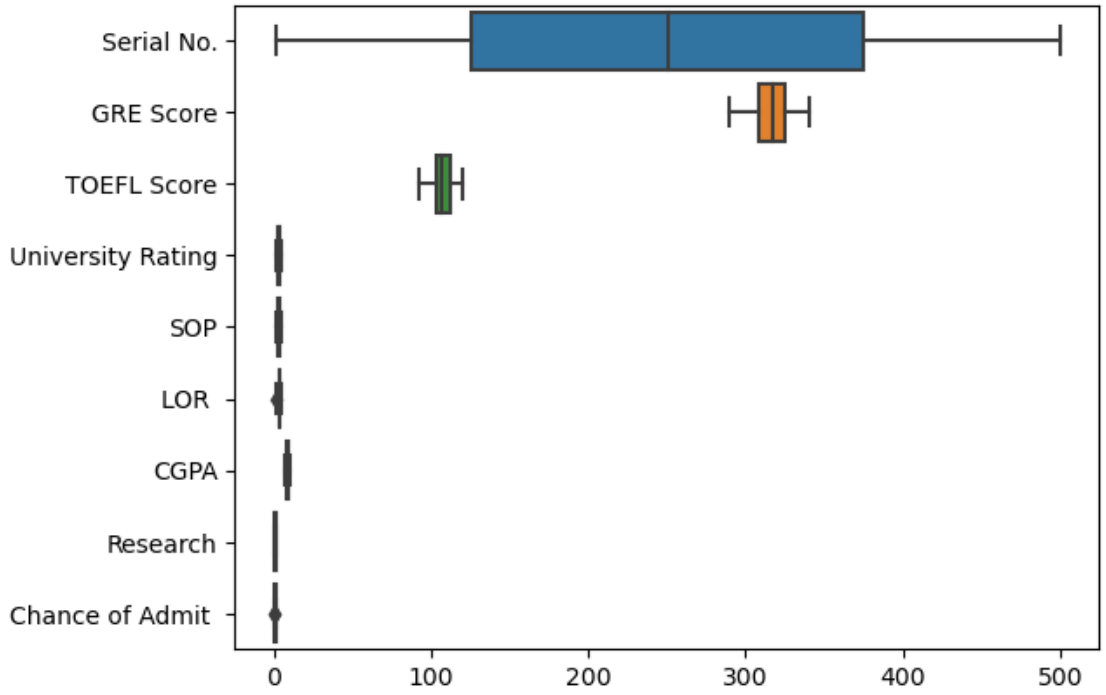
[6]:
```
Serial No.          0
GRE Score           0
TOEFL Score         0
University Rating   0
SOP                 0
LOR                 0
CGPA                0
Research            0
Chance of Admit     0
dtype: int64
```

No Null values found.

2.2 Outliers

[19]:
```
sns.boxplot(data=data, orient="h")
```

[19]: <AxesSubplot:>



No Considerable outliers found

2.3 If Standardization is required or not.

[8]:
```
# features with deviation > 10
[col for col in data.columns if data[col].max() - data[col].min() > 10]
```

[8]: ['Serial No.', 'GRE Score', 'TOEFL Score']

We need to apply standardization

3 Feature Engineering

[16]:
```
# Seperating Independent and Dependent Features
X = data.drop(['Serial No.', 'Chance of Admit '], axis=1)
y = data['Chance of Admit ']
```

[20]:
```
X.head()
```

[20]:

	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research
0	337	118	4	4.5	4.5	9.65	1
1	324	107	4	4.0	4.5	8.87	1
2	316	104	3	3.0	3.5	8.00	1
3	322	110	3	3.5	2.5	8.67	1
4	314	103	2	2.0	3.0	8.21	0

[21]:
```
y.head()
```

[21]:
```
0    0.92
1    0.76
2    0.72
3    0.80
4    0.65
Name: Chance of Admit , dtype: float64
```

[23]:
```
from sklearn.preprocessing import StandardScaler
scaler = StandardScaler()
```

[25]:
```
X_tf = scaler.fit_transform(X)
```

3.0.1 Split of Test and Train Data

[26]:
```
from sklearn.model_selection import train_test_split

X_train, X_test, y_train, y_test = train_test_split(X_tf, y, test_size=0.33,␣
 ↪random_state=42)
```

3.0.2 Model Building

[30]:
```
from sklearn.svm import SVR
```

[31]:
```
model = SVR()
```

[32]:
```
model.fit(X_train, y_train)
```

[32]:
```
SVR()
```

3.0.3 Model Testing

[33]:
```
y_pred = model.predict(X_test)
```

3.0.4 Check the Accuracy and Performance of the Model

R-square

[52]:
```
from sklearn.metrics import r2_score
R2 = r2_score(y_test, y_pred)
adj_R2 = 1 - ((1 - R2)*((len(X_test) - 1)/(len(X_test) - len(X.columns) - 1)))
print("R2 score = ", round(R2, 4))
print("Adjusted R2 Score = ", round(adj_R2, 4))
```

```
R2 score =  0.7603
Adjusted R2 Score =  0.7496
```

[ ]:
```

```