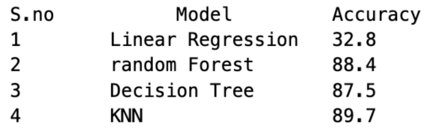
Project Development Phase
Model Performance Test

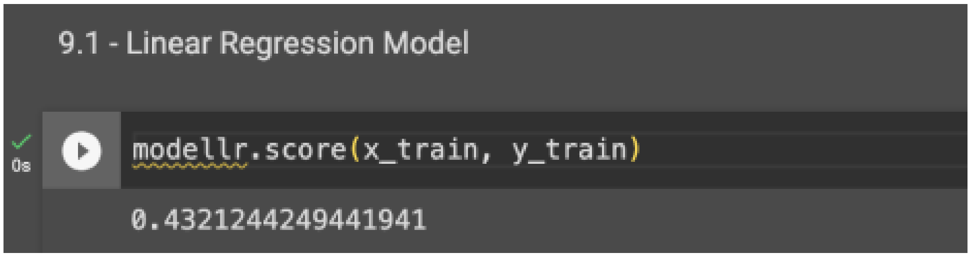
Date	18 November 2023
Team ID	592203
Project Name	Project - AI-Driven Optimization Of 5G Resource Allocation For Network Efficiency
Maximum Marks	4 Marks

Model Performance Testing:

The project team shall fill the following information in the model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Model Summary	We tested with 4 Machine Learning Models for the Optimized Allocation of 5G Resources and the results show that KNN and Random Forest show the highest accuracy for our project.	 S.no Model Accuracy 1 Linear Regression 32.8 2 random Forest 88.4 3 Decision Tree 87.5 4 KNN 89.7
2.	Accuracy	Training Accuracy and Validation Accuracy	Given below

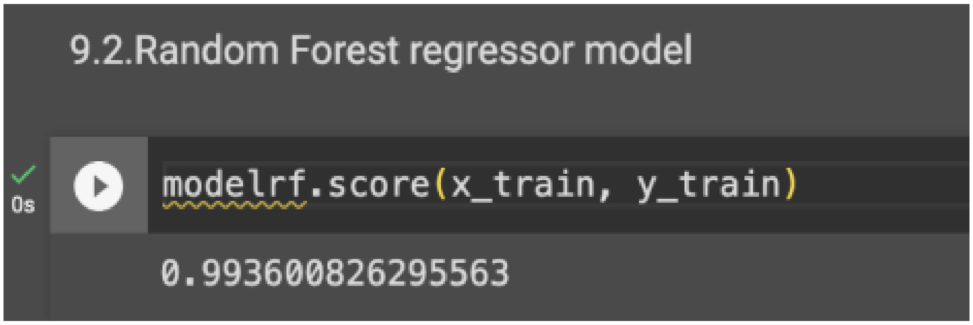
Training Accuracies:



9.1 - Linear Regression Model

```
modellr.score(x_train, y_train)
```

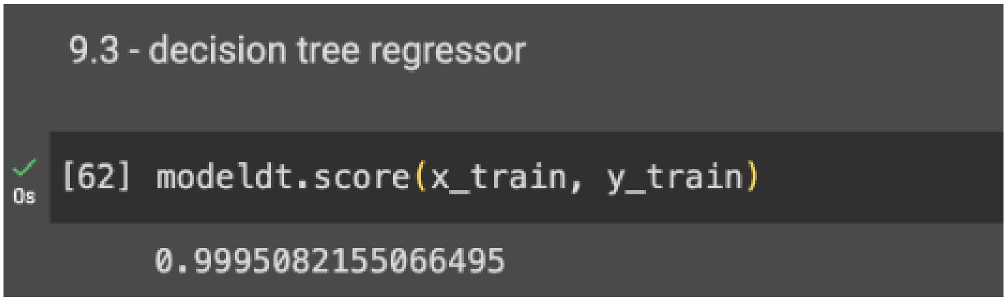
```
0.4321244249441941
```



9.2.Random Forest regressor model

```
modelrf.score(x_train, y_train)
```

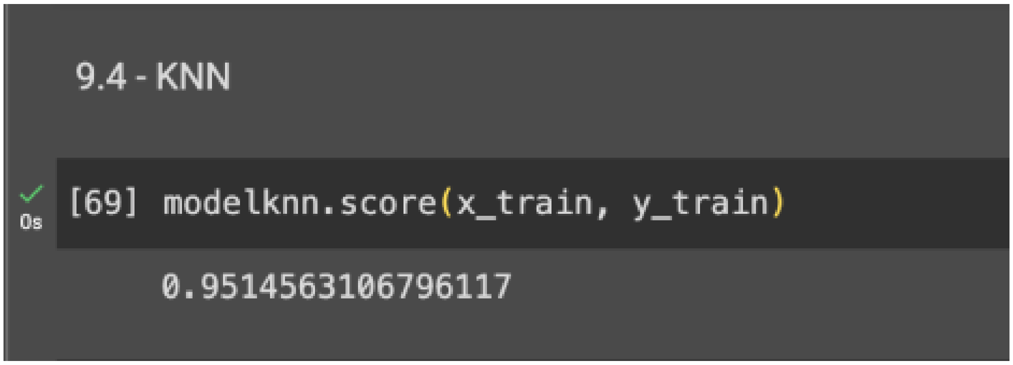
```
0.993600826295563
```



9.3 - decision tree regressor

```
[62] modeldt.score(x_train, y_train)
```

```
0.9995082155066495
```

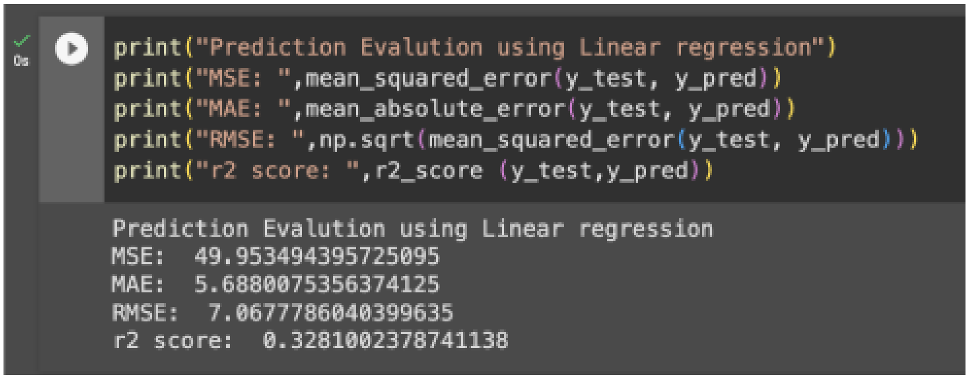


9.4 - KNN

```
[69] modelknn.score(x_train, y_train)
```

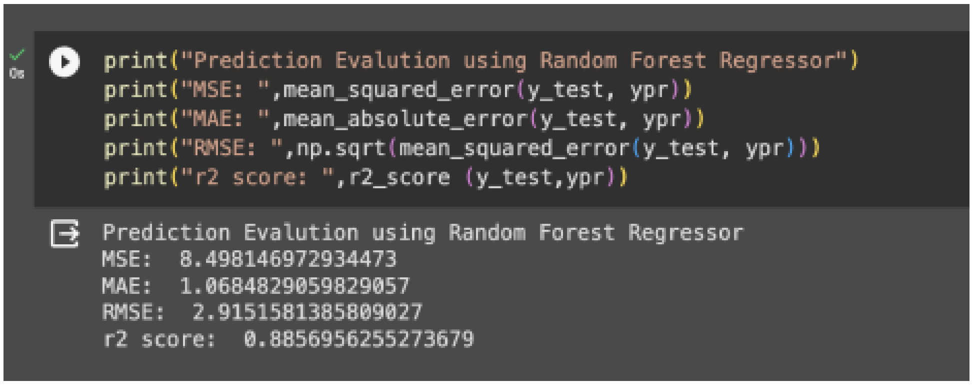
```
0.9514563106796117
```

Validation Accuracies :



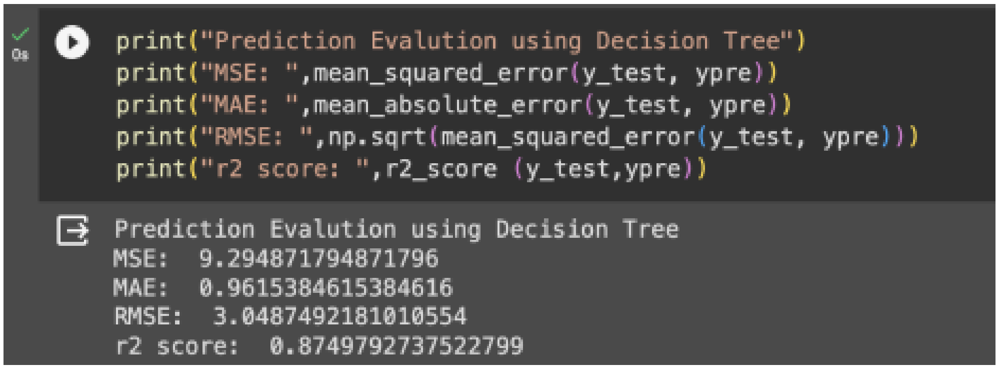
```
print("Prediction Evalution using Linear regression")
print("MSE: ",mean_squared_error(y_test, y_pred))
print("MAE: ",mean_absolute_error(y_test, y_pred))
print("RMSE: ",np.sqrt(mean_squared_error(y_test, y_pred)))
print("r2 score: ",r2_score (y_test,y_pred))
```

```
Prediction Evalution using Linear regression
MSE:  49.953494395725095
MAE:  5.6880075356374125
RMSE:  7.0677786040399635
r2 score:  0.3281002378741138
```



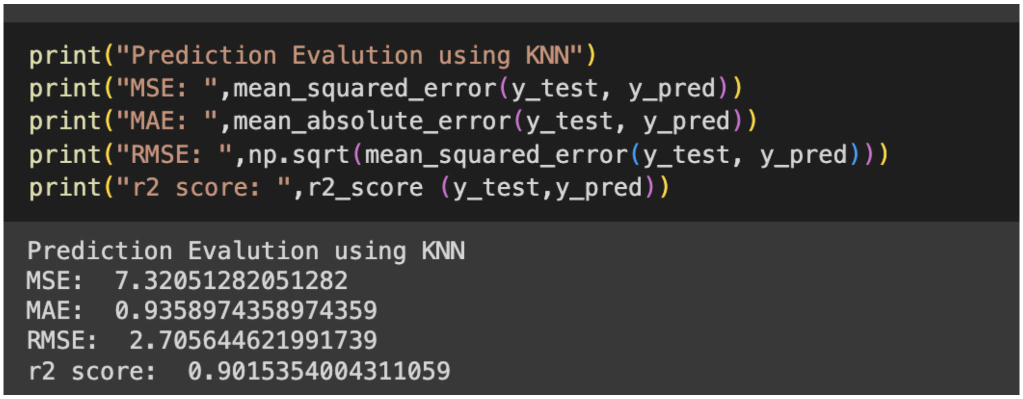
```
print("Prediction Evalution using Random Forest Regressor")
print("MSE: ",mean_squared_error(y_test, ypr))
print("MAE: ",mean_absolute_error(y_test, ypr))
print("RMSE: ",np.sqrt(mean_squared_error(y_test, ypr)))
print("r2 score: ",r2_score (y_test,ypr))
```

```
Prediction Evalution using Random Forest Regressor
MSE:  8.498146972934473
MAE:  1.0684829059829057
RMSE:  2.9151581385809027
r2 score:  0.8856956255273679
```



```
print("Prediction Evalution using Decision Tree")
print("MSE: ",mean_squared_error(y_test, ypre))
print("MAE: ",mean_absolute_error(y_test, ypre))
print("RMSE: ",np.sqrt(mean_squared_error(y_test, ypre)))
print("r2 score: ",r2_score (y_test,ypre))
```

```
Prediction Evalution using Decision Tree
MSE:  9.294871794871796
MAE:  0.9615384615384616
RMSE:  3.0487492181010554
r2 score:  0.8749792737522799
```



```
print("Prediction Evalution using KNN")
print("MSE: ",mean_squared_error(y_test, y_pred))
print("MAE: ",mean_absolute_error(y_test, y_pred))
print("RMSE: ",np.sqrt(mean_squared_error(y_test, y_pred)))
print("r2 score: ",r2_score (y_test,y_pred))
```

```
Prediction Evalution using KNN
MSE:  7.32051282051282
MAE:  0.9358974358974359
RMSE:  2.705644621991739
r2 score:  0.9015354004311059
```