

“Concrete Compressive Strength Prediction”

Introduction :

The compressive strength of concrete determines the quality of the concrete. This requires engineers to build small concrete cube with different combination of raw materials and test this cubes. This testing requires 28 days to get the correct result and it requires a lot of labours.

So we have to build a model such that we will be able to predict the compressive strength.

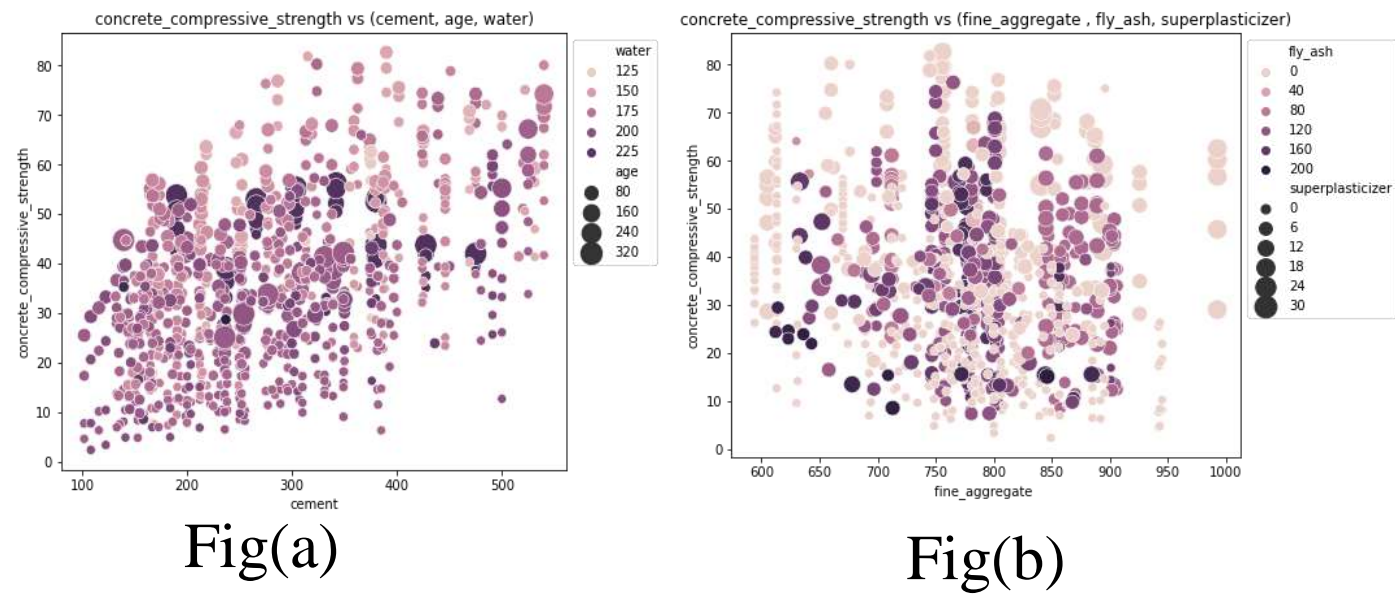
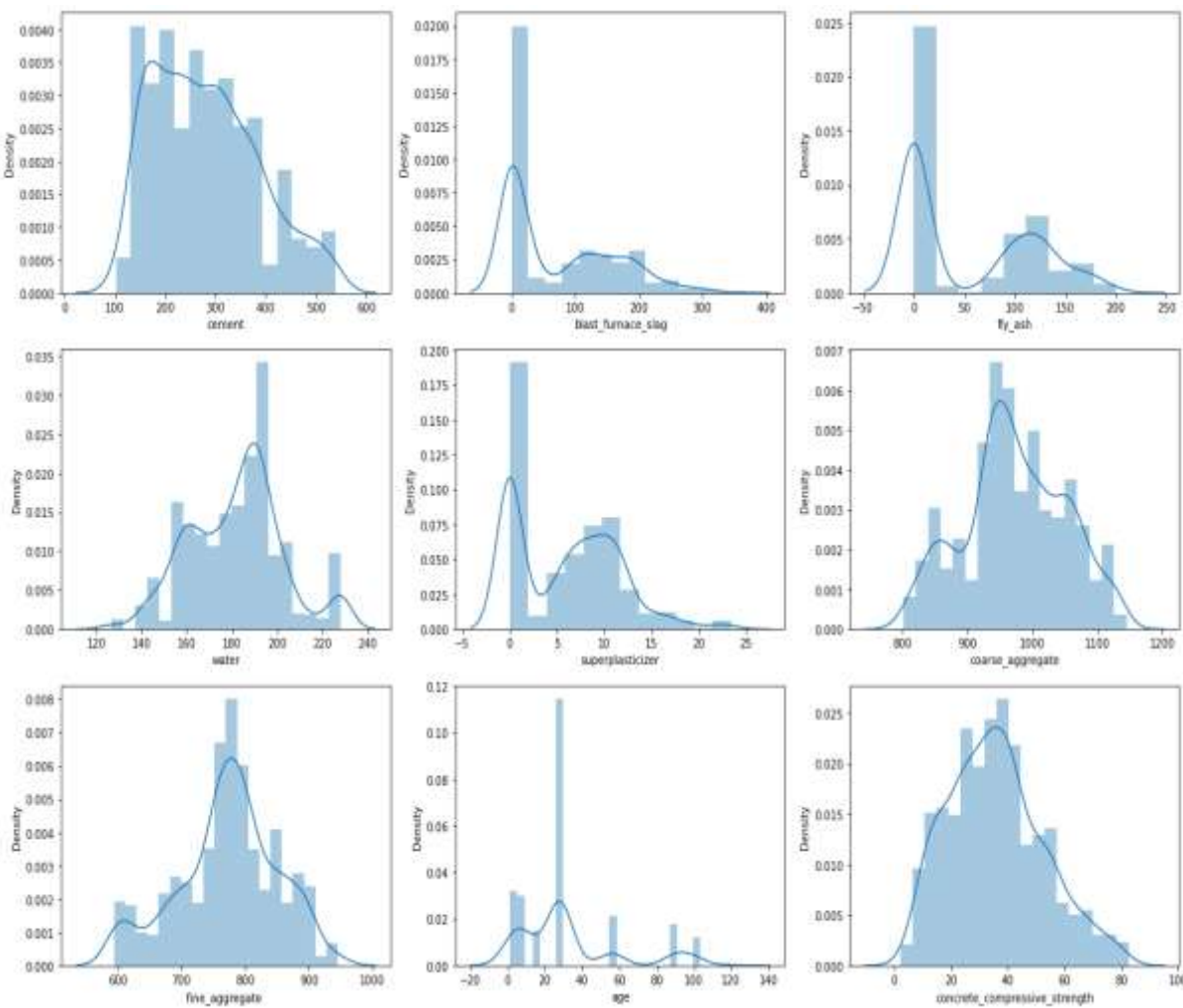
Objectives :

- Our main objective is
1. To predict the compressive strength of the 1 m concrete cube.
 2. To study the different relation between the components.
 3. To find the best effective model for this problm.

Data collection & Methodology:

The data is collected from the ineuron education platform.

EDA



Conclusion :

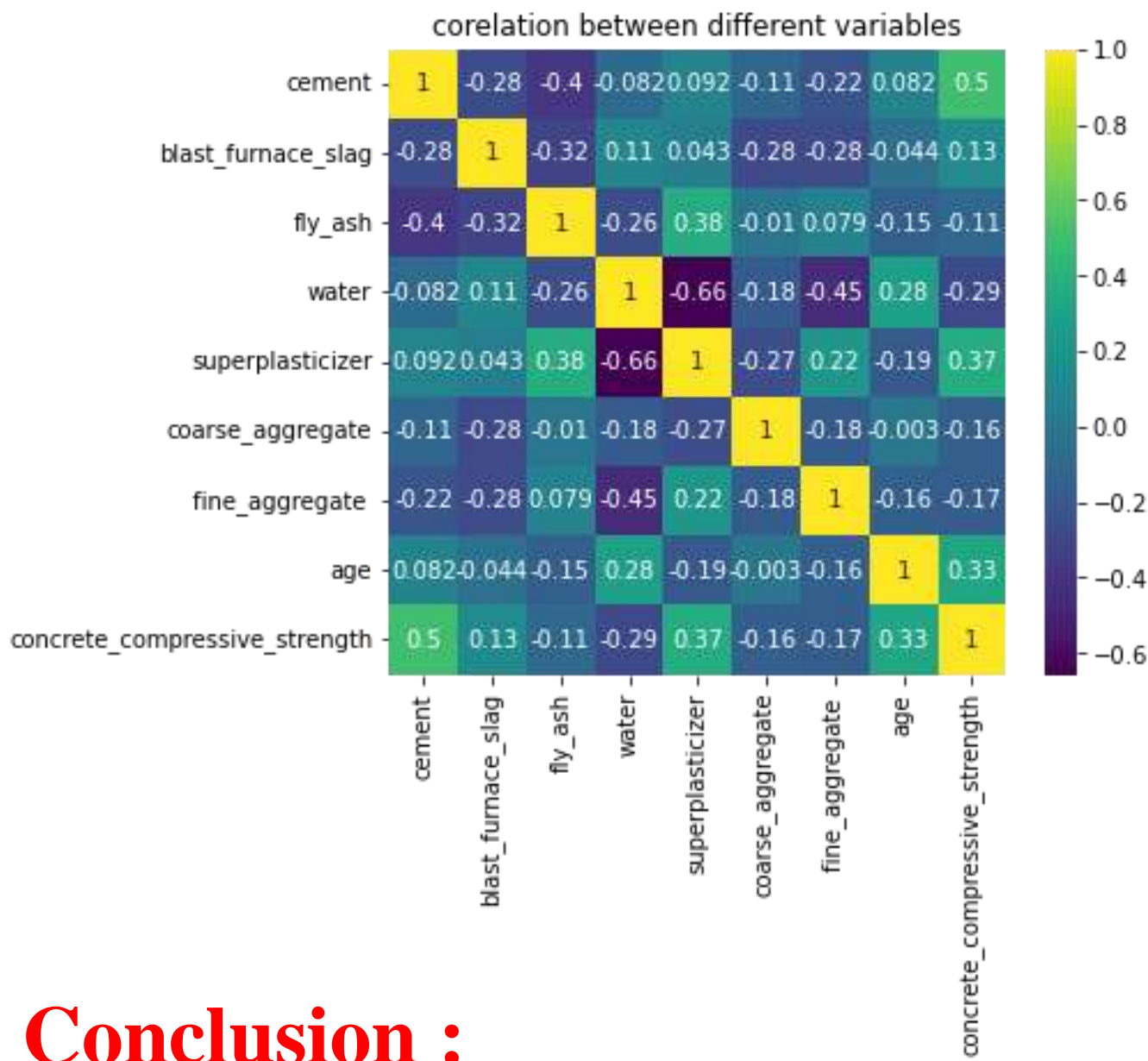
Fig(a):

- 1.The cement is increasing then the compressive strength is increase.
2. Age is more the strength is more.
3. Water is less then strength is good.

Fig(b):

- 1.As the fly ash increases the strength will be decreases.
2. Superplasticizer is increases then the strength is normally increase.

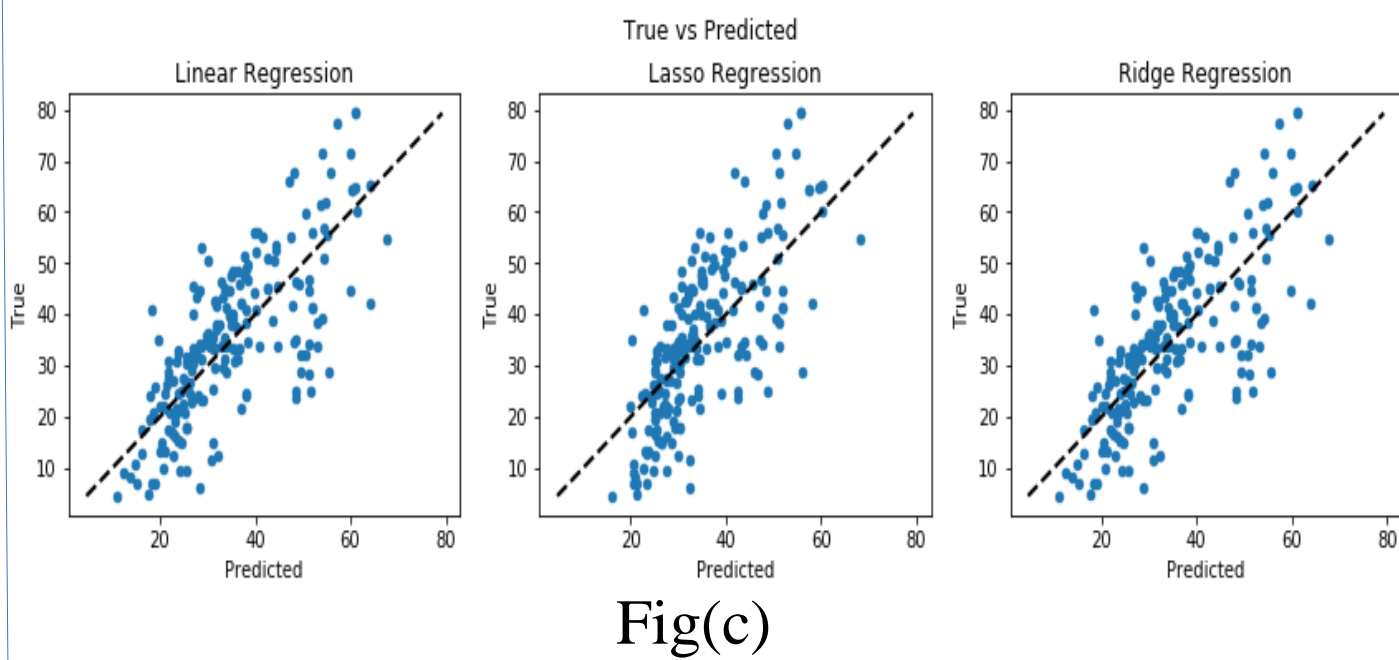
Heatmap :



Conclusion :

- 1.From the above fig. we observe that there are high positive correlation between cement and the compressive strength.
- 2.Age and superplasticizer also have the positive correlation.

Regression :



Model	RMSE	R2
LinearRegression	10.29	0.57
LassoRegression	10.68	0.54
RidgeRegression	10.29	0.57

Decision Tree :



Model	RMSE	R2
Decision Tree Regressor	7.31	0.78

Overall Conclusion :

1. As seen in the fig(c) there is not much difference between the performance with Linear,Lasso and Rigid regression.None of the model predict the correct compressive strength.
2. The Root Mean Squared Error (RMSE) has come down from 10.29 to 7.31 so the Decision Tree Regressor has improved the performance.