

Model Development Phase Template

Date	4 July 2024
Team ID	740509
Project Title	Honey price prediction based on purity.
Maximum Marks	10 Marks

Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include a summary and training and validation performance metrics for multiple models, presented through respective screenshots.

Initial Model Training Code (5 marks):

Linear regression:

```
] : lr=LinearRegression()  
    lr.fit(xtrain,ytrain)  
    ypred=lr.predict(xtest)  
    print(ypred)
```

Decision Tree:

```
dt=DecisionTreeRegressor()  
dt.fit(xtrain,ytrain)  
ypred=dt.predict(xtest)  
print(ypred)
```

Random Forest Regressor

```
rf=RandomForestRegressor()  
rf.fit(xtrain,ytrain)  
ypred=rf.predict(xtest)  
print(ypred)
```

Model Validation and Evaluation Report (5 marks):

Model	Summary	Training and Validation Performance Metrics
Linear Regression	<pre>lr=LinearRegression() lr.fit(xtrain,ytrain) ypred=lr.predict(xtest) print(ypred) print("training accuracy",lr.score(xtrain,ytrain)) print("testing accuracy",lr.score(xtest,ytest)) mse=mean_squared_error(ypred,ytest) print("mean squared error:",mse) r2_lr=r2_score(ypred,ytest) print("r2 score",r2_lr)</pre>	<pre>[457.86632615 570.21503296 661.73780104 ... 436.18061448 463.83095799 634.22040533] training accuracy 0.19026427365457044 testing accuracy 0.1911240436993652 mean squared error: 44139.15355762908 r2 score -3.2502638178467516</pre>
Decision Tree	<pre>[7]: dt=DecisionTreeRegressor() dt.fit(xtrain,ytrain) ypred=dt.predict(xtest) print(ypred) print("training accuracy",dt.score(xtrain,ytrain)) print("testing accuracy",dt.score(xtest,ytest)) mse=mean_squared_error(ypred,ytest) print("mean squared error:",mse) r2_dt=r2_score(ypred,ytest) print("r2 score",r2_dt)</pre>	<pre>[657.68 459.59 528.18 ... 791.11 621.56 562.51] training accuracy 1.0 testing accuracy 0.999999560292225 mean squared error: 0.024022097174320488 r2 score 0.9999995602913916</pre>
Random forest regression	<pre>rf=RandomForestRegressor() rf.fit(xtrain,ytrain) ypred=rf.predict(xtest) print(ypred) print("training accuracy",rf.score(xtrain,ytrain)) print("testing accuracy",rf.score(xtest,ytest)) mse=mean_squared_error(ypred,ytest) print("mean squared error:",mse) r2_rf=r2_score(ypred,ytest) print("r2 score",r2_rf)</pre>	<pre>[657.68 459.59 528.18 ... 791.11 621.56 562.51] training accuracy 1.0 testing accuracy 0.999999560292225 mean squared error: 0.024022097174320488 r2 score 0.9999995602913916</pre>