Model Development Phase Template

Date	15 July 2024
Team ID	739989
Project Title	Crop Prediction using machine learning
Maximum Marks	4 Marks

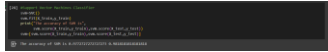**Initial Model Training Code, Model Validation and Evaluation Report**

The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include classification reports, accuracy, and confusion matrices for multiple models, presented through respective screenshots.

Initial Model Training Code:

Paste the screenshot of the model training code

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix
1. K Nearest Neighbors Model		0.98579	

| 2. SVM Model |  | **0.97784** | ```
[ ] svm=SVC()
    svm.fit(X_train,y_train)
    y_pred=svm.predict(X_test)
    print(classification_report(y_test,y_pred))

              precision  recall  f1-score  support

       apple      1.00     1.00     1.00       23
      banana      1.00     1.00     1.00       20
    blackgram     0.91     1.00     0.95       21
     chickpea     1.00     1.00     1.00       22
      coconut     1.00     1.00     1.00       20
       coffee     1.00     1.00     1.00       24
       cotton     0.95     1.00     0.98       20
       grapes     1.00     1.00     1.00       20
         jute     0.74     0.94     0.83       18
   kidneybeans    0.90     1.00     0.95       19
       lentil     1.00     0.96     0.98       25
        maize     1.00     0.90     0.95       20
        mango     1.00     1.00     1.00       17
    mothbeans     0.93     0.93     0.93       14
     mungbean     1.00     1.00     1.00       20
    muskmelon     1.00     1.00     1.00       18
       orange     1.00     1.00     1.00       24
       papaya     1.00     0.93     0.97       15
    pigeonpeas    1.00     0.90     0.95       21
   pomegranate    1.00     1.00     1.00       23
         rice     0.93     0.74     0.82       19
    watermelon    1.00     1.00     1.00       17

     accuracy                       0.97      440
    macro avg     0.97     0.97     0.97      440
  weighted avg    0.97     0.97     0.97      440
``` |
| 3.Decision Tree Model |  | 0.7613 | ```
[>] dtclassifier=DecisionTreeClassifier()
    dtclassifier.fit(X_train,y_train)

    y_pred=dtclassifier.predict(X_test)
    print(classification_report(y_test,y_pred))

              precision  recall  f1-score  support

       apple      1.00     1.00     1.00       23
      banana      1.00     1.00     1.00       20
    blackgram     0.84     1.00     0.91       21
     chickpea     1.00     1.00     1.00       22
      coconut     1.00     1.00     1.00       20
       coffee     1.00     1.00     1.00       24
       cotton     1.00     1.00     1.00       20
       grapes     1.00     1.00     1.00       20
         jute     0.89     0.94     0.92       18
   kidneybeans    1.00     1.00     1.00       19
       lentil     0.92     0.92     0.92       25
        maize     1.00     1.00     1.00       20
        mango     1.00     1.00     1.00       17
    mothbeans     1.00     0.71     0.83       14
     mungbean     1.00     1.00     1.00       20
    muskmelon     1.00     1.00     1.00       18
       orange     1.00     1.00     1.00       24
       papaya     1.00     1.00     1.00       15
    pigeonpeas    1.00     1.00     1.00       21
   pomegranate    1.00     1.00     1.00       23
         rice     0.94     0.89     0.92       19
    watermelon    1.00     1.00     1.00       17

     accuracy                       0.98      440
    macro avg     0.98     0.98     0.98      440
  weighted avg    0.98     0.98     0.98      440
``` |
| 4. Random Forest Model |  | 0.9954 | ```
[>] rfclassifier=RandomForestClassifier()
    rfclassifier.fit(X_train,y_train)
    y_pred=rfclassifier.predict(X_test)
    print(classification_report(y_test,y_pred))

              precision  recall  f1-score  support

       apple      1.00     1.00     1.00       23
      banana      1.00     1.00     1.00       20
    blackgram     1.00     1.00     1.00       21
     chickpea     1.00     1.00     1.00       22
      coconut     1.00     1.00     1.00       20
       coffee     1.00     1.00     1.00       24
       cotton     1.00     1.00     1.00       20
       grapes     1.00     1.00     1.00       20
         jute     0.90     1.00     0.95       18
   kidneybeans    1.00     1.00     1.00       19
       lentil     1.00     1.00     1.00       25
        maize     1.00     1.00     1.00       20
        mango     1.00     1.00     1.00       17
    mothbeans     1.00     1.00     1.00       14
     mungbean     1.00     1.00     1.00       20
    muskmelon     1.00     1.00     1.00       18
       orange     1.00     1.00     1.00       24
       papaya     1.00     1.00     1.00       15
    pigeonpeas    1.00     1.00     1.00       21
   pomegranate    1.00     1.00     1.00       23
         rice     1.00     0.89     0.94       19
    watermelon    1.00     1.00     1.00       17

     accuracy                       1.00      440
    macro avg     1.00     1.00     1.00      440
  weighted avg    1.00     1.00     1.00      440
``` |