

Model Development Phase Template

Date	21 June 2024
Team ID	740112
Project Title	Life Style Change Due To Covid Prediction
Maximum Marks	4 Marks

Initial Model Training Code, Model Validation and Evaluation Report

The initial Random Forest model shows promising results for predicting lifestyle changes due to COVID-19 based on demographic and behavioral attributes. Further refinement of the model, including hyperparameter tuning and feature engineering, may enhance its predictive performance.

Initial Model Training Code:

```
from sklearn.ensemble import RandomForestClassifier
# Initialize the Random Forest Classifier
model2 = RandomForestClassifier()

# Fit the model
model2.fit(X_train, y_train)

# Make predictions on the test set
y_pred = model2.predict(X_test)

# Model Accuracy
accuracy = accuracy_score(y_test, y_pred)

# Evaluate the model
print("Accuracy: ", accuracy * 100)
print("\nClassification Report: \n", classification_report(y_test, y_pred))
```

```
from sklearn.tree import DecisionTreeClassifier

# Initialize the Decision Tree Classifier
model3 = DecisionTreeClassifier(random_state=42)

# Fit the model
model3.fit(X_train, y_train)

# Make predictions on the test set
y_pred = model3.predict(X_test)

# Model Accuracy
accuracy = accuracy_score(y_test, y_pred)

# Evaluate the model
print("Accuracy: ", accuracy * 100)
print("\nClassification Report: \n", classification_report(y_test, y_pred))

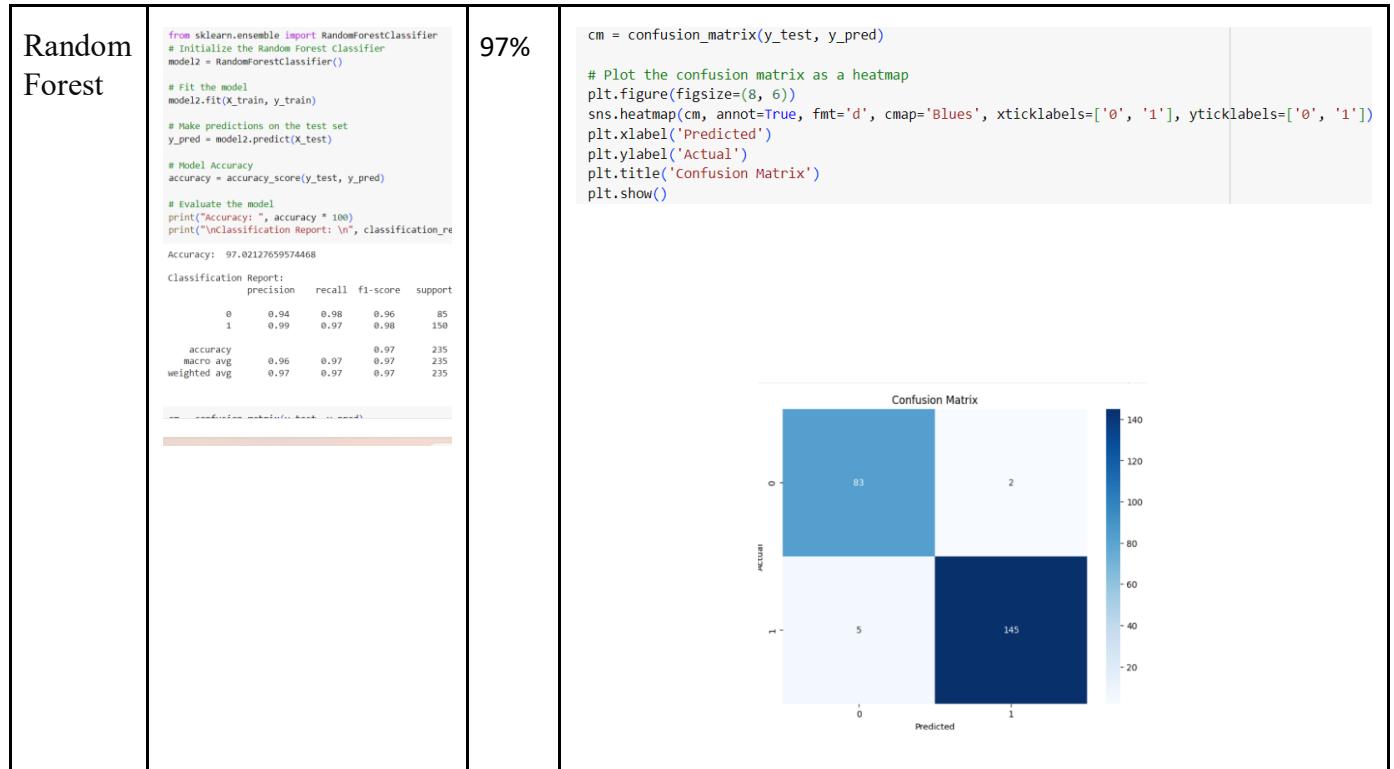
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score, classification_report

model1=LogisticRegression()

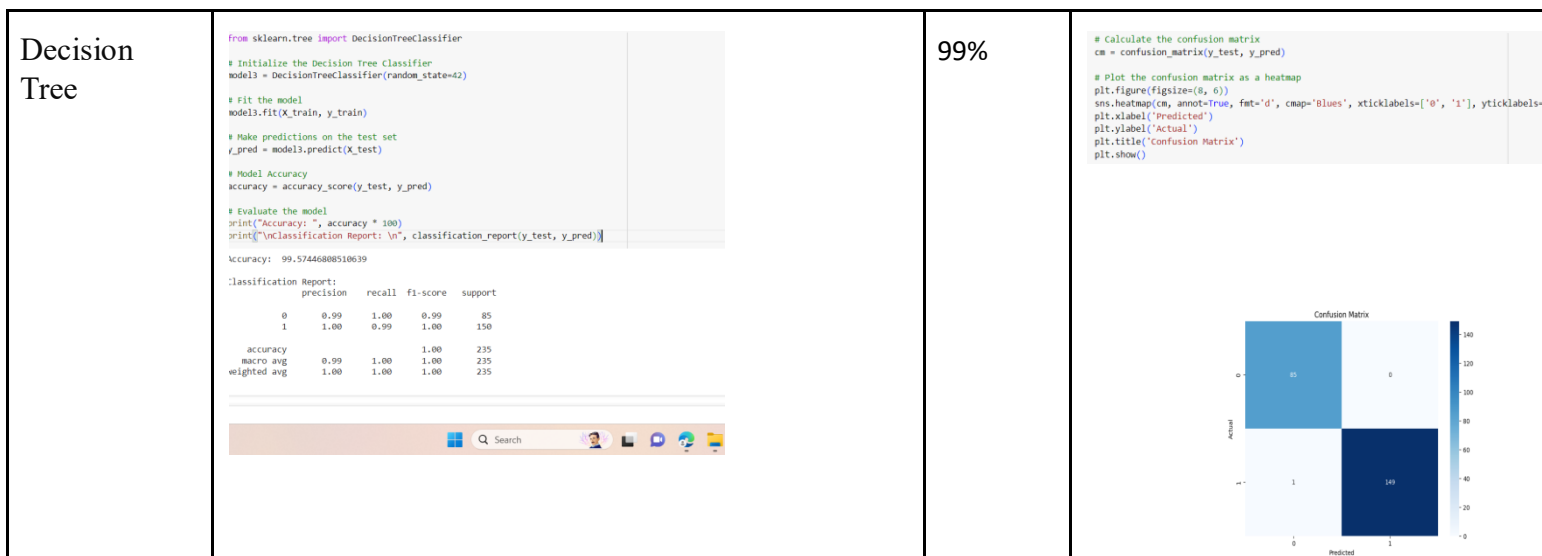
model1.fit(X_train,y_train)

▼ LogisticRegression
LogisticRegression()
```

Model	Classification Report	F1 Score	Confusion Matrix
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Model Validation and Evaluation Report:



Logistic Regression

```
print('Accuracy:',accuracy*100)
print('\nClassification Report:',classification_report(y_test,y_pred))
```

accuracy: 82.97872340425532

Classification Report:		precision	recall	f1-score	support
0	0.82 0.68	0.74	85		
1	0.84 0.91	0.87	150		
accuracy		0.83	235		
macro avg		0.83	235		
weighted avg		0.83	235		

82%

```
cm = confusion_matrix(y_test, y_pred)

# Plot the confusion matrix as a heatmap
plt.figure(figsize=(8, 6))
sns.heatmap(cm, annot=True, fmt='d', cmap='Blues', xticklabels=['0', '1'], yticklabels=['0', '1'])
plt.xlabel('Predicted')
plt.ylabel('Actual')
plt.title('Confusion Matrix')
plt.show()
```

