Initial Model Training Code, Model Validation, and Evaluation Report

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Model Development Phase

Team ID: SWTID1720067156
Project Title: Lymphography Classification Tool
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

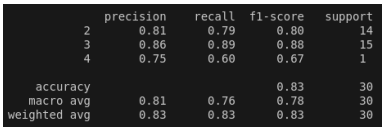
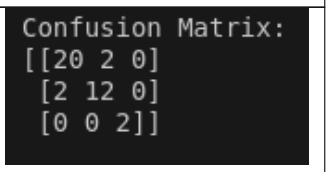
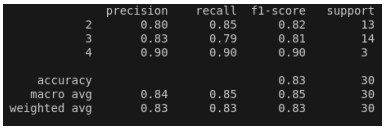
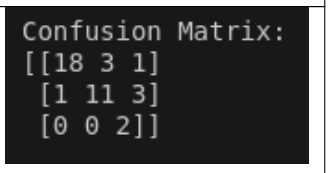
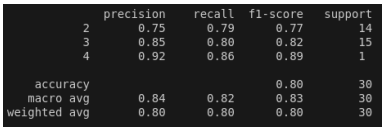
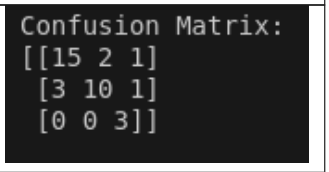
```
def train_knn(X_train, y_train, X_test, y_test, n_neighbors=5):
    knn = KNeighborsClassifier(n_neighbors=n_neighbors)
    knn.fit(X_train, y_train)
    y_pred = knn.predict(X_test)
    accuracy = accuracy_score(y_test, y_pred)
    report = classification_report(y_test, y_pred)
    return knn, accuracy, report
```

```
def train_random_forest(X_train, y_train, X_test, y_test, n_estimators=100):
    rf = RandomForestClassifier(n_estimators=n_estimators, random_state=42)
    rf.fit(X_train, y_train)
    y_pred = rf.predict(X_test)
    accuracy = accuracy_score(y_test, y_pred)
    report = classification_report(y_test, y_pred)
    return rf, accuracy, report
```

```
def train_decision_tree(X_train, y_train, X_test, y_test, max_depth=None):
    dt = DecisionTreeClassifier(max_depth=max_depth, random_state=42)
    dt.fit(X_train, y_train)
    y_pred = dt.predict(X_test)
    accuracy = accuracy_score(y_test, y_pred)
    report = classification_report(y_test, y_pred)
    return dt, accuracy, report
```

```python
def train_gradient_boosting(X_train, y_train, X_test, y_test, n_estimators=100):
    gb = GradientBoostingClassifier(n_estimators=n_estimators, random_state=42)
    gb.fit(X_train, y_train)
    y_pred = gb.predict(X_test)
    accuracy = accuracy_score(y_test, y_pred)
    report = classification_report(y_test, y_pred)
    return gb, accuracy, report
```

Model Validation and Evaluation Report

Model	Classification Report	Confusion Matrix
Random Forest		
Decision Tree		
KNN		
Gradient Boosting