

Model Development Phase

Date	3 July 2024
Team ID	740011
Project Title	Thyroid Classification using ML
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:

```
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score, confusion_matrix, classification_report
from sklearn.model_selection import GridSearchCV
```

```
rf = RandomForestClassifier(random_state=42, bootstrap=False, max_depth=None,
                           max_features='sqrt', min_samples_leaf=2,
                           min_samples_split=2, n_estimators=100)
rf.fit(x_train, y_train)
```

```
▼ RandomForestClassifier
RandomForestClassifier(bootstrap=False, min_samples_leaf=2, random_state=42)
```

```
x_pred=rf.predict(x_train)
y_pred=rf.predict(x_test)
```

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix																														
Random forest Classifier	<pre>print(classification_report(y_test,y_pred))</pre> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>compensated hypothyroid</td><td>0.84</td><td>0.88</td><td>0.86</td><td>24</td></tr><tr><td>negative</td><td>1.00</td><td>1.00</td><td>1.00</td><td>893</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.99</td><td>917</td></tr><tr><td>macro avg</td><td>0.92</td><td>0.94</td><td>0.93</td><td>917</td></tr><tr><td>weighted avg</td><td>0.99</td><td>0.99</td><td>0.99</td><td>917</td></tr></tbody></table>		precision	recall	f1-score	support	compensated hypothyroid	0.84	0.88	0.86	24	negative	1.00	1.00	1.00	893	accuracy			0.99	917	macro avg	0.92	0.94	0.93	917	weighted avg	0.99	0.99	0.99	917	99.86%	<pre>confusionMatrix = confusion_matrix(y_train,x_pred) print("Confusion Matrix:",confusionMatrix)</pre> <p>Confusion Matrix: [[3534 0] [10 3524]]</p>
	precision	recall	f1-score	support																													
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