

Model Development Phase

Date	5 October 2024
Team ID	LTVIP2024TMID24876
Project Title	Rising Waters: A Machine Learning Approach to Flood Prediction
Maximum Marks	4 Marks

Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code will be showcased in this. 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:

Train Test split for all models:

```
from sklearn.model_selection import train_test_split
x_tr,x_t,y_tr,y_t=train_test_split(x,y,test_size=0.3,random_state=0)
```

Random forest model:

```
from sklearn.ensemble import RandomForestClassifier
rf=RandomForestClassifier()
```

```
rf.fit(x_tr,y_tr)
```

```
RandomForestClassifier
```

```
y_p=rf.predict(x_t)
y_p1=rf.predict(x_tr)
```

KNN Model:

Not Used

Support vector Machine Model:

Not Used

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix																														
Random Forest	<pre>from sklearn.metrics import accuracy_score,classification_report print("Accuracy score for testing data: ",accuracy_score(y_t,y_p)) print("Accuracy score for training data: ",accuracy_score(y_tr,y_pl))</pre> <p>Accuracy score for testing data: 0.9714285714285714 Accuracy score for training data: 1.0</p>	97%	array([[26, 1], [0, 8]])																														
KNN	<pre>print("test accuracy:",accuracy_score(y_t,y_predict)) print("train accuracy:",accuracy_score(y_train_smote,y_predict1)) print(classification_report(y_t,y_predict))</pre> <p>test accuracy: 0.9142857142857143 train accuracy: 0.9791666666666666</p> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>1.00</td><td>0.89</td><td>0.94</td><td>27</td></tr><tr><td>1</td><td>0.73</td><td>1.00</td><td>0.84</td><td>8</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.91</td><td>35</td></tr><tr><td>macro avg</td><td>0.86</td><td>0.94</td><td>0.89</td><td>35</td></tr><tr><td>weighted avg</td><td>0.94</td><td>0.91</td><td>0.92</td><td>35</td></tr></tbody></table>		precision	recall	f1-score	support	0	1.00	0.89	0.94	27	1	0.73	1.00	0.84	8	accuracy			0.91	35	macro avg	0.86	0.94	0.89	35	weighted avg	0.94	0.91	0.92	35	91%	array([[24, 3], [0, 8]])
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