

# **EARTHQUAKE PREDICTION MODEL USING PYTHON**

**TEAM MEMBER**

**810621104028:SOWNDARAVALLI.M**

**PROJECT: EARTHQUAKE PREDICTION MODEL USING PYTHON**

1. Data Collection: Gather seismic data

from reliable sources. This could

include earthquake event data,

ground motion data, fault line

information, and any other relevant

geospatial or geological data.

2.Data Preprocessing: Prepare and

preprocess your data. This might

involve cleaning, normalizing, and

feature engineering. Feature

engineering could be critical in

extracting relevant information from

seismic data.

3.Feature Selection: Use techniques to

select the most relevant features for

your prediction task.

4.Data Splitting: Split your data into

training and testing sets to evaluate  
your model's performance.

5.

python

Copy code

```
# Import necessary libraries

import xgboost as xgb

from xgboost import plot_importance

from sklearn.metrics import accuracy_score

from sklearn.model_selection import train_test_split


# Split the data into features (X) and target labels (y)

X = ...

y = ...
```

```
# Split data into training and testing sets
```

```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

```
# Create an XGBoost classifier
```

```
model = xgb.XGBClassifier(objective='binary:logistic')
```

```
# Fit the model on the training data
```

```
model.fit(X_train, y_train)
```

```
# Make predictions
```

```
y_pred = model.predict(X_test)
```

```
# Evaluate the model
```

```
accuracy = accuracy_score(y_test, y_pred)
```

```
print(f"Accuracy: {accuracy}")
```

```
# Plot feature importances
```

```
plot_importance(model)
```

6. Hyperparameter Tuning: You can

fine-tune the model's

hyperparameters to improve its

performance. Tools like

GridSearchCV or RandomizedSearchCV can be useful.

7.Evaluation: Evaluate your model's performance using appropriate metrics, such as accuracy, precision, recall, or F1-score. Additionally, consider using domain-specific metrics for earthquake-related tasks.

8.Visualization: Visualize the results and relevant features using libraries like Matplotlib and Seaborn.