EARTHQUAKE PREDICTION MODEL USING PYTHON

ANALYZE AND VISLALIZE

- Earthquake is a natural phenomenon whose occurrence predictability is still a hot topic in academia. This is because of the destructive power it holds. In this article, we'll learn how to analyze and visualize earthquake data with Python and Matplotlib.

DATASET

- Origin time of the Earthquake Latitude and the longitude of the location.
- Depth – This means how much depth below the earth's level the earthquake started.
- The magnitude of the earthquake location.
- Data Set
  Link: https://www.kaggle.com/datasets/usgs/earthquake-database

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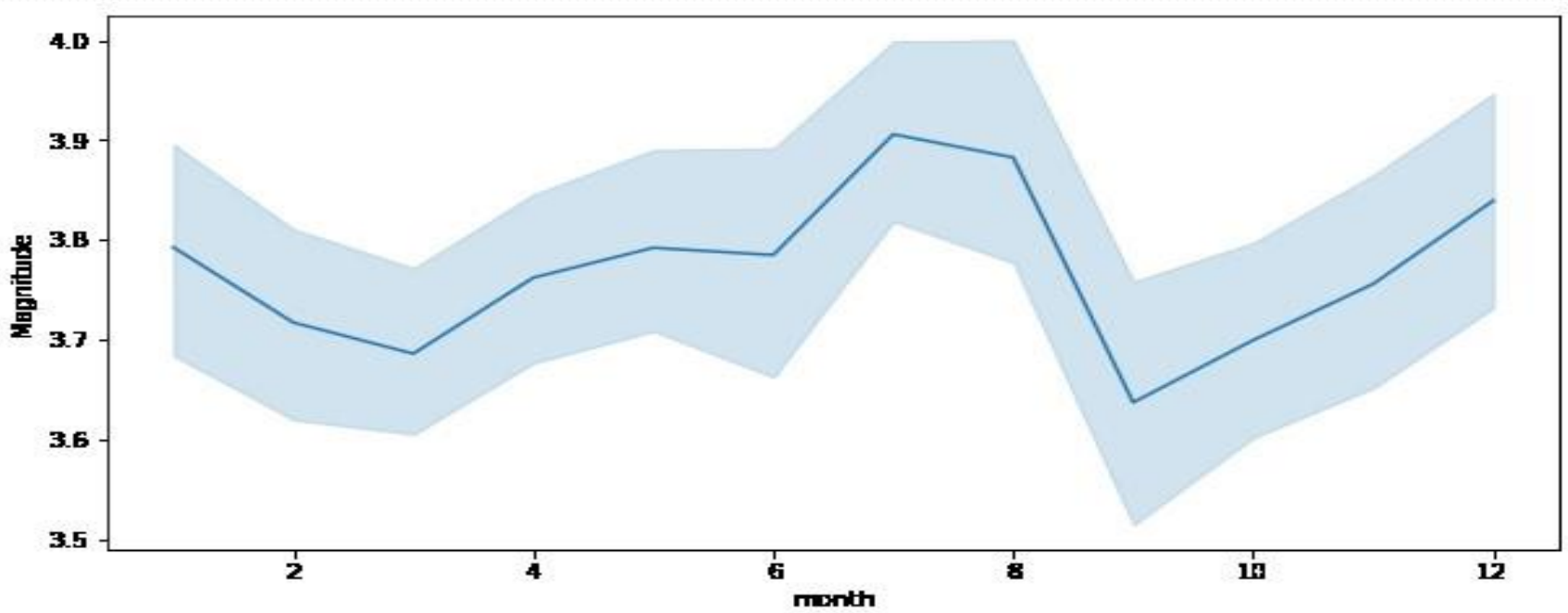
Code Python (Pyodide)

[*]:

```
# Import necessary libraries
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import accuracy_score

# Load your earthquake dataset (replace 'your_dataset.csv' with your actual dataset file)
# Your dataset should contain relevant features and a label indicating earthquake occurrence (1 for earthquake, 0 for no earthquake)
data = pd.read_csv('your_dataset.csv')

# Define features (X) and labels (y)
X = data.drop('earthquake_label', axis=1) # Assuming 'earthquake_label' is the column indicating earthquake occurrence
y = data['earthquake_label']

# Split the 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)

# Initialize and train the Decision Tree classifier
classifier = DecisionTreeClassifier(random_state=42)
classifier.fit(X_train, y_train)

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

# Calculate accuracy
accuracy = accuracy_score(y_test, predictions)
print(f'Accuracy: {accuracy * 100:.2f}%')
```


4.0
3.9
3.8
3.7
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Magnitude
2
4
6
8
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12
month

Date	Time	Latitude	Longitude	Type	Depth	Depth Err	Depth Sei	Magnitud	Magnitud	Magnitud	Magnitud	Azimuthal	Horizonta	Horizonta	Root Mea	ID	Source	Location S	Magnitud	Status
#####	13:44:18	19.246	145.62	Earthquak	131.6			6	MW							ISCGEM8(	ISCGEM	ISCGEM	ISCGEM	Automatic
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#####	18:05:58	-20.579	-173.97	Earthquak	20			6.2	MW							ISCGEM8(	ISCGEM	ISCGEM	ISCGEM	Automatic
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#####	13:36:32	-13.405	166.63	Earthquak	35			6.7	MW							ISCGEM8(	ISCGEM	ISCGEM	ISCGEM	Automatic
#####	13:32:25	27.357	87.867	Earthquak	20			5.9	MW							ISCGEM8(	ISCGEM	ISCGEM	ISCGEM	Automatic
01/15/19(	23:17:42	-13.309	166.21	Earthquak	35			6	MW							ISCGEM8(	ISCGEM	ISCGEM	ISCGEM	Automatic
01/16/19(	11:32:37	-56.452	-27.043	Earthquak	95			6	MW							ISCGEMSL	ISCGEMSL	ISCGEM	ISCGEM	Automatic
01/17/19(	10:43:17	-24.563	178.49	Earthquak	565			5.8	MW							ISCGEM8(	ISCGEM	ISCGEM	ISCGEM	Automatic
01/17/19(	20:57:41	-6.807	108.99	Earthquak	227.9			5.9	MW							ISCGEM8(	ISCGEM	ISCGEM	ISCGEM	Automatic
01/24/19(	00:11:17	-2.608	125.95	Earthquak	20			8.2	MW							ISCGEM8(	ISCGEM	ISCGEM	ISCGEM	Automatic
01/29/19(	09:35:30	54.636	161.7	Earthquak	55			5.5	MW							ISCGEM8(	ISCGEM	ISCGEM	ISCGEM	Automatic
#####	05:27:06	-18.697	-177.86	Earthquak	482.9			5.6	MW							ISCGEM8!	ISCGEM	ISCGEM	ISCGEM	Automatic
#####	15:56:51	37.523	73.251	Earthquak	15			6	MW							ISCGEM8!	ISCGEM	ISCGEM	ISCGEM	Automatic
#####	03:25:00	-51.84	139.74	Earthquak	10			6.1	MW							ISCGEM8!	ISCGEM	ISCGEM	ISCGEM	Automatic
#####	05:01:22	51.251	178.72	Earthquak	30.3			8.7	MW							OFFICIAL1	OFFICIAL	ISCGEM	OFFICIAL	Automatic
#####	06:04:59	51.639	175.06	Earthquak	30			6	MW							ISCGEMSL	ISCGEMSL	ISCGEM	ISCGEM	Automatic
#####	06:37:06	52.528	172.01	Earthquak	25			5.7	MW							ISCGEM8!	ISCGEM	ISCGEM	ISCGEM	Automatic
#####	06:39:32	51.626	175.75	Earthquak	25			5.8	MW							ISCGEM8!	ISCGEM	ISCGEM	ISCGEM	Automatic