Artificial intelligence - Earthquake prediction

Problem statement:

The problem is to develop an earthquake prediction model using a Kaggle dataset. The objective is to explore and understand the key features of earthquake data, visualize the data on a world map for global overview, split the data for training and testing and build a neural network model to predict earthquake magnitudes based on the given features.

Understanding

Upon the given problem statement, to create an earthquake prediction model with the given dataset from Kaggle. The given dataset has many features ie, Type, longitude, latitude, etc. There is some relation between these features that can be identified and with that identified relations it is possible to predict the event of happening of a earthquake. We can move through the project with some design thinking …

Goals

- To identify important features of collected dataset.
- To analyze and visualize the data to identify the relation between features.
- To identify input and output data.
- To split data into training data and testing data.
- To create a model for predicting the output.

Design thinking

Feature Exploration:

Analyzing the given dataset to understand the relations between the features of the dataset and figure out the key features the are helpful in predicting the earthquake events.

Important features: Longitude, Latitude, Depth, Magnitude, Time, Date

Visualization:

With the given features like longitude and latitude we can visualize how the data is being distributed among the geographical space. To visualize data we can use various python packages.

Data splitting:

To make use of the data must split the data into training data and testing data. This spiltting is done by us based on the size of the dataset. The test data can be used to evaluate the model trained with training data.

Model development:

To predict the magnitude of earthquake we should build a artificial neural network with many layers added to it. Each layer has its own function to do and we use different activation functions at each layer. The final layer is designed to give out the expected output.

Model used : Artificial Neural Network (ANN) with ensembling

Training and evaluation:

The training can be done in many ways and once we built the model we can make use of the model for predicting the magnitude of the earthquake. The model is trained with the training data and is expected to give the magnitude of earthquake as a output.

FLOWCHART FOR DESIGN THINKING