**Earthquake Magnitude Prediction Using Linear Regression**

**1. Introduction**

This project aims to predict the magnitude of earthquakes using various geological and seismological features. The dataset was sourced from the [US Geological Survey (USGS)](https://earthquake.usgs.gov), containing real-time earthquake data.

**2. Dataset Overview**

The dataset includes multiple attributes such as latitude, longitude, depth, and other seismic measurements. Since many columns contained categorical data, only numerical features were selected for the analysis.

**Preprocessing Steps:**

* Removed non-numeric columns.
* Dropped rows with missing values.
* Defined **magnitude (mag)** as the target variable.

**3. Model Development**

A **Linear Regression** model was trained to predict earthquake magnitude based on available numerical features. The dataset was split into **80% training** and **20% testing**.

**4. Results & Performance Evaluation**

The model's accuracy was evaluated using the **R² Score**, which measures how well the independent variables explain the variance in magnitude. The achieved **R² Score was 0.83**, indicating a strong correlation between the features and earthquake magnitude.