

Earthquake Analysis Using GeoPandas (Live Data Project)

Project Overview

This project analyzes live earthquake data using geospatial techniques. The data was retrieved from the USGS (United States Geological Survey) live GeoJSON API. The objective was to perform spatial, temporal, and country-level analysis using Python GIS libraries.

Key Steps Performed

- 1 Fetched live earthquake GeoJSON data from USGS API.
- 2 Filtered earthquakes with magnitude greater than 4.
- 3 Extracted time-based features (hour analysis).
- 4 Performed spatial join with Natural Earth country boundaries.
- 5 Counted earthquakes per country.

Libraries Used

- 1 GeoPandas – For spatial data handling and spatial joins.
- 2 Pandas – For data manipulation and aggregation.
- 3 Matplotlib – For plotting and visualization.
- 4 Requests – For fetching live data from API.

Analysis Performed

- 1 Magnitude-based filtering and categorization.

- 2 Country-level spatial aggregation (Point-in-Polygon analysis).
- 3 Temporal analysis (Earthquake frequency by hour).
- 4 Top affected countries identification.

Conclusion

This project demonstrates practical GIS skills including spatial joins, coordinate reference system handling, live API data integration, and geospatial visualization. It reflects real-world GIS internship-level capabilities.