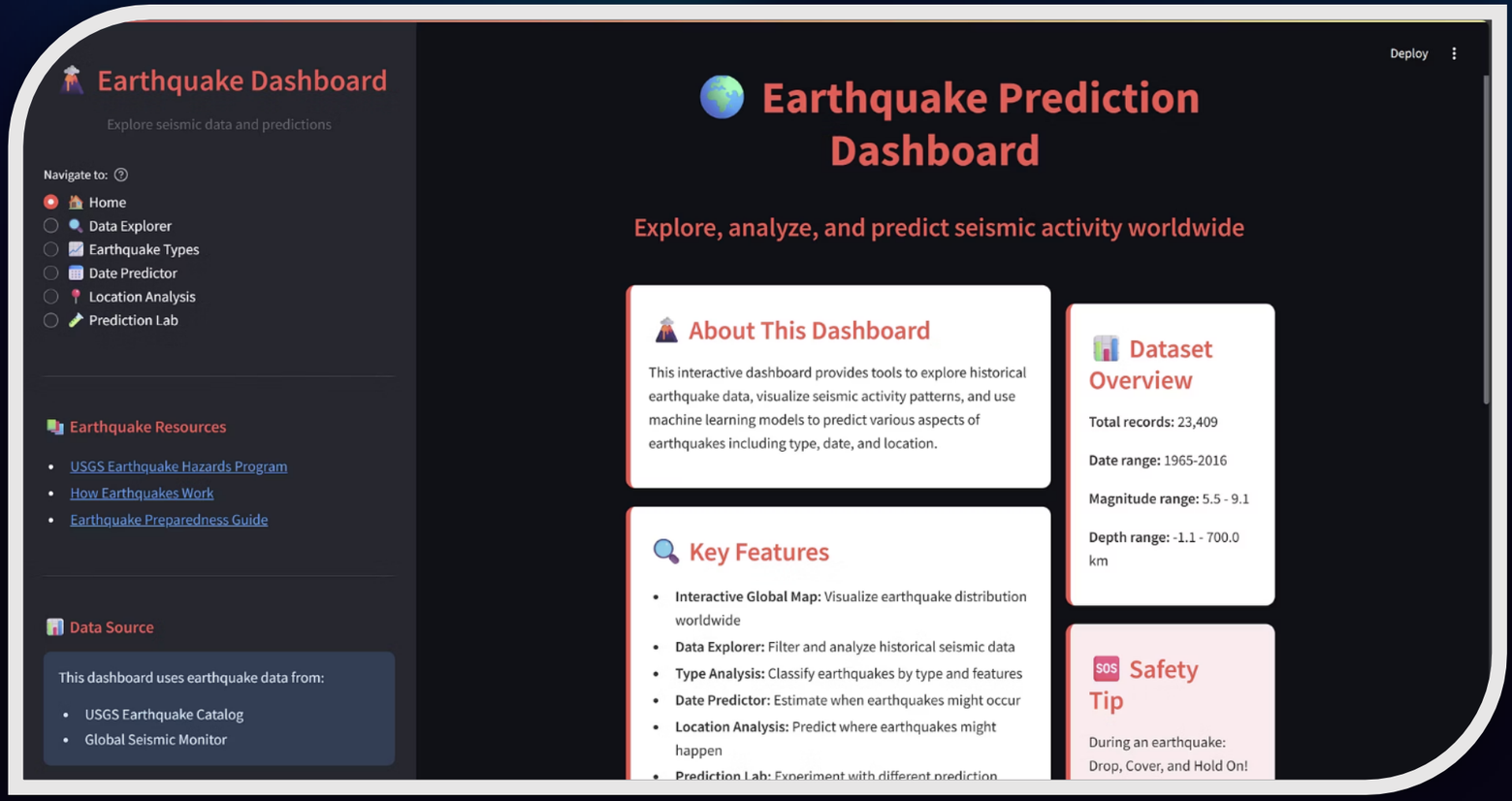
🌍 Earthquake Prediction Dashboard: Data Science in Action 🌋

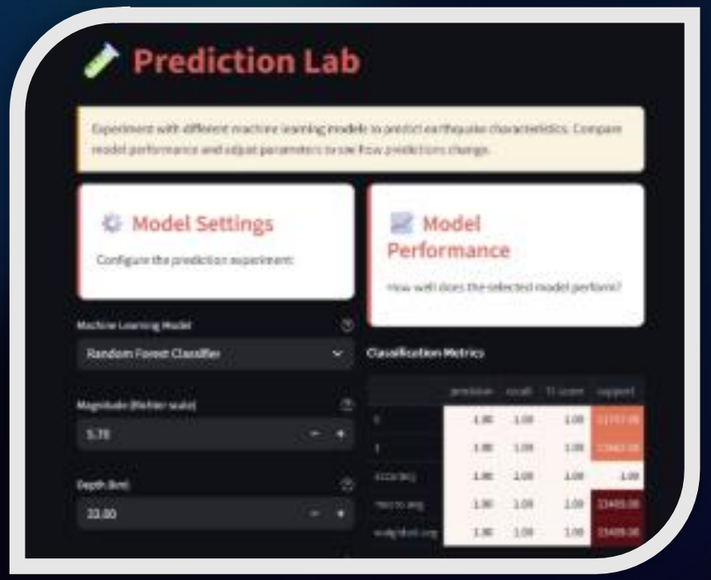
A Machine Learning Approach to Seismic Analysis

What Does This Dashboard Do?



- Interactive visualization of global earthquake data
- ML-powered predictions for earthquake type, date, and location
- Tools for exploratory data analysis (EDA)

Key Features



Global Map

Filter earthquakes by magnitude/depth

Date Predictor

Forecasts earthquake years using regression

Location Analysis

Predicts epicenters with Random Forest

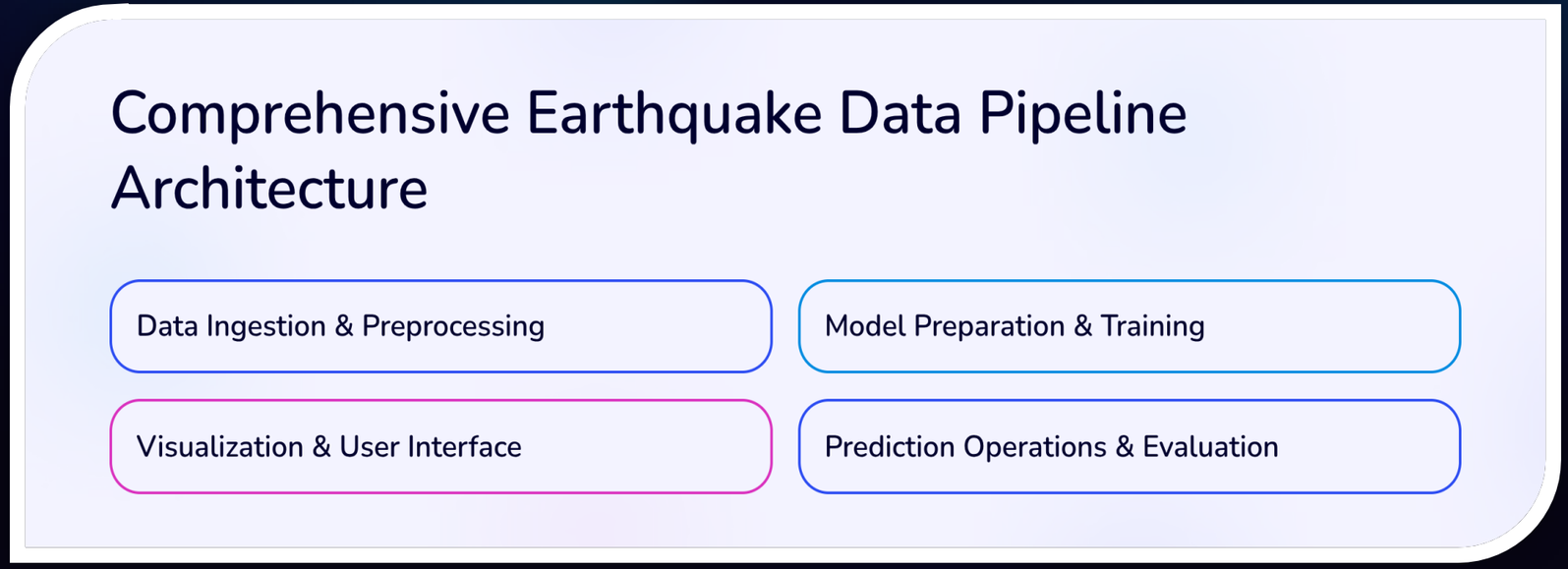
Prediction Lab

Compare model performance (RF vs. Logistic Regression)

Under the Hood

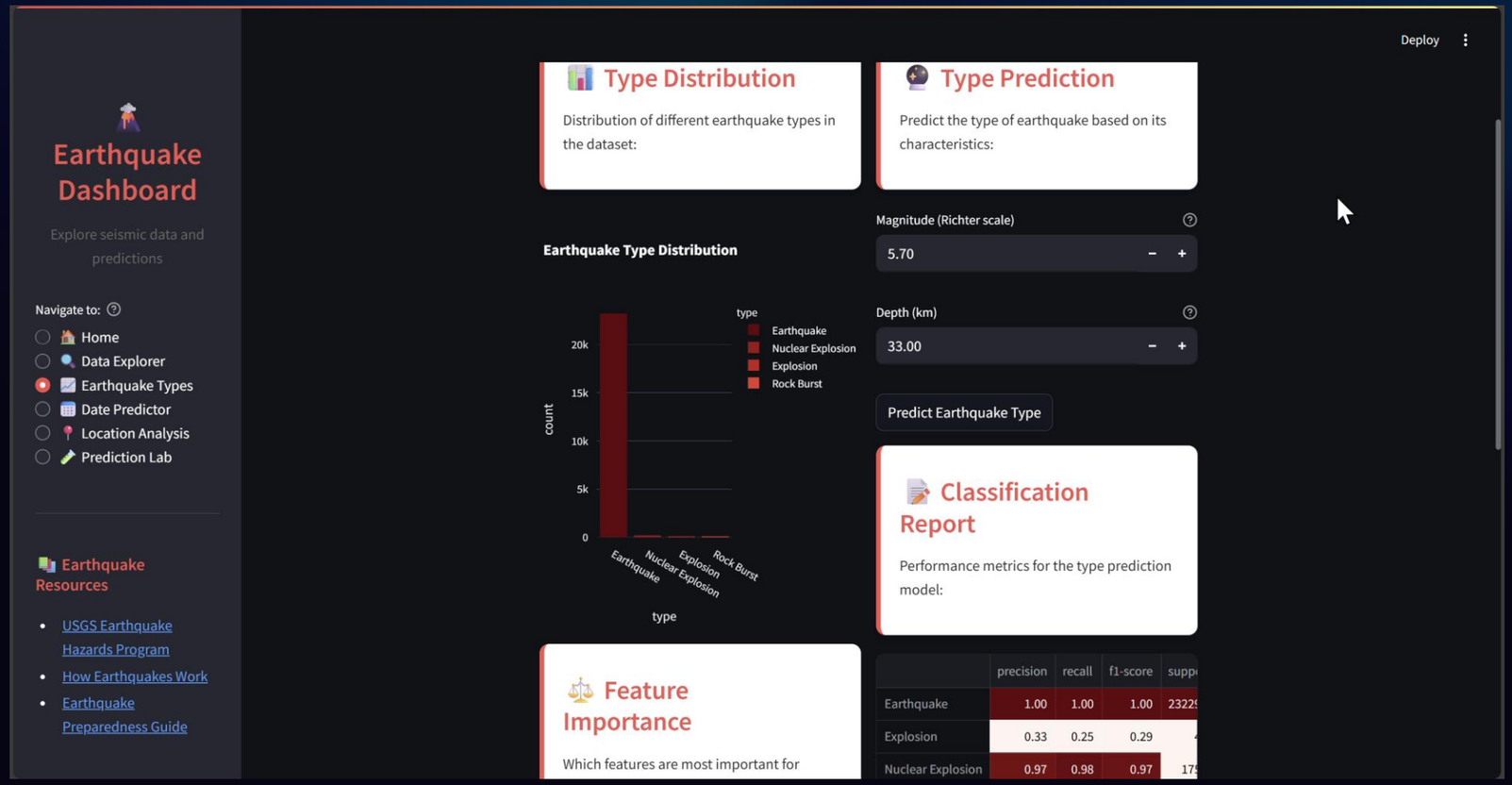
- **Languages**: Python
- **Libraries**: Pandas, Scikit-learn, Plotly, Streamlit
- **Models**: Random Forest, Logistic Regression, Linear Regression
- **Deployment**: Streamlit Cloud

How the Models Work



- **Data**: USGS/Global Seismic datasets → Cleaned with Pandas
- **Features**: Magnitude, Depth, Coordinates → Encoded with LabelEncoder
- **Training**: 70/30 train-test split
- **Evaluation**: Classification reports, confusion matrices

Example: Type Prediction



- Input: **Magnitude=5.70, Depth=33km** → Output: **Type=Earthquake (92% confidence)**
- Feature Importance: Magnitude > Depth

Why This Matters

- Helps governments prioritize disaster preparedness
- Demonstrates how ML can analyze geospatial patterns
- Open-source template for seismic research

🆘 Safety Tip

During an earthquake: Drop, Cover, and Hold On! Protect yourself from falling objects.

🌋 Input Features

Enter earthquake characteristics to predict its location:

📈 Model Performance

How well does the selected model perform?

🌍 Global Earthquake Hotspots

Historical earthquake distribution showing common seismic zones:

Catch up the Project!

🔗 **GitHub** : [nour43210 (Nour Elbanna)]

- 🌐 **Live Demo**: http://localhost:8501
- Network URL: http://192.168.1.4:8501]

📩 **Let's Connect**: [(3) Nour El banna | LinkedIn]