

PREDICTION OF EARTH QUAKE BY IMPLEMENTATION OF DEEP LEARNING MODELS ON THE HISTORICAL DATA

Name: Noman Amin

ID: 22017418

INTRODUCTION

Earthquake prediction is challenging due to complex and poorly understood factors. Earthquakes lead to devastating consequences, necessitating better prediction methods. Traditional methods have limitations in creating predictive models. Earthquake unpredictability makes accurate predictions difficult. Urbanization in seismic areas demands reliable warning tools. Deep learning models like LSTM and GRU offer hope for improved predictions. The study aims to compare deep learning models with traditional methods. It seeks to enhance earthquake prediction for community preparedness.

BACKGROUND

The public is becoming increasingly concerned about the frequency of natural disasters as well as the severity of their effects. At the same time as these horrible acts have a severe impact on people's capacity to make a living, they also have a significant impact on the economy and on important public services. The absolute necessity of improved disaster preparedness is brought into sharper focus by this.

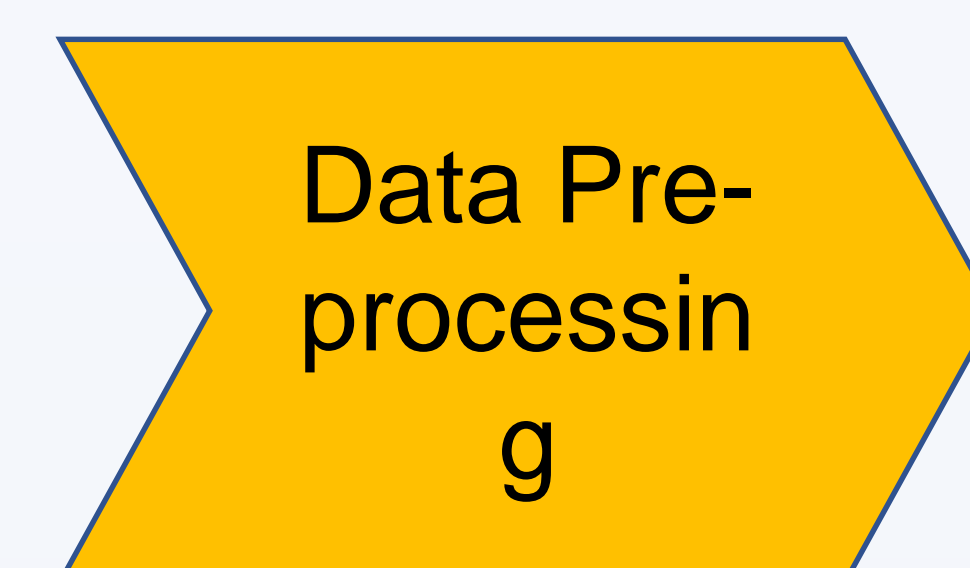
Research Questions

- How effective are deep learning models, specifically deep learning, in predicting earthquake occurrences?
- How does the predictive performance of Deep learning models compare to that of traditional Linear Regression and Random Forest Regression?

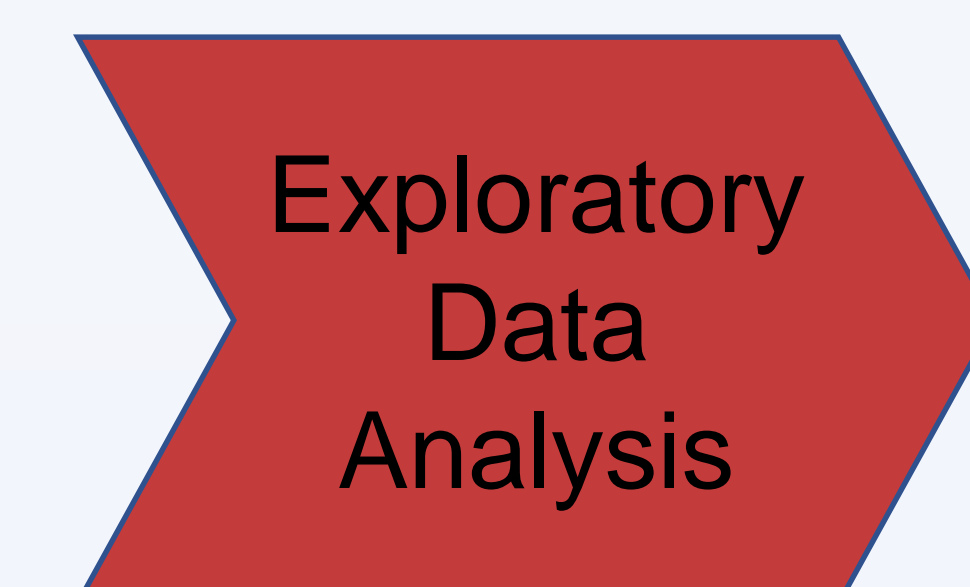
OBJECTIVES

- To Develop Deep learning based models for earthquake prediction.
- To comparative analysis of the accuracy of deep learning models with traditional Machine Learning methods.

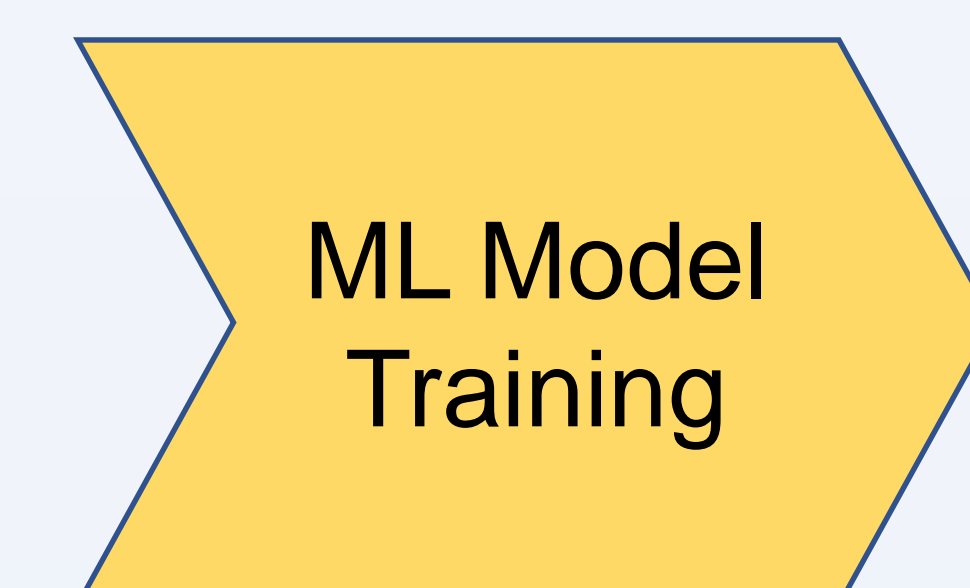
METHODOLOGY



Remove irrelevant data from dataset. Fill Missing Values In data.



Perform data Visualization of data. Explore Correlations of data attributes



Train Test Splitting of data. Data Encoding Apply ML models i.e. Random forest, Decision Tree etc.,



Calculate results by Using different evaluation matrices i.e. MSE, RMSE and R2 score

GitHub Link

<https://github.com/nomanmehar5/PREDICTION-OF-EARTH-QUAKE-FYP>

THE DATASET

To implement this project we will use publically available dataset. The dataset, has 21 informative columns i.e. date, time, latitude, longitude, type, depth, depth_error, depth_seismic_error, magnitude, Magnitude_type, Magnitude_error, Magnitude_seismic_station, Azimuthal_gap, horizontal_distance, horizontal_error, Root_mean_square, ID, source, location, magnitude, and status. Having access to this wealth of information allows for a more nuanced understanding of seismic occurrences and their surrounding environment.

Project TimeLine

Activity	Week 1,2	Week 3	Week 4,5,6	Week 7	Week 8,9	Week 10	Week 11,12,13	Week 14,15
Literature Surveys								
Exploring Gaps and Propose Methodology								
Literature Review Writing								
Understand Previous Implementations								
Data collection and Preparation								
Implement proposed models and experimental results evaluation								
Final Draft Writing								
Project Submission								

THE NEXT STEPS

Once the data have been properly refined at the preprocessing stage, ML models will get applied in order to get trained predict the earth quake.

References

Azis, M.F.A., Darari, F. and Septyandy, M.R., 2020, October. Time series analysis on earthquakes using EDA and machine learning. In 2020 international conference on advanced computer science and information systems (ICACSIS) (pp. 405-412). IEEE.