

Analysis and Prediction of Earthquake Impact-a Machine Learning approach

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Abstract—An earthquake is a natural disaster known on account of the devastating effect it has on naturally occurring structures and manmade structures such as buildings, bungalows and residential locations to name a few. Earthquakes are measured using seismometers, that detect the vibrations due to seismic waves travelling through the earth's crust. In this work, the damage that is caused by an earthquake was classified into damage grades, ranging in values from one to five. A previously acquired data set was used, wherein a series of parameters were taken into consideration to predict the damage grade of a given building, which is associated with a Unique Identification String. The prediction was done using a survey of existing machine learning classifier algorithms. The machine learning algorithms used in this work were Logistic Regression, Naive Bayes Classifier, Random Forest Classifier and K-Nearest Neighbors. Based on an evaluation of a set of attributes, the most appropriate algorithm was considered. A detailed analysis was done on the predicted attribute by the given algorithm, followed by data analysis that provided details that could help mitigate the impact of an earthquake in future.

Keywords—*predictive analysis, Logistic Regression, K-Nearest Neighbors, Random Forest Classifier, Naive Bayes Classifier, Machine Learning.*