

Earthquake Predictions

Natural disasters cause massive casualties, damages and leave many injured. Human beings cannot stop them, but timely prediction and due safety measures can prevent human life losses and many precious objects can be saved. Earthquake is one of the major catastrophes. Unlike other disasters, there is no specific mechanism for earthquake prediction, which makes it even more destructive.

Though many of them say that it is impossible to make earthquake predictions, few Scientists declare that it is a predictable phenomenon.

Motivation:

Believing that earthquakes could be predicted, from the past experiences we can say that we can avoid life loss and property damage if we have an estimation on severity of earthquake that will occur in near future.

On a yearly basis, there are approximately 14,000—16,000 fatalities due to earthquakes. The count of fatalities per year due to earthquakes when compared to other disasters and accidents might be less. Whereas, an abrupt and a huge earthquake in a city could take away thousands of lives at once. So, a solution to this problem using machine learning would save many lives and properties with no much of the damage.

Problem Definition:

What could be the Solution?

- When the event will occur.
- Where it will occur.
- How large it will be.

The above three factors could be able to give a proper intimation to the governing bodies and it could warn them to take the required actions accordingly.

What are Solution Benefits?

Earthquakes are natural disasters and it could occur in any place around the earth, but we must be worried if the prediction is in an overcrowded place or in the place of historic sculptures or national monuments. In this case, predictions that are made accurately could give an intimation to evacuate the place and make amendments to the buildings with concrete and redesign them in a way that it's foundation can take that sort of punch.

Solution Use

Lifetime of the usage of solution and probability of solution to be correct is often based on hypothesis. As it is related to nature, sometimes the levels of earthquake might be more than expected or it might not occur. The solution from the algorithm always depends on the balance of nature, i.e.; if the solution is made when the ecology system is good, the

algorithm might not work as expected when the ecology system is not good in future. The solution might be useful for short-term or Long-term depending on the balance in nature and ecology system.

How would I solve the problem?

The historic earthquake records that are well maintained in the catalogues and few other datasets like variations of electric fields, magnetic fields and total electron content of ionosphere, animal behaviour analysis will be considered as the inputs to the algorithm. Training the algorithm with this data along with other necessary inputs and performing it on various locations for deep learning and making predictions based on the statistics would provide us a solution.