Implementation of Predicting Terrorist Incident Using Real Time Big Data Analysis

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ABSTRACT: Various terrorist organization plant new attacks in different manner like bomb blast, RDX use in tiffin box at school areas and bus areas and rail-way platform.Now the current attacks likeRansomeware attack. This is one of the IT attacks, which damage our national security information. Now a day to protect world from terrorism is much important aspects. Terrorism the society country and economical as well as environmental condition and most important thing it leads to war situation.There for it is very important to develop a terrorism prediction system which will exactly predict the risk level for future date.Myproject deals with collecting real time existing terrorist attack event data and develops a formulas and methodology(risk project model which will predict the future terrorist event probability and the risk level at the various location of the world). My project will result high precision value up to 100% and very high recall value up to 100%.

KEYWORDS: Terrorism; prediction; attack; war; real time big data.

I. INTRODUCTION

Terrorism is very important issue which increase day by day rapidly. The complexity of terrorism is very deep means that the connection of this terrorist organisation is present in all important cities. They use the slipper-cell concept. Due to that finding the details information of terrorist organisation becomes complex because slipper cell person don't know anything that is head of who play these attacks in our country. They just perform these types of works of less money. These all things are must be taken into consider while developing the counter terrorism cell related data of groups. The network of these terrorism organisation and their attacks are unpredictable.

Terrorism is complex issue and it evolve day by day rapidly in last few decade. We have seen the number of terrorist attack happen in the world. The world need to come together to fight against the terrorist groups such as Al-Qaeda, ISIS etc. Now a day terrorist attack more sophisticated and lethal. For example the Mumbai attack – Series of 12 bomb explosion were took place in 12 march 1993 and CST, Hotel Taj, Cama hospital,Nariman House in 26 November 2008 etc. are the example of lethal attack. All countries in the worldare fighting against the terrorism by developing counter terrorism expert groups like RAW,ATS and FBI etc.

The terrorist attacks are unpredictable. Our work contributes to these groups to predicate the terrorism incident in future in the world. In our paper we find the predication using real time big data analysis for these purpose, we will use number of methodology, various model like risk model,risk projection model, precision and recall. Which find the probability that the attack will happen or not that is predication?

The main purpose our system to predicate the terrorist attack which will happen in future to protect our city, state, country and whole world. Awareness is important in each part in society like this awareness regarding to terrorism is important using these work people will know where red zone is for terrorism.These works maximize the awareness of terrorism and help the anti-terrorism groups.

II. RELATED WORK

In [1] authors used the java software tools that provide the evaluation of terrorism risk. These tools are used to maintain the security for nuclear materials, cyber security. They also evaluate the issue with nuclear weapons. For these purpose they implemented the mathematics of fuzzy set, reasoning which calculate the terrorist risk in future.

In [2] authors used the Chabot project to retrieve the huge collection of digitized image. Using thisDepartment of Water Resource(DWR) they retrieve the lot of digitized image form these DWR. Using Photo CD Technology DWR began project for facilitate the retrieval digitizing its entire image. But DWR facing some problems like keyword indexing for an image has limitation as well as descriptions of image.

In[3] authors used the novel method these method based on Latent Dirichlet Allocation to analyze data which was collected by Study of terrorism and Responses to Terrorism from 1970 to 2010. That means all the data was collected and according to data analyze the terrorist attack. Input data for this Latent Dirichlet Allocation is text data that describing the attackandterm document matrix concept are used in it.

In [4] authors developed novel system that automatically gather a new data based on whatever the terrorist incident were happen in a year. That means they collect the data on yearly basis. For these purpose they used the methodology such as Crawler, Safety Level Formula different theorem. They designed web crawler to download the new data regarding to terrorist incident. They find out safety level of countries using formula. They used different type of theorem such as time factor, frequency factor.

In [5] website provide the details regarding to terrorist attack was happen in which city, how many injuries, which weapons were used and all details.

Table

Day	City	Country	Fatalities	Injuries	Description
12 /03/1993	Mumbai	India	350	713	Series of 12 bomb explosion.
22/12/2000	Delhi	India	03	14	Aterrorist attack took place on Red Fort in Delhi.
26/11/2008	Mumbai	India	171	239	Series of attack took place in CST, Hotel Taj, Oberoi Trident, Metro Cinema, Cama Hospital, Nariman House and Leopold Café.
13/02/2010	Pune	India	17	60	German bakery Pune bomb explosion
7/12/2010	Varanasi	India	01	20	The explosion occurred at SheetlaGhat.
13/07/2011	Mumbai	India	26	130	Series of three coordinated bomb explosions
07/09/2011	Delhi	India	19	36	Powerful bomb blast outside Delhi High Court
01/08/2012	Pune	India	00	01	Series of four coordinated low intensity bomb
21/02/2013	Hyderabad	India	16	119	Two blasts occurred in the city of Hyderabad
07/07/2013	Bihar	India	00	05	Series of ten bombs exploded
25/04/2014	Jharkhand	India	08	4-5	Bomb Blast
01/05/2014	Tamil-nadu	India	01	14	Chennai train bombing
28/12/2014	Bengaluru	India	01	05	Bomb blast at church street
20/03/2015	Jammu	India	06	10	Bomb attack in J&K
27/07/2015	Punjab	India	10	15	Gurdaspur attack in Dina nagar Punjab
02/01/2016	Punjab	India	07	00	Pathankot attack in Air Force station
25/06/2016	Pampore	India	08	22	Pampore attack by attack by Lashkar-e-Taiba
05/08/2016	Assam	India	14	15	Three terrorist attack in Assam
18/09/2016	Uri	India	20	08	Uri attack in J&K
03/10/2016	Baramulla	India	-------	------	Baramulla attack in J&K

Table 1.**Year fatalities and No. Of Incidents**

III. SCOPE

The predicting terrorist incident using real time big data analysisthat we are developing create the red zone area that will help to understand the risk in country according to location. Due to these the people will aware about the upcoming situations in future. Also the national securities provide the tight security on that date. For example on date 15 August there will chance the attack will happen like these dates we will find out and people will aware about that.Using these people know the which location is under red zone of terrorist attack and which date. Predictions will provide whenever the national holiday or any special function like political rally or any sport matches or any high level meeting of diplomatic persons there may be chance of terrorist attack. Using older and recent terrorist attack we canpredict the future terrorist attack.

IV. PROPOSED SYSTEM

Our proposed system is finds out the risk based on the previous past terrorist incidents data. For these we use risk model to calculate the risk. Risk projection model is developed and plot the graph. Our system describes the risk of day on certain date.

V. IMPLEMENTATION

In implementation part we first add the input data from different source like newspapers, web sites, government official announcement statements and all other source. These data are added in format which having the key attributes like date, time, and locations.

1. **Time Factor**

After that we find the time factor by taking the inverse square root of theta i.e. total days.

$$Time\ factor = 1/\sqrt{\theta}$$

Where θ= Number of Total Days.

Using above equation we find out the time factor and plot the graph of inverse square root of function are as following.

Fig. Implementation of inverse square root function

Above fig. shows the inverse square root for 30 days.

Before stepping into developing a terrorism risk projection model, we first need a risk model. We developed a risk model based on frequency and time factors.

2. Risk Model

The terrorism risk model can be find out using the time factor and frequency factor.
For these following step are follows.

    a. We first sum the time factor and store in the sumTF varible
    b. Getting the Boolean value of incidents day i.e. True or false form database to for frequency.
    c. Multiply frequency and time factor and sum it to variable R i.e. R is for risk.
    d. Repeat the step b and c for all records of event table (incidents day)
    e. Last step multiply the R by 100.

In these ways we find the risk value for model.

3. Normalization

Normalization is important for calculating the risk,because whenever the data is generated using risk model are more complex value. These value need to normalize for easy to understand and next to develop the risk projection model.

We add a normalization factor to the risk model to controlthe risk values. The normalized risk is always between 0 and100. For normalization following process are used in predicting terrorist incidents using real time data analysis system.

To normalize the risk value, we divide our risk model bythe sum of the preset time *t* values, that is the sum of $\left(\frac{1}{\sqrt{\theta}}\right)$ For the period *t* time whether an incident occurs or not.Finally, we multiply the risk value by 100, to raise itsvalue up to one hundred.Normalization applies on risk by using following formula.

$$Risk = 100\left\{ \frac{\sum\limits_{\theta=1}^{t}\left[\sum\limits_{\lambda=1}^{1}\lambda_{\theta}\left(\frac{1}{\sqrt{\theta}}\right)\right]}{\sum\limits_{\theta=0}^{t}\frac{1}{\sqrt{\theta}}} \right\}$$

4. Risk Projection Model

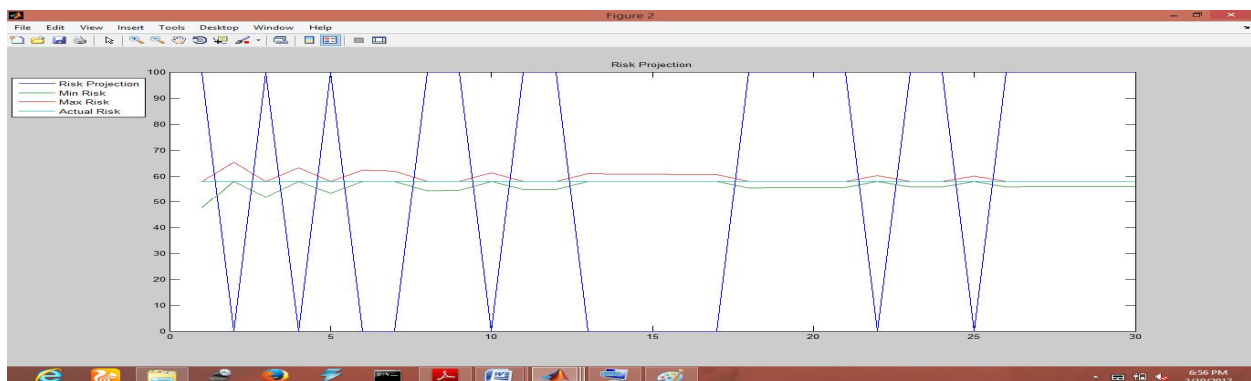We implement the risk projection model based on the risk model

Fig. Risk Projection Model

A. *Frequency factor:*

In these the frequency can be check.

i. A location can have min of zero incidents per day.

ii. A location can have max of one incident per day.

This frequency logic gives us the frequency of incident in that appropriate location.

B. *Time factor:*

In time factor we used the inverse square root of β (1/root (β)). These inverse square root allow to assign the high value to recent incident happen and low value to older terrorist incident.

C. *Normalization*

In risk model we add the normalization to control the risk value. Using these we can calculate the risk.

For these first we divide the risk the sum of 1/root (β)at the time t value and multiply the risk value by 100

$$Risk = 100 \left(\frac{\sum_{\beta}^{t} \left[\sum_{\gamma=1}^{1} \gamma_{\beta} \cdot \left(1 \Big/ \sqrt{\beta} \right) \right]}{\sum_{\beta=1}^{t} \frac{1}{\sqrt{\beta}}} \right)$$

Fig. a

Using this equationwe can calculate the risk. Normalize risk alwaysbetween 0 to 100. These risk value will use in developing the risk projection model

D. *Risk Projection Model*

In this model we will project the risk according to two logics.

Logic: 1 Incident

In this logic we will calculate the incident values

Logic: 2 Time period

In this logic the day wise time is calculate to project the risk model

VI. CONCLUSION AND FUTURE WORK

This paper presents the idea of our project, which contain the view of terrorism.It describes the implementation view of our project. This paper various terrorist attack take into consider in detail. The requirement for study the terrorism concepts areexplained in this paper with help of two tables. The reference side and papers provide lot of data, these data can be helping us to develop the terrorist attack prediction system. These all data will use in our project to calculate the risk in future. In future work we develop a mathematical logic to calculate the risk using risk projection model, frequency factor, time factor, normalization. We will find the terrorist attack in future based on older and recent incident.We will study the various organization of terrorist and there way of attack, these will help us to develop the

profile of terrorist organization. Different techniques were used in various attacks these will also study to find the level of terrorist attack.Our system will produce the result terrorist attack prediction.

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