DETERMINATION OF FUTURE TERRORIST ATTACKS BY STUDYING THE PAST INCIDENTS USING MACHINE LEARNING APPROACHES

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Abstract

Among the issues directly affecting people, terrorism is a high priority global issue. Adverse effects of the terrorist attacks include huge loss of lives, victims becoming disable due to injuries, destruction of the properties, deep fear, insecurity and other mental diseases. Therefore, all the attempts to stop or avoid an attack should be taken. In that case, identifying possible future attacks in advance holds a significance. Most research utilizes Machine Learning approaches to ascertain perpetrator, attack type and attack behaviour using the GTD. But recognizing exact date and country for future attacks is not feasible in those solutions. In this work, attacks are grouped based on the date and then the time series algorithm is applied to forecast 365 days. Fbprophet algorithm, which determines the number of attacks that can happen for each day for 365 days, is used. The output is categorized as attacks or non-attacks. For the prediction of the perpetrator, Random Forest classifier is used. The main data set was derived from GTD adhering to its definition of terrorism. According to this research, authorities can be informed prior to an attack thereby strengthening the national security. The proposed model in this paper is easily understandable, feasible, effective and has a better performance. The general impressions of the proposed system from domain and technical experts were positive. A few Machine Learning experts suggested improvements for the model which are stated as future enhancements.

Keywords

Terrorism prediction, Machine Learning, Fbprophet, Time-series prediction, Global Terrorism Database (GTD), Seasonality prediction, Classification