Predicting the success of suicide terrorist attacks using different machine learning algorithms

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ABSTRACT

Extremism has become one of the major threats throughout the world over the past few decades. In the last two decades, there has been a sharp increase in extremism and terrorist attacks. Nowadays, terrorism concerns all nations in terms of national security and is considered one of the most priority research topics. In order to support the national defense system, academics and researchers are analyzing various datasets to determine the reasons behind these attacks, their patterns, and how to predict their success. The main objective of our paper is to predict different types of attacks, such as successful suicide attacks, successful non-suicide attacks, unsuccessful suicide attacks, and unsuccessful non-suicide attacks. For this purpose, various machine learning algorithms, namely Random Forest, K Nearest Neighbor, Decision Tree, LightGBM Boosting, and a feedforward Artificial Neural Network called Multilayer Perceptron (MLP), are used to determine the success of suicide terrorist attacks. With an accuracy rate of 98.4% and an AUC-ROC score of 99.9%, the Random Forest classifier was the most accurate among all other algorithms. This model is more trustworthy than previous work and provides a useful comparison between machine learning methods and an artificial neural network because it is less dependent and has a multiclass target feature.

KEYWORDS

GTD; Machine learning; Suicide terrorist attack; Terrorism

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