

This work aims to build a classification model based on fire data in London for 2017- 2021, which predicts whether a particular alarm is real or false.

London Fire Brigade Incident Records 2017-2021 dataset contains complete information about the incident, including the incident's type, location, and time. Moreover, the data set contains a column with an incident group with three possible values: false alarm, fire, or special service. Therefore, it is known to which class this or that incident belongs. Thus, the selected data set is well suited for analyzing the factors to predict whether the alarm is real (if it was a fire or a special service) or false.

For this work, there were the following research questions:

- Is the classification problem suitable for predicting whether an alarm is real or false?
- Which classification technique is most suitable for this aim?
- What is the accuracy of the chosen method?
- What factors are most important in deciding whether an alarm is false or real?

Data preprocessing, missing values handling, feature engineering were done.

Next, three different classification models were built in R: decision tree (CART), k-nearest neighbor classifier, and logistic regression.

It was found that with approximately the same accuracy for the models, the decision tree has properties that better meet the purpose of the study.

Estimates of the importance of various factors were obtained. The most important factors for models turned out to be factors built based on the average number of false calls in the context of Unique Street Identification Number (USRN) and Unique Street Identification Number (USRN). And also, an important factor turned out to be whether the scene of the incident is residential.