

Data is trained using the neural network toolbox and remaining of the 70 samples are simulated against this trained neural network. The performance of neural network is seen when it runs. The mean square error (MSE) is a network performance function. The performance of the network is measured according to the mean square errors. The mean square error is defined as the average square difference between the output and the targets. Taking into consideration the results, we can say that the better percentage of accuracy is obtained on the recognition of speech signals that are recorded in a closed room rather than in an open one.

In the present work we have arrived at the conclusion that neural networks can use very powerful models for the classification of speech signals. The performance of the neural networks is being impacted largely by the pre-processing technique.

References:

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MACHINE LEARNING IN AUTOMATED TEXT CATEGORIZATION

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The paper reveals approaches to the use of machine learning in automated text categorization. The automated categorization of texts into predefined categories has witnessed a booming interest in the last 10 years, due to the increased availability of documents in digital form and the ensuing need to organize them. In the research community the dominant approach to this problem is based on machine learning techniques.

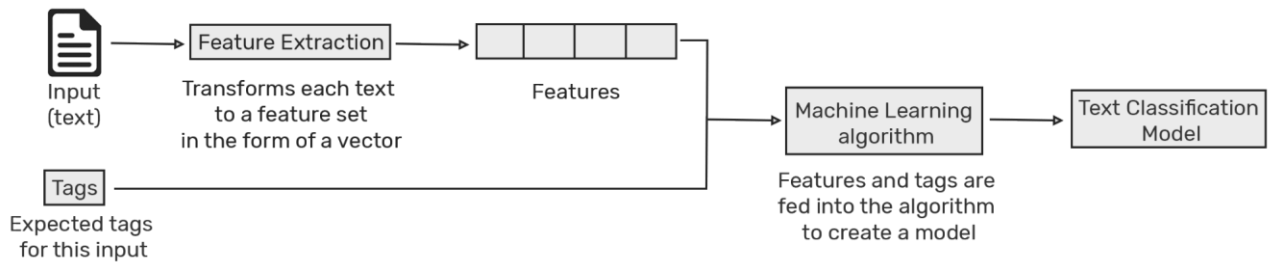
Digitization has changed the way we process and analyze information. There is an exponential increase in online availability of information. From web pages to emails, science journals, e-books, learning content, news and social media are all full of textual data. The idea is to create, analyze and report information fast. This is when automated text classification steps up. Text classification is a smart classification of a text into categories. Moreover, using machine learning to automate these tasks makes the whole process super-fast and efficient. Recently artificial intelligence and machine learning have become the most beneficial technologies in the world.

Text classification is a task of assigning a set of predefined categories to free-text. Text classifiers can be used to organize, structure, and categorize a lot of things. For example, new articles can be organized according to topics, support tickets can be organized according to urgency, chat conversations can be organized according to a language and so on. Text classification can be presented in two different forms: manual and automatic classification. In the former, a human annotator interprets the content of text and categorizes it accordingly. Usually this method can provide qualitative results but it is time-consuming and expensive. The latter applies machine learning, natural language processing, and other techniques to classify text automatically in a faster and more cost-effective way.

Instead of relying on manual crafted rules, text classification using machine learning learns to make classifications based on the past observations. By using pre-labeled examples as training data, a machine learning algorithm can learn the different associations between pieces of a text and; a particular output (i.e. tags) is expected for a particular input (i.e. text).

The first step towards training a classifier with machine learning is a feature extraction. This method is used to transform each text into a numerical representation in the form of a vector. One of the most frequently used approaches is a bag of words, where a vector represents the frequency of a word in a predefined dictionary of words. For example, if we have defined our dictionary to have the following words {This, is, the, not, awesome, bad, basketball}, and we want to vectorise the text «This is awesome», we will have the following vector representation of that text: 1, 1, 0, 0, 1, 0, 0.

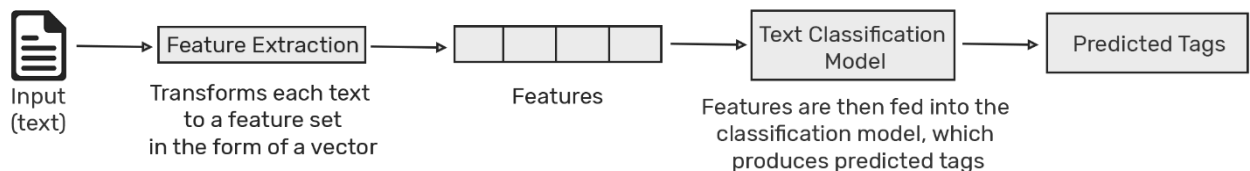
Then, the machine learning algorithm is fed with training data that consists of pairs of feature sets (vectors for each text example) and tags (e.g. sports, politics) to produce a classification model (picture 1).



Picture 1 – Classification model

Once it's trained with enough training samples, the machine learning model can begin to make accurate predictions. The same feature extractor (picture 2) is used to transform an unseen text to feature sets, which can be fed into the classification model to get predictions on tags (e.g. sports, politics).

Text classification with machine learning is usually much more accurate than human-crafted rule systems, especially on complex classification tasks. In addition, classifiers with machine learning are easier to maintain and you can always tag new examples to learn new tasks.



Picture 2 – Feature extractor

Automated text categorization is now a major research area within the information systems discipline thanks to a number of factors:

its domain of application is numerous and important, and give the proliferation of documents in digital form they are bound to increase dramatically in both number and importance;

it is indispensable in many applications in which a number of documents are classified and fast response is required;

it has reached effectiveness levels comparable to those of trained professionals. The effectiveness of manual text categorization is not 100% anyway and more important that it is unlikely to be improved substantially by the progress of research. The levels of effectiveness of automated text categorization are growing at a steady pace and this approach will probably be higher than the effectiveness levels of manual text categorization.

References:

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MODERN APPROACH TO THE DIAGNOSIS OF NEUROLOGICAL DISEASE

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This article deals with neurological diseases as a category of diseases. The importance of timely diagnosis of neurologic diseases is also described. A modern approach to diagnosing these diseases is presented, as well as the reasons why this approach can be possible and useful.