Sentiment Analysis on IMDB Movie Reviews

Evaluation and comparison of multi machine learning approaches to predict a binary sentiment of a movie review

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*Abstract*—

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# Introduction

## Goal of the analysis

This text classification task is focused on the evaluation and comparison of several natural language processing methods for sentiment classification. For this purpose, we use a dataset with 50 thousand film reviews from the IMDB[[1]](#footnote-1) platform. A dataset that is often used for benchmarks in the NLP environment. The dataset is suitable for a binary sentiment classification as it is labeled with the binary feature "sentiment" which either takes on the value "positive", if the sentiment of the review is positive, or "negative" if the sentiment is negative [1]. An example record of the dataset would be:

Table 1, Example of a review in the IMDB dataset

|  |  |  |
| --- | --- | --- |
| **Index** | **Review** | **Sentiment** |
| 124 | “I like this movie” | positive |

## Process

At the start of the process, functions were defined that allow a uniform pre-processing of the data. This ensures that all employed models receive the same data as input. In chapter II we describe the pre-processing in more detail. With the pre-processed data several models were trained and their accuracy on train and test set was recorded. In a further step, the models have been compared. Assumptions about the results, how they were obtained and whether they are robust, are given at the end of the report in chapter 5.

# Preprocessing

# Modelling

## Baseline Model

## Probabilistic Models

### Bag of Words

### TF-IDF

## Deepl Learning Models

### Bidirectional LSTM

### BERT

# Evaluation

# Results

##### References

[1] “Sentiment Analysis.” http://ai.stanford.edu/~amaas/data/sentiment/ (accessed Oct. 31, 2021).

1. IMDB: Internet Movie Database [↑](#footnote-ref-1)