

Sentiment analysis report

5.1. A description of the dataset used.

1429_1.csv from the Kaggle Consumer Reviews of Amazon Products

This is a list of over 34,000 consumer reviews for Amazon products like the Kindle, Fire TV Stick, and more provided by [Datafiniti's Product Database](#). The dataset includes basic product information, rating, review text, and more for each product.

[Consumer Reviews of Amazon Products \(kaggle.com\)](#)

Columns in the file:

id,
name,
asins,
brand,
categories,
keys,
manufacturer,
reviews.date,
reviews.dateAdded,
reviews.dateSeen,
reviews.didPurchase,
reviews.doRecommend,
reviews.id,
reviews.numHelpful,
reviews.rating,
reviews.sourceURLs,
reviews.text,
reviews.title,
reviews.userCity,
reviews.userProvince,
reviews.username

Columns used for the analysis: *reviews.text*

reviews.text

5.2. Details of the preprocessing steps.

- 1) All the text is updated to lower case
- 2) Removed punctuations like comma
- 3) Removed stop words like the, an etc

5.3. Evaluation of results.

I have identified a few reviews and checked if the results are as expected. Some were correctly classed as Positive. Some were wrongly classified as Negative. I have analysed these and reason for the results below.

Evaluation 1:

Input: I really like this tablet. I would have given 5 stars but sometimes you have to push start several times after you unlock the screen and it is a little annoying.

Sentiment: Negative

Verdict: Not expected

Reason: This potentially happens due to words like *annoying* moving the polarity towards negative

Evaluation 2:

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Input: Simply does everything I need. Thank youAnd silk works wonders

Sentiment: Negative

Verdict: This is unexpected.

Reason: Due a typo in the review text *you* and *And* are combined together. There are no strong positive words. The word *Wonders* is considered as neutral. So, the meaning is not correctly inferred.

Evaluation 3:

Input: This product so far has not disappointed. My children love to use it and I like the ability to monitor control what content they see with ease.

Sentiment: Positive

Verdict: This is as expected.

Evaluation 4:

Input: Great video quality lots of fun apps fun for the whole family

Sentiment: Positive

Verdict: This is as expected.

5.4. Insights into the model's strengths and limitations.

The polarity score is not perfect. This assigns scores on an individual word and the overall score is sum of all the words. This approach is very limited due to some words appearing as positive and negative in certain contexts. Spacy approach used in the model is not able to take the larger context into considerations. LLMs like Llama and GPT4 excel since they are able to consider the overall context (and are trained in larger dataset providing the efficiency).

My conclusion is Spacy can only be used for preprocessing and final sentiment has to be handled by an LLM like Llama / GPT4

The pipeline can be potentially modified as below for better performance.

Spacy (PreProcessing) ---→ GPT4 (Sentiment analysis) --→ Evaluation