

# SENTIMENT ANALYSIS (ABSA, SLSA)

## INSTRUCTIONS

### AIM OF THE PROJECT

The aim of the **Sentiment Analysis** project is to determine the tone or attitude (sentiment) that the author of a text has towards a product or service. For the purpose of this project, we call this product/service **aspect**, and the sentiment expressed towards it (good/bad/mixed).

For this project you should be able to identify sentiments essentially in three levels:

- Document-level or Document Level Sentiment Analysis (DLSA). You should indicate the sentiment of an entire document.  
*“The hotel was beautiful. We arrived by boat and they received us with some wine, and they kindly took care of the luggage. The room was spacious, modern, and with anything we could need, we even had a Espresso Coffee machine!”*

This document has a “good” sentiment, because all of its sentences are positive.

- Sentence-level or Sentence Level Sentiment Analysis (SLSA). You should indicate the sentiment of each individual sentence.  
*“The pizza is delicious, but it’s also a bit expensive in my opinion. “*

This sentence has a “mixed” sentiment, because the pizza is delicious (good) but expensive (bad).

- Word-level or Aspect Basic Sentiment Analysis (ABSA). You should identify all individual aspects (products or services) and indicate their sentiment.  
*“This **car** is amazing.”*

“car” is the aspect, and the sentiment of that word is “good”, because of the adjective “amazing”

### DOCUMENT-LEVEL (Document Level Sentiment Analysis)

For the Document-Level Sentence Analysis you will have to read a document, and determine if it expresses a positive/negative sentiment towards the products/services in it. You need to consider the document as a whole, and not the individual sentiments assigned to each sentence.

Sentiment	Definition	Examples
Positive	All or some of the sentiments in the document express a positive opinion, attitude, or mood.	Good charger! It’s perfect because it also has a USB connection. Also love that it is original material.
		We have experienced issues with the car since

Uncertain	There is a sentiment, but we cannot know which one it is for lack of context/external knowledge that is not contained in the text.	I used the Melbourne cab service. The taxi ride cost me twenty bucks!!!
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-There are still times when a document doesn't seem completely negative or completely positive. If you ever wonder if a document is "positive enough to be positive" or "negative enough to be negative", then label the document as UNCERTAIN




-Some documents might have more positive sentences than negative ones. If they contain the two of them, please label the document as UNCERTAIN

- "In the two years I have owned this car, it has had the fuel pump go out, the fuse block melt, the water pump go out, the timing belt snap, the BMW USA would do nothing but refer me to the dealer. This is a legitimate warranty claim and they're refusing to cover it. It's not covered" by warranty. No explanation, nobody to talk to who can do anything about it. I love their cars, I have a BMW 3 Series.

The only positive sentiment here is "I love their cars," while everything else is negative. Still, the document should be tagged as UNCERTAIN

## SENTENCE-LEVEL (Sentence Level Sentiment Analysis)

For the Sentence-Level Sentence Analysis you will be read one or several sentence and determine if each sentence (individually) is positive/negative/mixed/neutral sentiment on the products/services in it.

Sentiment	Definition	Examples
Positive 	All or some of the sentiments in the document express a positive opinion, attitude, or mood.	I can't wait to eat here again!
Negative 	All or some of the sentiments in the document express a negative opinion, attitude, or mood.	The last time I visited this barber I got an uneven haircut.
Mixed 	Some of the sentiments in the document express a positive opinion, attitude, or mood, while other sentiments express a negative one.	The steak was great, but the fries were cold
Neutral	No opinion is expressed, or the opinion expressed is neutral (using adjectives like "just okay", "acceptable", etc.	Overall, their service was okay.
Uncertain	There is a sentiment, but we cannot know which one it is for lack of context/external knowledge that is not contained in the text.	The taxi ride cost me twenty bucks!!!
		That is just unheard of these days.

There are still times when a sentence doesn't seem completely negative or completely positive. If you ever find yourself wondering if a sentence is 'positive' or negative enough to be 'negative', then label it as UNCERTAIN.

Some special examples:

Sentiment	Emotion/Opinion/Concept	Examples
		-Thank you for texting me a lot today!

<b>Negative</b> ❌	Apology/regret	-Sorry. -Sorry I'm late. -I unfortunately can't join you, I've made plans.
	Sadness/disappointment	-That's really sad. -I feel let down by them.
	Rejection/disagreement	-Sorry, I can't make it tonight. -I can't -No.
	Criticism	-He's not a very good football player.
	Frustration/annoyance/anger/swearing	-Shut up! -What the hell??
	Confusion	-I don't understand.
	Sarcasm	-So this is the thanks I get for being a good customer?
<b>Neutral</b>	Fact	-London is the capital of the UK. -Indonesia's population in 2019 was 270 million people.
	Neutral opinion	-Lunch was okay.
	Opinion without sentiment	-I think it will snow next week.
	Formality	-Thank you and best regards. -Looking forward to hearing from you.

## **WORD-LEVEL (Aspect Basic Sentiment Analysis)**

You need to find all products/services in a sentence that have a sentiment. You should annotate only the products/service. For instance, in “The car is amazing”, you should annotate the product/service “car”, and not the adjective “amazing”, which is a sentiment.

### Sentiment Classes

Sentiment	Definition	Examples
<b>Positive</b> ✅	The expressed sentiment is clearly positive	The <b>pizza</b> ✅ is really

Sentences can have several aspects (products/services) and sentiments:

- That **car**❌ does not handle the road well
  - “Car” is an aspect, and the phrase “does not handle the road well” expresses a negative sentiment
- The **room**✅ was spacious, but the **air conditioner**❌ didn’t work.
  - Two sentiments(positive & negative), two aspects (room & air conditioner).
- **Green curry**✅ and **red curry**✅ are awesome!
  - One sentiment (positive), two aspects (green curry & red curry)

Hierarchies

Some sentences may have hierarchies, aspects that belong to other aspects. Each aspect should be annotated with its sentiment. The parent aspect should be annotated.

- The sound of this phone is clear.
  - “Sound” is an attribute of the parent entity “phone”
- I like the **quick transfer feature**✅ of the **savings account**✅ at this **branch**✅ of the **North American Bank**❌
  - In this example, only up to four should be annotated, “Chase Bank” should be excluded.

Sentiments in child entities are transferred to parent entities

If the child entities do not have all the same sentiment, you can follow this table as to which sentiment does the parent entity take.




Child entities	Parent entity
Positive✅ + Negative❌	MIXED⚪
Neutral + Positive✅	POSITIVE✅
Neutral + Negative❌	NEGATIVE❌
Neutral + Mixed⚪	MIXED⚪

- The **processor**✅ in this **laptop**⚪ is top-notch, but the small **screen**❌ makes it hard to use.
  - Child aspect “processor” is positive, “screen” is negative, and they belong to parent aspect “laptop”, then the parent aspect is mixed.
- I loved the **food**✅ at this **restaurant**⚪, can’t say the same for their terrible **service**❌ though.
  - Child aspects “food” (positive) and “service”(negative) belong to parent aspect “restaurant”, that is mixed.
- The **machine**✅ has good **graphics**✅, but the **processor speed** is only acceptable.
  - One child entity has a positive sentiment, the other one is neutral. The parent entity will be marked as positive.











Compound nouns

Compound nouns should be annotated as one single aspect, if the meaning of the combined nouns is different than the sum of the individual nouns.





Compound noun	Nº of aspects	Annotation
Customer service	1 aspect	“Customer service” is a common used phrase and has a distinct meaning.
Credit card	1 aspect	The meaning of “credit” and “card” by themselves would be different, cannot be reformulated to “card of the credit”
Air conditioner	1 aspect	The meaning of “air” and “conditioner” by themselves is vastly different, cannot be reformulated to “conditioner of the air”

The <b>restaurant</b>  nicely <b>serves</b> <b>food</b>  .	1 aspect	"serves food" is an aspect because it is done "nicely", positive sentiment expressed towards the verb.
The air dryer <b>cooks</b> <b>items</b>  fast.	1 aspect	"cooks items" is an aspect because a positive sentiment is expressed about the verb (fast)

**Do annotate:**

- All aspects that have a sentiment in a sentence. If a word is repeated, only the words with sentiment must be annotated.
  - I bought a wonderful **car**  last week, and I'm so happy with my new **car** !
  - I bought a car last week, and I'm so happy with my new **car** .
- Synonyms should be annotated, if they have a sentiment.
  - **John**  is amazing! The best **manager**  in the business.
- Misspelled words should be annotated.
  - The **car**  had good **tire**  **pressure** .
- Implicit sentiments. Even if there isn't a clear adjective to express a sentiment, sometimes sentiments can be inferred.
  - Hotel has a great **location**  next to the highway. It also features free **parking** . ("free" expresses a positive sentiment in this example)

**Do NOT annotate:**

- Pronouns
  - You are the best!
- Articles
  - The **food**  was good.
- Generic Words. Do not annotate words that are too generic and not a product/service
  - This *thing* doesn't work at all!
- The words expressing the sentiment
  - What a mind-blowing **service** .
- Punctuation
  - **Bank of Australia** 's **customer service**  is horrible
- Items with no sentiments
  - There was pizza on the menu.