
Targeted Sentiment Annotation Guidelines for English COVID-19 Related Tweets¹

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Version 1.0**

¹This standard refers to Orbach M, Toledo-Ronen O, Spector A, et al. YASO: A Targeted Sentiment Analysis Evaluation Dataset for Open-Domain Reviews[C]//Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing. 2021: 9154-9173

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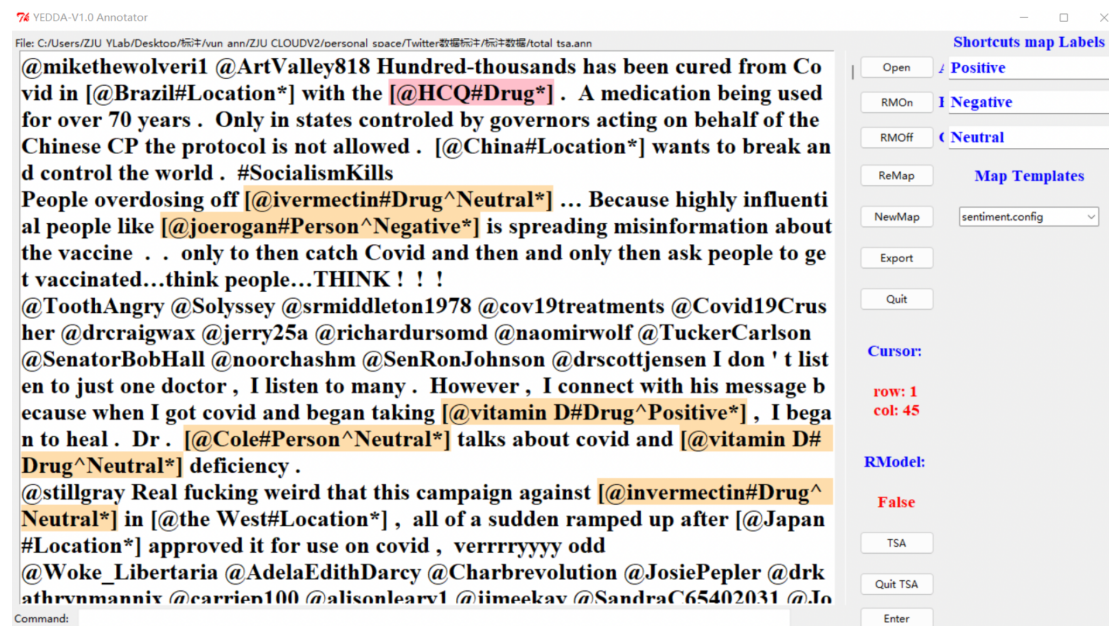
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1. Introduction

During the COVID-19 pandemic, users' attitudes toward different entities (such as *Person*, *Organization*, *Vaccine*, *Drug* etc.) may change drastically. Using the big data of social media to track changes in users' different attitudes can help CDC formulate epidemic policies, publicize the need for getting vaccinated and reduce the spread of misinformation. Hence, there is a pressing need to build relevant datasets to precisely understand the public's attitudes, especially on medical and healthcare topics. To fill the research gap, we designed these annotation guidelines to build a new targeted sentiment analysis dataset for English COVID-19 related tweets, which contains users' sentiments on 4 entity types (*Person*, *Organization*, *Vaccine*, *Drug*) during pandemic.

2. Annotation Tool and Process

All the annotation work could be done using the YEDDA annotation platform. The readers could check more details about YEDDA on its GitHub page: <https://github.com/jiesutd/YEDDA>. The screenshot of using YEDDA to annotate sentiment for targeted entities is shown as follows:



METS-CoV-TSA's annotation has 3 phases:

1. First, we conduct 6 rounds of sentiment pre-labeling and update the labeling guidelines in each iteration. The annotators who meet the consistency criteria are selected to participate in the subsequent annotation process.
2. We randomly pair up the annotators (4 pairs in total) and assign the same tweets to each group. A third annotator determines the final annotation when inconsistency occurs.
3. The project team conducts a secondary check to ensure that the annotation meets the guidelines. The final inter-annotator agreement is 78.4% in accuracy.

3. General Annotation Specification

Annotate the user's sentiment towards the target entity as *positive*, *negative* and *neutral*.

- A. Overall consideration of Twitter: In the process of annotation, it is necessary to comprehensively judge the user's sentiment towards entities based on the entire Twitter content. It is necessary to read the **entire** tweet to make a judgement on the entity rather than considering only the single sentence that contains the entity.
- B. User's point of view: It is necessary to analyze the entity's sentiment from the user's point of view, and judge the Twitter user's **own** sentiment on the entity in the Twitter text.
- C. Irony: If it is clear that the text is ironic, it should be annotated according to the real meaning of the user's irony.
- D. Paraphrase: For the retweeted tweets by the user, it is necessary to judge the sentiment from the user's point of view, and judge the user's sentiment. If the user's attitude cannot be judged, it is annotated as neutral. .
- E. Pay attention to special symbols/formats/rhetorical questions: It is necessary to combine twitter punctuation such as exclamation marks, quotation marks, capitalization, emoji characters, etc. Using these special writing methods generally has stronger sentiments and is an important clue for sentiment annotation.
- F. Lack of contextual information: Some tweets lack context, which is difficult to annotate their entity sentiment. There is no need to go too deep, just annotated as neutral.

4. Detailed Specification

3.1 Positive and Negative Sentiment Judgment:

Direct expression:

1. The user expresses sentiment directly to the entity,
 - a) the words with emotional color directly describe the entity
 - b) comment the entity's good/bad influence with emotion
 - c) describe the positive/negative result generated by the entity
 - d) recommend/not recommend or accept/reject
2. Tweet contains irony, usually negative emotions, which can be judged by seemingly positive description + bad behavior/consequence.
3. If there is a direct emotional attitude towards an entity in the Tweet, the entity is basically annotated according to the emotional attitude.

Examples:

- ✧ [@Sean Hannity#Person^Negative*] is a biased propaganda spewing douche bag.
- ✧ [@Trump#Person^Negative*]'s erratic trade and foreign policy creates big headaches for businesses going forward. Add that to good chance of COVID spike w/ [@flu#Disease*] season killing more people and jobs. Not much for market 2 cheer...
- ✧ Dr gave her [@ivermectin#Drug^Positive*]. 2 days later up and about, no [@fever#Symptom*], [@cough#Symptom*] gone. Still [@tired#Symptom*] but otherwise much better. I would take it if diagnosed positive for covid.
- ✧ If we stopped testing now, we'd have very few cases (of corona) says
 [@trump#Person^Negative*] Almost directly from "The House of God" "You can't find a
 [@fever#Symptom*] if you dont take a temperature" Excellent book, btw, which everyone
 should read

Indirect expression:

1. Judge the sentiment of one entity based on the user's sentiment of another entity. If entity A and B are in a causal relationship, the relationship between user A and entity B should be consistent.
2. If entity A and B are in a turning/opposite relationship, the user's sentiment towards entity A and entity B is opposite
3. The entity has a strong emotional color at the beginning. Due to the continuity of sentiments, identical entities in the same tweet can be annotated as the same sentiment. But with valid reasons, sentiments can take a turn in some cases.
4. The entity does not have a strong emotional color at the beginning, and subsequent emotions towards the entity will not affect the neutral attitude at the beginning.
5. When expressing entity A, take B as an example. At this time, the emotions of entity A and B should be basically the same

Examples:

- ✧ Numbers are under reported because [@GOP#Organization^Negative*] goons like [@RonDeSantis#Person^Negative*] classify deaths as [@pneumonia#Disease*] rather than Covid, when statistically it's a clear cover up for his ineptitude... nice try though, Trumpanzee.
- ✧ The data is quite clear. Suburban women are voting [@Democratic#Organization^Positive*]. Apparently they are tired of [@Trump#Person^Negative*]'s whining and his to unending Insults but mostly because of his malfeasance regarding COVID 19.
- ✧ Numbers are under reported because [@GOP#Organization^Negative*] goons like [@RonDeSantis#Person^Negative*] classify deaths as [@pneumonia#Disease*] rather than Covid, when statistically it's a clear cover up for his ineptitude... nice try though, Trumpanzee.

3.2 Special case annotating rules on different categories:

Drug and Vaccine:

Type	Judgment basis	Sentiment
Side Effects related	A. Only describe side effects, no other comments B. Describe side effects, but mentioning little impact later C. Describe the side effects are mild D. Objectively describe side effects	Natural
	A. Think vaccine side effects are too serious or the vaccine is ineffective B. Exaggerate side effects	Negative
	A. Describe side effects, think the vaccine can protect/have positive effect B. Describe side effects, followed by positive emotional expressions C. Recommend others to get vaccinated	Positive

Person and Organization:

Type	Judgment basis	Sentiment
Political related	A. Clearly points out what the analysis is for and against B. People/organizations appear contrary to common sense descriptions or comments - CDC politicization, Trump's trust gap, unobjective organizations, useless drugs	A. Support-positive against - negative B. Negative

Irony		Judge the real attitude
COVID concern	A. Focusing only on COVID but ignores other diseases B. Exaggerating COVID consequences	Negative

4. Annotation example

4.1 Example for the rules:

Example:

Tweet1:

- ✧ @catturd2 There are no more talking lies he can say. Covid is getting boring, peeps are tired of [@Biden#Person^Negative*] blaming [@Trump#Person^Neutral*]. [@Charlotte#Person^Negative*] lie is been proven wrong. Always the white supremacy lie .[@Trump#Person^Neutral*]'s taxes, who cares. Military lie proven wrong. That's all [@Biden#Person^Negative*] has. 5 talking points (lies).
- ✧ **Explanation:** @Biden#Person: think that Biden is lying, according to the meaning of the sentence should be negative

Tweet2:

- ✧ y'know what? i am so proud of [@yoongi#Person^Positive*]. to go through years of [@shoulder pain#Symptom*] and then undergo surgery that requires tough temporary adjustments to his normal lifestyle all on top of the frickin pandemic which has already changed enough for every single one of us..
- ✧ **Explanation:** yoongi#Person: "so proud of young" should be postive

Tweet3:

- ✧ @KellyannePolls @JoeBiden Well not everyone can have a [@White House#Location^Neutral*] balcony to go [@cough#Symptom*] on for some of us, external spaces will do when it's w/o Covid. [@Biden#Person^Negative*] always wears masks You're petty. And nice try on invoking [@Hillary#Person^Positive*] ... your favorite opponent. As a woman you should be ashamed of demonizing her.

- ✧ **Explanation:** White House#Location: Neutral to White House, although the general idea is to a negative attitude towards Biden

4.2 Mistakes

Organization

Tweet1:

- ✧ @JusticeTargeted It's like they have more time than ever since "other" non Covid related surgeries and other medical appointments are canceled and visitors aren't allowed..So much free time to dance and choreography [@tik tok#Organization^Negative*] videos....oh and there's no [@flu#Disease*] season or [@pneumonia#Disease*] to deal with either.
- ✧ **Conclusion:** tik tok is more like a tool here, it should be neutral

Tweet2:

- ✧ @britishlivesuk @val_tigress @FenrirWolf26 Read [@the BTP#Organization^Positive*] report. He was obnoxious deliberately [@coughing#Symptom*] at people on the train to induce covid panic. He thought it was funny until [@BTP#Organization^Positive*] intervened then the mask story emerged. He swore and abused the cop. Smart aleck lost this time.
- ✧ **Conclusion:** Stating the facts

Person

Tweet1:

- ✧ @AshaRangappa_ The mask did a good job hiding [@Chauvin#Person^Negative*]'s shock and disbelief
- ✧ **Conclusion:** Only the shock and disbelief of Chauvin are described, and it should be neutral until there is more information.

Tweet2:

- ✧ As CM [@Kejariwal jii#Person^Neutral*] after getting [@cough#Symptom*], [@cold#Symptom*] and [@fever#Symptom*] became anxious to be tested for Covid, same anxiousness is there in other persons affected by [@cold#Symptom*] [@cough#Symptom*] and [@fever#Symptom*]. Then why should he stay at home and wait for more symptoms? Mr [@Kejariwal#Person^Neutral*] please answer.

- ✧ Conclusion: According to Then why should he stay at home and wait for more symptoms?
There is a irony that can be interpreted as a negative attitude towards Kejariwal's practice.

Tweet3:

- ✧ @RealPDeLuise @c_harley48 @LouDPhillips @marcosanchezorg @MaurySterling So sorry for your loss [@Peter#Person^Negative*] @c_harley48 My thoughts prayers are with you everyone who has lost a loved during these difficult times. My brother in laws mom passed away this morning from [@covid pneumonia#Disease*] complications. She has been in the hospital since Christmas eve. Sad
- ✧ Conclusion: Here's a consolation

Tweet4:

- ✧ @AI_Clayton For 4 years the left screamed [@Trump#Person^Negative*] was a dictator, loved [@Putin#Person^Negative*], etc Yet [@Biden#Person^Negative*] is FORCING people businesses to comply with [@COVID_vax#Vaccine-related^Negative*], "they're tired of non-compliant", so ppl want to ban unvaxd from jobs, shopping, medical care, etc. Isn't THAT epitome of "Dictator"?
- ✧ **Conclusion:** For 4 years the left screamed [@Trump#Person^Negative*] was a dictator, loved [@Putin#Person^Negative*]. It can be seen from the following that it should be a negative attitude towards Biden's forced approach. Negative is an annotation error.
- ✧ [@COVID_vax#Vaccine-related^Negative*] The overall attitude is to criticize the mandatory vaccination policies of Biden. Attitudes toward vaccines are unclear.

Tweet5:

- ✧ @kayleighmcenany [@Trump#Person^Negative*] asked [@Wallace#Person^Negative*] not to mention the number of Covid-19 deaths that he's responsible for. That's more than 200,000. TWO HU[@ND#Location*]RED THOUSA[@ND#Location*]. Better to be tired than inept, unqualified, and a liar like [@Trump#Person^Negative*].
- ✧ **Conclusion:** Trump asks Wallace not to mention death toll, no direct evidence to against him.

Tweet6:

- ✧ @goldengateblond @billprady My God in so tired of conservatives whining about [@Obama#Person^Negative*]'s birthday. It's outdoors. I am area with low transmission.

Everyone is vaccinated. It's not only within the letter of the law, it's within the current recommendations of [@the CDC#Organization^Positive*].

- ✧ **Conclusion:** here is a complaint from conservatives about Obama's birthday.

Tweet7:

- ✧ For the crowd saying the backup [@Clemson OL#Person^Positive*] shouldn't have practiced Bc he was "symptomatic", explain to me like you would to a 5 year old, how you'd justify sitting out a player with a negative Covid test and a [@runny nose#Symptom*] and/or [@congestion#Symptom*].
- ✧ **Conclusion:** There is not much praise for Clemson OL here, more likely to be a disapproval of the audience's behavior.

Tweet8:

- ✧ @BillyPrempeh I realized with a shock that [@CDC#Organization^Negative*] was politicized when [@obama#Person^Neutral*] got the director to say that we WANT to have [@ebola#Disease*] patients in[@ the USA#Location*].
- ✧ **Conclusion:** Because Obama's words made the CDC political. So if the CDC is negative, as a reason of that, Obama should also be negative.

Vaccine

Tweet1:

- ✧ As I cope with [@aches#Symptom*] and [@chills#Symptom*] after getting my second [@COVID-19 vaccine#Vaccine-related^Positive*], I would like to remind you that Spider-Man 2 had the best pop soundtrack ever.
- ✧ **Conclusion:** Stated vaccination facts.