

Project Overview

The goal of this project was to try to combine my love for videogames with Python sentiment analysis. With the release of the Modern Warfare game coming out recently, there have been a lot of mixed reviews, sentiments, and ideas related to the game. Therefore, I wanted to use Python to gauge user sentiment based on the comments written in Reddit threads: were they as bad as I imagined? Were the critics right in rating the game an 8.6? are the other underlying reasons as to why players disliked the game? To answer said questions, I used Reddit, as a data source. To pull the data from Reddit, I proceeded to gain access to their API and used the Python program: PRAW to extract that data (submissions, subreddit, and comments) from the website itself with my key. With the information from Reddit, I used the Sentiment Analyzer in NLTK [module] in order to analyze the emotion: positive, negative, or neutral, of the words used by Redditors in their titles and/or comments. I was hoping to analyze the feel of the game through the comments of players by performing a sentiment analysis on about 5 of them and averaging out all of their scores (i.e. the average score of the percentage of the comments that was positive, negative or neutral once all are analyzed for sentiment). In this way I can get a realer answer on how players really feel and where their disappointed is placed.

Implementation

The major component of the code relied in getting access to Reddit's API. In order to do this, I was introduced to the developer's side of Reddit which allowed me to create an app, which I named 'PythonSentimentAnalysis', in order to ask Reddit permission to grab posts from their website. This in turn allowed me to create a client secret and ID which is unique to the app and needed to create a client-agent which allows you to inform Reddit that you have a user key to user their comments and information for the app you are using.

I essentially tested printing the top 10 top, new, or hot comments pulled from the r/modernwarfare thread in the console. I then returned the submission author and submission text for each submission which allowed me to choose the submissions of interest that I wanted to analyze and eliminate the posts that were meme posts. The other alternative was to play around and implement Pandas. It would take all of the comments and submissions from reddit and displayed it in a neatly packed table with information regarding the post's title, author, number of likes, number of comments, post id, and more. This allowed for the action of pulling reddit submission to be more organized and more digestible in table form rather than being printed in the console. However, there were technical difficulties that impeded with this.

With these two choices in place, I was able to pull a set of submissions from any thread I specified and distinguish each by their respective authors. This allowed me to get the overall sentiment of the post through the analysis and thus average them. I then averaged out the ratings and came up

with the overall sentiment of modern warfare based on a set of 5 random comments from the TOP sort function.

I could have also chosen to use a Redditor's specific ID to fish for their comments or thoughts on the new Modern Warfare game but using a Redditors ID doesn't guarantee that I will get their modern warfare comment but perhaps a mix of all the comments they have posted in various threads.

Results [~2-3 paragraphs + figures/examples] Present what you accomplished:

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if __name__ == "__main__":

    print("\n1st comment :")
    sentence = 'Everyone constantly bitches and moans that each new CoD is a re-skin of the last.\n
    The most innovative CoD in a minute drops, and now people just want a re-skin of Black Ops 4.\n
    Hopefully Infinity Ward can distinguish in this clown show the legitimate criticism from the people who just spend their entire day bitching on this website just to bitch.\n
    Great game IW. Definitely needs some tweaks like any game that just came out, but this is one of the best CoD games yet.'
    sentiment_scores(sentence)

    #It would not judge the text file appropriately so I used this method instead.
    #Author: whatschildsupport

    # Function calling

    print("\n2nd comment :")
    sentence = 'Here's an analogy for all of you "tactical" players.\n
    Imagine you're in a math class, and it's a breeze for you but everyone else is struggling, even though they're using a calculator.\n
    You finish all the tests 3x faster than anyone else and you get high scores, all without using a calculator.\n
    The teacher doesn't make you come to class on Fridays, because you're doing so well you deserve to get rewarded.\n
    Then next year you get a teacher who requires you to show your work.\n
    He thinks the other students are getting upset because you're finishing so much faster than they are.\n
    He wants to make sure they don't drop the class. You've never needed to show your work in the past, and while you know how to do that, you've never had to waste your time with it before.\n
    You were smart enough to do it all in your head. Now you're only finishing your tests a few minutes ahead of everyone.\n
    Still doing well but not fast enough to get significantly rewarded for it. Your intelligence isn't lacking, it's the rules holding you back from showing your full capabilities.\n
    This is what it's like going from Infinity Ward's last CoD to this one. The maximum speed at which you can do things in this CoD is so god damn slow that the skill gap is almost nonexistent.\n
    No one finds camping impressive, because it's easy as shit. We all know how to do it. You shouldn't feel like you're some genius who came up with the strategy.\n
    It's literally what 99 percent of people do when they get their first CoD. Congrats on not getting better after your first month of playing.'
    sentiment_scores(sentence)

    print("\n3rd comment :")
    sentence = 'I've played every call of duty since CoD4. I must say of all aspects of the game there is not alot that is good in my opinion.\n
    The guns are mediocre, the maps are probably the worst thing in this game right now, Too many weapon mods/attachments.\n
    The movement is okay I guess. Anyone thats saying this game is bad when there are not doing good in multiplayer I can understand.\n
    I guarantee in 2 months no one will want too play public matches cause it is not fun at all'
    sentiment_scores(sentence)

    print("\n4th comment :")
    sentence4 = 'What really needs to happen in Call of Duty: Modern Warfare I'm going to speak more with reason, than blind rage, or a blind fanboy opinion.\n
    The game's core is solid, everything feels smooth and polished. Gun balancing needs worked. But there's a foundation here that can still be salvaged.\n
    It's the idiotic map design IW decided to go with.\n
    And I'm not going to jump on the "bring 3-lane maps back" bandwagon that all these YouTubers, and their brainwashed fans are pining over.'
    sentiment_scores(sentence)
    #author: GravelIsNotAFood

    print("\n5th comment :")
    sentence5 = 'I feel like there hasn't been enough of a fuss about this, but where are all the gamemodes?!\n
    Maps and playstyles aside, this is my biggest issue with the game.\n
    This is the least 6v6 content I've ever seen in a CoD. I fully understand that people want more from CoD than just 6v6, but it feels so neglected.\n
    Only 5 traditional gamemodes, only 6 proper maps, I've played betas with more replay value than this.\n
    I can't help but feel like Infinity Ward tried too hard to please everyone and ended up not fully satisfying anyone.\n
    Any other CoD game would've been crucified for only having 5 gamemodes at launch.\n
    Where's Hardpoint, CTF, Demolition, something like Control out of BO4? Please Infinity Ward, can we have some more gamemodes to keep the game somewhat fresh until new maps arrive?\n
    I'm already getting bored with this game.'
    sentiment_scores(sentence5)
    #author: RedDevilLuca
```

```
1st comment :
Overall sentiment dictionary is : {'neg': 0.099, 'neu': 0.727, 'pos': 0.174, 'compound': 0.8124}
sentence was rated as 9.9 % Negative
sentence was rated as 72.7 % Neutral
sentence was rated as 17.4 % Positive
Sentence Overall Rated As Positive

2nd comment :
Overall sentiment dictionary is : {'neg': 0.064, 'neu': 0.766, 'pos': 0.17, 'compound': 0.9886}
sentence was rated as 6.4 % Negative
sentence was rated as 76.6 % Neutral
sentence was rated as 17.0 % Positive
Sentence Overall Rated As Positive

3rd comment :
Overall sentiment dictionary is : {'neg': 0.141, 'neu': 0.708, 'pos': 0.151, 'compound': -0.2268}
sentence was rated as 14.099999999999998 % Negative
sentence was rated as 70.8 % Neutral
sentence was rated as 15.1 % Positive
Sentence Overall Rated As Negative

4th comment :
Overall sentiment dictionary is : {'neg': 0.141, 'neu': 0.708, 'pos': 0.151, 'compound': -0.2268}
sentence was rated as 14.099999999999998 % Negative
sentence was rated as 70.8 % Neutral
sentence was rated as 15.1 % Positive
Sentence Overall Rated As Negative

5th comment :
Overall sentiment dictionary is : {'neg': 0.1, 'neu': 0.747, 'pos': 0.153, 'compound': 0.7801}
sentence was rated as 10.0 % Negative
sentence was rated as 74.7 % Neutral
sentence was rated as 15.299999999999999 % Positive
Sentence Overall Rated As Positive
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The most interesting part of this text analysis, with the above quotes is that I expected some of them to be neutral but the sentiment analysis rated them either positive or negative, not just based on the polarized score but based on the word usage. A big reason that these comments are mostly neutral is because the users are speaking more towards the features of the game being good or bad rather than their sentiments on the game. To be fair, most of the sentiment around the game is negative on the reddit thread, and it seems hard for the people that have positive comments to come to the top when the negative comment are getting more attention and players relate to the frustration of the glitches more than anything.

Reflection

When it comes to what went well, there were a lot of resources, tutorials and step-by-step instructions online on how to perform text analysis successfully. The instructions on how to use PRAW from Reddit were incredibly clear and after some troubleshooting, it became easy to follow. Additionally, the community on Reddit is welcoming and they helped in identifying issues and bugs within my code that I did not know how to handle or spot. I found this project really interesting considering that I want to get into data analytics and gauging someone's sentiment based on their words is a great way to analyze and quantify a user's feelings when their results, reviews, or comments can seem vague.

I will use this going forward as a tool for user-centered data within the game industry. It'll help me understand the features users want to add to games based on how strongly their comments sway to the negative or positive parts of the spectrum. When it comes to what I wish I would have known before, it boils down to wishing I was an active and avid reddit user. Being one, perhaps, would have allowed me to understand the mechanics and different features more. With that being said, I still used it as my data source because I believe it has the rawest form of feedback on topics, in this case: games, than any other platform. The sheer number of how many different viewpoints and ideas are allowed and posted allowed for an interesting set of comments to analyze.

Although this was a new experience to me, I was able to determine, after learning the techniques and analyzing the sentiments of a small group of comments that right now the overall sentiment towards Call of Duty: Modern Warfare is on average 10.8% Negative, 73.12% Neutral, and 16.08% Positive. More positive than negative but still a lot of frustration that causes a lot of mixed feelings.