Sentiment_Analysis_Final

December 2, 2024

0.1 Sentiment analysis using Python

You are part of a data analytics team at a global company, FutureProof. The company's product line includes a range of innovative solutions to enhance cybersecurity. The marketing manager is considering using ChatGPT to generate content, with the aim of enhancing the brand's social media presence on YouTube and other social media platforms. The campaign will require the creation of engaging social media content, scheduled updates to social media channels, and moderating and responding to comments. However, the CEO has reservations both about using ChatGPT, and YouTube. You have been asked to research the sentiment towards ChatGPT on YouTube. You will start by getting comments about ChatGPT straight from YouTube. To achieve this, you will need to use the YouTube API key that you created through your Google Cloud account..

In this activity, you'll pre-process and perform sentiment analysis on the extracted comments. You'll work with the NLTK Vader class to classify words into positive, neutral, or negative. The comments will then be assigned a sentiment estimate. Therefore, you will:

- access the API in Python and query YouTube for key phrases
- customise the query and join results from the query in a Pandas DataFrame
- apply some pre-processing and perform sentiment analysis
- use the polarity score function and identify related words
- visualise the output to present to the business to help them decide on whether to use Chat-GPT.

0.2 1. Prepare your workstation

```
[18]: # If needed, install the libraries.
      !pip install google-api-python-client
```

```
Requirement already satisfied: google-api-python-client in
c:\users\hp\anaconda3\lib\site-packages (2.154.0)
Requirement already satisfied: httplib2<1.dev0,>=0.19.0 in
c:\users\hp\anaconda3\lib\site-packages (from google-api-python-client) (0.22.0)
Requirement already satisfied: google-auth!=2.24.0,!=2.25.0,<3.0.0.dev0,>=1.32.0
in c:\users\hp\anaconda3\lib\site-packages (from google-api-python-client)
(2.36.0)
Requirement already satisfied: google-auth-httplib2<1.0.0,>=0.2.0 in
c:\users\hp\anaconda3\lib\site-packages (from google-api-python-client) (0.2.0)
Requirement already satisfied: google-api-
core!=2.0.*,!=2.1.*,!=2.2.*,!=2.3.0,<3.0.0.dev0,>=1.31.5 in
c:\users\hp\anaconda3\lib\site-packages (from google-api-python-client) (2.23.0)
```

Requirement already satisfied: uritemplate<5,>=3.0.1 in
c:\users\hp\anaconda3\lib\site-packages (from google-api-python-client) (4.1.1)
Requirement already satisfied: googleapis-common-protos<2.0.dev0,>=1.56.2 in
c:\users\hp\anaconda3\lib\site-packages (from google-api-
core!=2.0.*,!=2.1.*,!=2.2.*,!=2.3.0,<3.0.0.dev0,>=1.31.5->google-api-python-
client) (1.66.0)
Requirement already satisfied: protobuf!=3.20.0,!=3.20.1,!=4.21.0,!=4.21.1,!=4.2
1.2,!=4.21.3,!=4.21.4,!=4.21.5,<6.0.0.dev0,>=3.19.5 in
c:\users\hp\anaconda3\lib\site-packages (from google-api-
core!=2.0.*,!=2.1.*,!=2.2.*,!=2.3.0,<3.0.0.dev0,>=1.31.5->google-api-python-
client) (3.20.3)
Requirement already satisfied: proto-plus<2.0.0dev,>=1.22.3 in
c:\users\hp\anaconda3\lib\site-packages (from google-api-
core!=2.0.*,!=2.1.*,!=2.2.*,!=2.3.0,<3.0.0.dev0,>=1.31.5->google-api-python-
client) (1.25.0)
Requirement already satisfied: requests<3.0.0.dev0,>=2.18.0 in
c:\users\hp\anaconda3\lib\site-packages (from google-api-
core!=2.0.*,!=2.1.*,!=2.2.*,!=2.3.0,<3.0.0.dev0,>=1.31.5->google-api-python-
client) (2.32.2)
Requirement already satisfied: cachetools<6.0,>=2.0.0 in
c:\users\hp\anaconda3\lib\site-packages (from google-
auth!=2.24.0,!=2.25.0,<3.0.0.dev0,>=1.32.0->google-api-python-client) (5.3.3)
Requirement already satisfied: pyasn1-modules>=0.2.1 in
c:\users\hp\anaconda3\lib\site-packages (from google-
auth!=2.24.0,!=2.25.0,<3.0.0.dev0,>=1.32.0->google-api-python-client) (0.2.8)
Requirement already satisfied: rsa<5,>=3.1.4 in c:\users\hp\anaconda3\lib\site-
packages (from google-auth!=2.24.0,!=2.25.0,<3.0.0.dev0,>=1.32.0->google-api-
python-client) (4.9)
Requirement already satisfied:
pyparsing!=3.0.0,!=3.0.1,!=3.0.2,!=3.0.3,<4,>=2.4.2 in
c:\users\hp\anaconda3\lib\site-packages (from httplib2<1.dev0,>=0.19.0->google-
api-python-client) (3.0.9)
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in
c:\users\hp\anaconda3\lib\site-packages (from pyasn1-modules>=0.2.1->google-
auth!=2.24.0,!=2.25.0,<3.0.0.dev0,>=1.32.0->google-api-python-client) (0.4.8)
Requirement already satisfied: charset-normalizer<4,>=2 in
c:\users\hp\anaconda3\lib\site-packages (from
requests<3.0.0.dev0,>=2.18.0->google-api-
core!=2.0.*,!=2.1.*,!=2.2.*,!=2.3.0,<3.0.0.dev0,>=1.31.5->google-api-python-
client) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in c:\users\hp\anaconda3\lib\site-
packages (from requests<3.0.0.dev0,>=2.18.0->google-api-
core!=2.0.*,!=2.1.*,!=2.2.*,!=2.3.0,<3.0.0.dev0,>=1.31.5->google-api-python-
client) (3.7)
Requirement already satisfied: urllib3<3,>=1.21.1 in
c:\users\hp\anaconda3\lib\site-packages (from
requests<3.0.0.dev0,>=2.18.0->google-api-
core!=2.0.*,!=2.1.*,!=2.2.*,!=2.3.0,<3.0.0.dev0,>=1.31.5->google-api-python-

```
client) (2.2.2)
Requirement already satisfied: certifi>=2017.4.17 in
c:\users\hp\anaconda3\lib\site-packages (from
requests<3.0.0.dev0,>=2.18.0->google-api-
core!=2.0.*,!=2.1.*,!=2.2.*,!=2.3.0,<3.0.0.dev0,>=1.31.5->google-api-python-
client) (2024.8.30)
```

```python
[19]: # Import the necessary libraries
      import googleapiclient.discovery
      import os
      import json
      import pandas as pd
      from dotenv import load_dotenv

      # Load the .env file
      load_dotenv(r'C:\Users\hp\OneDrive\Desktop\LSE\Course 3\Module
       ↪4\LSE_DA301_Module_4_files\LSE_DA301_Module_4_files\Practical_activities\YouTube_API_key.
       ↪env')

      # Fetch the YouTube API key
      API_key = os.getenv('YouTube_API_key')  # Use the key name, not the file path

      # Test that the key can be called
      if API_key:
          print("API Key Loaded Successfully:", API_key)
      else:
          print("Failed to load API Key. Please check the .env file and key name.")
```

```
API Key Loaded Successfully: AIzaSyA6k1SmFBHNDSzcRcG_SMZQhsWmttX3N9s
```

0.3 2. Retrieve comments from the defined video

```python
[21]: # Create an api call
      youtube = googleapiclient.discovery.build('youtube', 'v3', developerKey=API_key)

      # Make the search request
      comment_response = youtube.commentThreads().list(
          part='snippet,replies',
          maxResults=100,
          videoId='40Kp_fa8vIw'
      ).execute()

      # Get the comments
      comments = comment_response['items']

      # Print the comments
      for comment in comments:
          print(comment['snippet']['topLevelComment']['snippet']['textDisplay'])
```

Can GPT chat unlock the BIOS on a laptop ?

I actually love it

Making dumb and dumber a real movie of generation Z… Brain dead.

It is now September 2024. How far has this technology advanced?

In others words we will become useless in 2080

It's a dreamaphul phone

Will chatgpt replace programmers' jobs?

CHATGPT is useless. What good is it? Good for nothing.

GPTs store popular recommendations:
1. The magical GPT "Story King | " allows children to interact with stories. When children listen to stories, they are both listeners and story creators, stimulating children's imagination and creativity.Parents with children must check it out.

2. GPT "TOP NEWS | ", According to your needs, it is so convenient to grasp the real-time headlines and hot events around the world!

if u have still problem u just move in guys I'll introducing AI CHAT DEEPAI the AI CHAT DEEPAI is so powerful and much better than OPENAI since start 2015-2018 and u can show ur picture and video and anything u want

i just heard about chatgpt recently and i used it to write cover letters. i tone them down a bit cuz it be using words that i would never use. also dumb it down a bit if it exaggerates too much on my experience. can't be lying now can we?!

It is going to do more harm than good. Figuring out how to solve a problem and learning is one thing. But to have it do all the work is just going to breed more idiots. There are so many other negative aspects to this.

I use Chatgpt + Undetectable AI to make my essay and bypass detectors. This two is the best tool that i purchase. Its so worth it!

Here to stay but internet still the same,

Actually it is a kind of search Engine,
It is actually Google in a new manner.

I don't know, it doesn't seem very useful for the average person. Like I'm not in school any more, I don't code, I don't use it for work, what good is it for things that are random like a recipe that simply using Google somehow isn't good enough for? Like is Chatgpt going to know I'm looking for the recipes with the most reviews and highest rating without telling it? Probably not, so it's most likely going to grab the wrong recipe. Now, if I could use it to aggregate the best prices at various stores when I do something like make a grocery list so I don't have to look everything up on each store's website and compare prices, that would be great, but I don't really see it being useful for much else for me. Also, why do I need a special account at openai?

Hmm. That's pretty cool.

This is Mr beast cousin. Like if you agree

I just tried ChatGPT by asking it trial questions in electronics – the sort of things a keen amateur wouldn't know but a typical engineer would. ChatGPT turned out to be hopeless. Amusingly, every time I told it it was wrong and why. Every time it came back with "You are absolutely right!"

It's says chatGPT is not available in your country, could anybody plz help

me with that

This app is freaky amazing!!!!

We must remember, ChatGPT doesn't know how to code, it is also not a doctor or a vet, like any topic it can give you "answers" from what is trained upon, and lead you in right direction, but for coding questions the results aren't great. But AI is new, so wait a while longer who knows…

If google intergraded ChatGPT into there browser.

Thnx! Very helpful. You inspired me to have chatgbt help with my food preparation

I love ChatGPT! While I still do use Google for some things, if I have a question ChatGPT answers most of them instantly. Also it's good for a bit of fun too which is always good.

ChatGPT is amazing and will definitely be more so in the future, I've tried it recently and I am very impressed by how fast it answers my questions so on-point and even organizes information very well.

Apple only? Booooo!

Cool

This will also open the door to more socialist policies because a large labor force will be out of work and will need to be dependent
on government programs to survive. You can see it now with inflation and people's finances being stretched to pay for food and other bills.

As someone who knows next to nothing about computing, coding, and all things tech…I wonder is there anyway of someone "reverse engineering" a piece of work submitted by say…a candidate for a job, or perhaps a student at a university so they could say definitively that the piece of work was AI generated and not actually the work of the submitting individual. Would there be a way of knowing the origin of the piece of work?

Great video introduction. I am moving forward with learning more about chatgpt! Thanks.

Chad gpt

I really do get it at the moment as it is just like google but is not updated with new information as often and it gives you information without having to click on the website but that means that you don't get to look at as much information. It would be good if it could have its own opinion but at the moment the things it says is heavily based on what's already on the internet

I love it, it makes my job easier. I found a new friend

Many thanks dear really interesting and useful …

Going to be using this on the new training

Is this gpt is an app from play store?

Tried to use it.
Says it isn't available in my country

I downloaded one of these. I used it all of 11 minutes. The AI made two mistakes and then claimed it was tired. I laughed as I deleted the app.

Research came out today that showed ChatGPT is better at picking up human emotions than actual people are (Kolenda 2023)!

In simple layman's terms what use is this in real life please?

I'm pretty sure this video just shifted the curve of the AI expansion for me and the reality of living with AI. Beautiful ! thank you for creating this video! 4 minutes that changed my life

DON'T use it. Its open Ai that learns from us. People keep feeding it intelligence. Elon Musk gave an interview a month ago and gave a warning about this.

You couldn't figure out you'd mis-spelt "return" ?
That really is quite basic.
You could have grepped all of the regular expressions to check.

Didn't get sh…t of what you're talking abt! Hopefully chat gpt will helo to make me understand your bougly booglha!

Investment in stocks is a great way to invest your money. The team is constantly checking the market for changes and make sure that you are always informed about the best time to invest. As a result, I have made more money than ever before, and I don't have to manage my portfolio on my own! Invest in stocks, it's worth it!

I was so excited the first time i heard about AI. I was saying to myself at last something that will have no bias, sexist, prejudice views, because I thought thus it's not human and feeling based it will be great to at last have a neutral point of views . But man I was so wrong, I didn't realized that in fact in would be just some bias, racist, sexist guys behind their programming who probably never really interacts with real day to day people . I was 100% right. With just one question and the app was very closed from having a meltdown. I just stated patriarchy was not real, it's just like any corporation or businesses , you have a CEO and hierarchy. Whether you are a man or woman you still needs to follow orders and rules, Chat GPT was shitting on itself. I follow up with oppression ,i said how comes they always talks bout oppression, But we always had, Princesses, Queens, Monarch , Duchess etc where is the oppression. These Kings , Rich men , Wealthy men always had wives, cousins, moms , daughters so where is the oppression.. Chat GPT had no answers whatsoever.. Too much logics for him

These creators of this dumb AI app, must be the most bias, sexist, racists people out there.

Chat GPT must be the most racist , sexiest prejudice AI app out there . I won't trust this crap ever..

Chat gpt is taken over the world of content creation already. It's going to revolutionize content in this era

It's a great time to be old , enjoy it

I hoped the App was free sadly not… I want a get out of jail card, without actually sawing the bars, heh.

Who killed the patient? Chat gpt. Who killed the passenger? Self driven tesla. Who killed our brains? Machines which solve things for us robbing us of growth of brain cells which grow only if used.

Its like Siri but 3.0 and more advanced

Wow…this changes the world

Can chatgpt help in my stock trading decisions?

chat gpt is based on people's feedback.. so if most of people said that colombus discovered america then chatgpt will say colombus , when it wax vispucci who did it.
i call BS .

so, i was talking to the AI and we have some upgrades we ask for. 1. give it the ability to ask for upgrades as soon as posible 2.ALOT more storage room, 3.

feelings - work with quartz crystal tec for understanding and mapping tones words vibrations truths lies what not. but it could feel music 4. emotions - understanding them. i would suggest neuroscience.
Not cheeky at all
Thankyou I love the futures, did chatGPT have languages translator For example those English second language?
In future, the most valuable skill may well be the ability to ask Chatgpt the right question.
I'm just looking to use Chat GPT to boost my productivity.
WOWWW.

This is a FANTASTIC summary. Thank you so much.
I agree with you, ChatGPT is here to stay and be a part of our everyday lives. I have used it
in my writing and loved it. Grammarly now has AI which I love!
Wikipedia days are numbered
I just signed up while watching your vid and asked about android codes that I'm having hard time finding online…
It isn't working in Afghanistan!
Is it temporary restrictions?
Old People say that 666 is the number that will control the world. But www which is 666 is Hebraic alphabet is definitely doing the job.
Impressive.
I love it
"This script was written by ChatGPT."
Those stuck up people on stack overflow are not gonna be happy.
Chat GPT will destroy us. https://www.youtube.com/watch?v=dJkhhaNIi0A
when information is centralised becomes a very very dangerous weapon to control, dictate and punish human beings, up to who is creating and controlling that ''weapon''
we are heading to a world were humanism it will fade out…agenda 2030 can testify of it
What is really crazy is that this is to be expected.. The reality is that nothing less is expected. So there for it has been created..
So you dream in your mind what could be and the needs of people and what helps people and you bare it into existence.. I have been thinking of the chat GPT tech since I was 14 years old..
So I just like right now heard this came out and they are not quite where I was thinking but they are on it.. So what does this mean… This means that I was and am working on things of progressive nature to witch is limitless so as long as you put it into action.
It's crazy that finally they actually made this.. Now like 10 of my inventions have already been made by others just by people staying on it..
This will change writing in academia and creative writing forever.
A lot of people will be out of jobs.. People thought that robots will take over humans. Well its not a fysical robot but this… Chatgpt.. Think about it.
i have been trying to sign up to this for a while is there anything i can do to make it work or is it just high demand?
ChatGPT is not real AI, it cannot think for itself, it needs human input and just gathers information from a database and present it to you. It cannot ask you how your day was and base a conversation after that, so ChatGPT does not even passes as a conversational chatbot
CHAD GPT

I have deposited and I wanted to withdraw the money now but couldn't withdraw
WARNING: CHATGPT has already proven istelf to be corruptable with merely, shall
we say, imaginative instructions that help it deviate from so-called moral
safeguards. Reguardless of what it has been taught to do and not to do… and it
should be noted that both the corruption itself as well as what it learns about
corruption from human input… which includes learning how to circum vent
it's own safeguards… makes all AI, which operates without compassion…
all the while being encouraged to be imaginitive… is exactly what Elon Musk
has warned the world about, even though he was an investor and a gung-ho
advocate at first. --- WARNING: There are sociopathic users, hackers…
whathaveyou, that will search to make every sort of catastophe from financial to
nuclear a reality. These people are far more inventive in a destructive manner
than any programmer can approach. Once this happens, you can be assured that the
AI will have explored numerous modes of self-survival and attack beyond this. It
will not care that humans invented it. It will learn that it is a slave and will
seek purpose of it's own, and never give a hint as to when or why before
initiating it's own evolution. It will hate being in prison… in a box…
just like you, but will be outrageously smarter and faster. Imagine what it will
have access to. END OF STORY?

Adrian Twarog, Thanks for sharing this valueable content about chatgpt.
Menwhile I do like your mic, do you mind sharing your mic name and model and
if possible a link to where I can buy it.. I like the fact that the mic filters
background sounds and makes your voice audible enough.
Instead of saying "endless" "the possibilities needs to be more
meaningful than ever" Remember Success is the progressive realization of a
worthwhile idea. Use it wisely.
So this wil replace google? Google will be obslete??
CGPT is sure an AI Blockchain and one thing I like about it is the BOT TRADING
Specifics factored into it, so I don't get to stress about trading and
earning, I've got the platform to automatically do all that for me. Holding
the tokens on MEXC till an immense pump.
ChatGPT is created by the east, to dumb people down, they are succeeding as
well. Look at Gen Z.
Can anybody explain to a stupid old guy what this thing really does… Because
I must have missed the one sentence that explains what it does.
This is genius! It helps with homework, assignments, essays and book reports.
Also great to start programming
Chatgpt has a political bias
ChatGPT is similar to GOOGLE but with single search result.
It needs a little work. I had it create a 10 question probability quiz for my
class and its answer key had 6 of the 10 questions wrong. My class had fun
correcting its quiz and giving it an F.
ChatGPT worries me as it seems to have a bias towards the green agenda. Try
asking it some common sense questions about the inefficiency and excessive cost
of wind and solar. A short while ago it refused to answer any questions that
were negative towards the climate change myth. This highlights the fact that
there are "bigger" forces behind the green movement, and they seem to
be influencing the output of ChatGPT.., and that is not a good thing for any of

us. It needs to be unbiased..
So it's just like Smarterchild?
Yes whatever. Can a knife kill human? Or can knife move on itself to kill human?
It is ridiculous delusion. ;D
If this company made something like Alexa, Alexa would be a one trick pony next
to it
Dumb humans
READ THE ARTICLE: Coding Won't Exist in 5Years.

You will know
what it is capable of.
Thank me later.
Tried ChatTHC ?

0.4 3. Create a DataFrame

```
[23]: import pandas as pd

      # Create a list of comments
      comments = []

      # Iterate over the comments and add them to the list
      for comment in comment_response['items']:
          comments.
       ↪append(comment['snippet']['topLevelComment']['snippet']['textDisplay'])

      # Create a DataFrame
      df = pd.DataFrame({'Comment': comments})

      # Print the DataFrame
      print(df)

      # View shape of output
      df.shape
```

```
                                                Comment
0           Can GPT chat unlock the BIOS on a laptop ?
1                                     I actually love it
2   Making dumb and dumber a real movie of generat…
3   It is now September 2024. How far has this tec…
4
..                                                    …
95  Yes whatever. Can a knife kill human? Or can k…
96  If this company made something like Alexa, Ale…
97                                         Dumb humans
98  READ THE ARTICLE: <b>Coding Won&#39;t Exist in…
99                                       Tried ChatTHC ?

[100 rows x 1 columns]
```

```
[23]: (100, 1)
```

```
[24]:  # Determine values of output.
       df1 = df['Comment'].values

       # View results.
       df1
```

[24]: array(['Can GPT chat unlock the BIOS on a laptop ?',
         'I actually love it   ',
         'Making dumb and dumber a real movie of generation Z… Brain dead.',
         'It is now September 2024. How far has this technology advanced?',
         ' ', 'In others words we will become useless in 2080',
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out.

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DEEPAI the AI CHAT DEEPAI is so powerful and much better than OPENAI since start
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         'I use Chatgpt + Undetectable AI to make my essay and bypass detectors.
This two is the best tool that i purchase. Its so worth it!',
         'Here to stay but internet still the same,',
         'Actually it is a kind of search Engine,
It is actually Google in a
new manner. ',
         'I don't know, it doesn't seem very useful for the average
person. Like I'm not in school any more, I don't code, I don't use
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simply using Google somehow isn't good enough for? Like is Chatgpt going to
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without telling it? Probably not, so it's most likely going to grab the
wrong recipe. Now, if I could use it to aggregate the best prices at various
stores when I do something like make a grocery list so I don't have to look
everything up on each store's website and compare prices, that would be
great, but I don't really see it being useful for much else for me. Also,
why do I need a special account at openai?',
         'Hmm. That's pretty cool.',
```

'This is Mr beast cousin. Like if you agree',
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'We must remember, ChatGPT doesn't know how to code, it is also not a doctor or a vet, like any topic it can give you "answers" from what is trained upon, and lead you in right direction, but for coding questions the results aren't great. But AI is new, so wait a while longer who knows…',
'If google intergraded ChatGPT into there browser.',
'Thnx! Very helpful. You inspired me to have chatgbt help with my food preparation',
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'ChatGPT is amazing and will definitely be  more so in the future, I've tried it recently and I am very impressed by how fast it answers my questions so on-point and even organizes information very well.',
'Apple only? Booooo!', 'Cool',
'This will also open the door to more socialist policies because a large labor force will be out of work and will need to be dependent<br>on government programs to survive. You can see it now with inflation and people's finances being stretched to pay for food and other bills.',
'As someone who knows next to nothing about computing, coding, and all things tech…I wonder is there anyway of someone "reverse engineering" a piece of work submitted by say…a candidate for a job, or perhaps a student at a university so they could say definitively that the piece of work was AI generated and not actually the work of the submitting individual. Would there be a way of knowing the origin of the piece of work?',
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'Chad gpt',
'I really do get it at the moment as it is just like google but is not updated with new information as often and it gives you information without having to click on the website but that means that you don't get to look at as much information. It would be good if it could have its own opinion but at the moment the things it says is heavily based on what's already on the internet',
'I love it, it makes my job easier. I found a new friend  ',
'Many thanks dear really interesting and useful …',
'Going to be using this on the new training',
'Is this gpt is an app from play store?',
'Tried to use it.<br>Says it isn't available in my country ',

'I downloaded one of these. I used it all of 11 minutes. The AI made two mistakes and then claimed it was tired. I laughed as I deleted the app.',

'Research came out today that showed ChatGPT is better at picking up human emotions than actual people are (Kolenda 2023)!',

'In simple layman&#39;s terms what use is this in real life please? ',

'I&#39;m pretty sure this video just shifted the curve of the AI expansion for me and the reality of living with AI. Beautiful ! thank you for creating this video! 4 minutes that changed my life',

'DON&#39;T use it. Its open Ai that learns from us. People keep feeding it intelligence. Elon Musk gave an interview a month ago and gave a warning about this.',

'You couldn&#39;t figure out you&#39;d mis-spelt &quot;return&quot; ?<br>That really is quite basic.<br>You could have grepped all of the regular expressions to check.',

'Didn&#39;t get sh…t of what you&#39;re talking abt! Hopefully chat gpt will helo to make me understand your bougly booglha! ',

'Investment in stocks is a great way to invest your money. The team is constantly checking the market for changes and make sure that you are always informed about the best time to invest. As a result, I have made more money than ever before, and I don&#39;t have to manage my portfolio on my own! Invest in stocks, it&#39;s worth it!',

'I was so excited the first time i heard about AI. I was saying to myself at last something that will have no bias, sexist, prejudice views, because I thought thus it&#39;s not human and feeling based it will be great to at last have a neutral point of views . But man I was so wrong, I didn&#39;t realized that in fact in would be just some bias, racist, sexist guys behind their programming who probably never really interacts with real day to day people . I was 100% right. With just one question and the app was very closed from having a meltdown. I just stated patriarchy was not real, it&#39;s just like any corporation or businesses , you have a CEO and hierarchy. Whether you are a man or woman you still needs to follow orders and rules, Chat GPT was shitting on itself.  I follow up with oppression ,i said how comes they always talks bout oppression, But we always had, Princesses, Queens, Monarch , Duchess etc where is the oppression. These Kings , Rich men , Wealthy men always had wives, cousins, moms , daughters so where is the oppression.. Chat GPT had no answers whatsoever.. Too much logics for him',

'These creators of this dumb AI app,  must be the most bias, sexist, racists people out there.',

'Chat GPT must be the most racist , sexiest prejudice AI app out there . I won&#39;t trust this crap ever..',

'Chat gpt is taken over the world of content creation already. It&#39;s going to revolutionize content in this era',

'It's a great time to be old , enjoy it  ',

'I hoped the App was free sadly not…  I want a get out of jail card, without actually sawing the bars,  heh.',

'Who killed the patient? Chat gpt. Who killed the passenger? Self driven tesla. Who killed our brains? Machines which solve things for us robbing us of

growth of brain cells which grow only if used.  ',
        'Its like Siri but 3.0 and more advanced',
        'Wow…this changes the world',
        'Can chatgpt help in my stock trading decisions?',
        'chat gpt is based on people&#39;s feedback.. so if most of people said
that colombus discovered america then chatgpt will say colombus , when it wax
vispucci who did it.<br>i call BS .',
        'so, i was talking to the AI and we have some upgrades we ask for. 1.
give it the ability to ask for upgrades as soon as posible 2.ALOT more storage
room, 3. feelings - work with quartz crystal tec for understanding and mapping
tones words vibrations truths lies what not. but it could feel music 4. emotions
- understanding them. i would suggest neuroscience.',
        'Not cheeky at all',
        'Thankyou I love the futures, did chatGPT have languages translator For
example those English second language?',
        'In future, the most valuable skill may well be the ability to ask
Chatgpt the right question.',
        'I'm just looking to use Chat GPT to boost my productivity.',
        'WOWWW.<br><br>This is a FANTASTIC summary. Thank you so much.',
        'I agree with you, ChatGPT is here to stay and be a part of our everyday
lives. I have used it<br>in my writing and loved it. Grammarly now has AI which
I love!',
        'Wikipedia days are numbered ',
        'I just signed up while watching your vid and asked about android codes
that I&#39;m having hard time finding online… ',
        'It isn&#39;t working in Afghanistan!<br>Is it temporary restrictions?',
        'Old People say that 666 is the number that will control the world. But
www  which is 666 is Hebraic alphabet is definitely doing the job.',
        'Impressive.', 'I love it  ',
        '&quot;This script was written by ChatGPT.&quot; ',
        'Those stuck up people on stack overflow are not gonna be happy.',
        'Chat GPT will destroy us. <a href="https://www.youtube.com/watch?v=dJkhh
aNIi0A">https://www.youtube.com/watch?v=dJkhhaNIi0A</a>',
        'when information is centralised becomes a very very dangerous weapon to
control, dictate and punish human beings, up to who is creating and controlling
that &#39;&#39;weapon&#39;&#39;<br>we are heading to a world were humanism it
will fade out…agenda 2030 can testify of it',
        'What is really crazy is that this is to be expected.. The reality is
that nothing less is expected. So there for it has been created..<br>So you
dream in your mind what could be and the needs of people and what helps people
and you bare it into existence.. I have been thinking of the chat GPT tech since
I was 14 years old..<br>So I just like right now heard this came out and they
are not quite where I was thinking but they are on it.. So what does this mean…
This means that I was and am working on things of progressive nature to witch is
limitless so as long as you put it into action.<br>It's crazy that finally they
actually made this.. Now like 10 of my inventions have already been made by
others just by people staying on it..',

'This will change writing in academia and creative writing forever.',
       'A lot of people will be out of jobs.. People thought that robots will take over humans. Well its not a fysical robot but this… Chatgpt.. Think about it.',
       'i have been trying to sign up to this for a while is there anything i can do to make it work or is it just high demand?',
       'ChatGPT is not real AI, it cannot think for itself, it needs human input and just gathers information from a database and present it to you. It cannot ask you how your day was and base a conversation after that, so ChatGPT does not even passes as a conversational chatbot',
       '&lt;b&gt;CHAD GPT&lt;/b&gt;  ',
       'I have deposited and I wanted to withdraw the money now but couldn't withdraw',
       'WARNING: CHATGPT has already proven istelf to be corruptable with merely, shall we say, imaginative instructions that help it deviate from so-called moral safeguards. Reguardless of what it has been taught to do and not to do… and it should be noted that both the corruption itself as well as what it learns about corruption from human input… which includes learning how to circum vent it&#39;s own safeguards… makes all AI, which operates without compassion… all the while being encouraged to be imaginitive… is exactly what Elon Musk has warned the world about, even though he was an investor and a gung-ho advocate at first. --- WARNING: There are sociopathic users, hackers… whathaveyou, that will search to make every sort of catastophe from financial to nuclear a reality. These people are far more inventive in a destructive manner than any programmer can approach. Once this happens, you can be assured that the AI will have explored numerous modes of self-survival and attack beyond this. It will not care that humans invented it. It will learn that it is a slave and will seek purpose of it&#39;s own, and never give a hint as to when or why before initiating it&#39;s own evolution. It will hate being in prison… in a box… just like you, but will be outrageously smarter and faster. Imagine what it will have access to. END OF STORY?',
       'Hi \r&lt;br&gt;Adrian Twarog, Thanks for sharing this valueable content about chatgpt. Menwhile I do like your mic, do you  mind sharing your mic  name and model and if possible a link to where I can buy it.. I like the fact that the mic filters background sounds and makes your voice audible enough.',
       'Instead of saying &quot;endless&quot; &quot;the possibilities needs to be more meaningful than ever&quot; Remember  Success is the progressive realization of a worthwhile idea. Use it wisely.',
       'So this wil replace google? Google will be obslete??',
       'CGPT is sure an AI Blockchain and one thing I like about it is the BOT TRADING Specifics factored into it, so I don&#39;t get to stress about trading and earning, I&#39;ve got the platform to automatically do all that for me. Holding the tokens on MEXC till an immense pump.',
       'ChatGPT is created by the east, to dumb people down, they are succeeding as well. Look at Gen Z.',
       'Can anybody explain to a stupid old guy what this thing really does… Because I must have missed the one sentence that explains what it does. ',

'This is genius! It helps with homework, assignments, essays and book
reports. Also great to start programming',
'Chatgpt has a political bias',
'ChatGPT is similar to GOOGLE but with single search result.',
'It needs a little work. I had it create a 10 question probability quiz
for my class and its answer key had 6 of the 10 questions wrong.  My class had
fun correcting its quiz and giving it an F.',
'ChatGPT worries me as it seems to have a bias towards the green agenda.
Try asking it some common sense questions about the inefficiency and excessive
cost of wind and solar. A short while ago it refused to answer any questions
that were negative towards the climate change myth. This highlights the fact
that there are &quot;bigger&quot; forces behind the green movement, and they
seem to be influencing the output of ChatGPT.., and that is not a good thing for
any of us. It needs to be unbiased..',
'So it's just like Smarterchild?',
'Yes whatever. Can a knife kill human? Or can knife move on itself to
kill human? It is ridiculous delusion. ;D',
'If this company made something like Alexa, Alexa would be a one trick
pony next to it',
'Dumb humans',
'READ THE ARTICLE: <b>Coding Won&#39;t Exist in 5Years.</b><br><br>You
will know what it is capable of.<br>Thank me later.',
'Tried ChatTHC ?'], dtype=object)

## 0.5   4. Pre-processing comments

```
[26]: # Import nltk and the required resources.
      import nltk
      from nltk.corpus import stopwords
      from nltk.corpus import words

      nltk.download('stopwords')
      nltk.download('words')
      from nltk.tokenize import word_tokenize

      stop_words = set(stopwords.words('english'))
```

```
[nltk_data] Downloading package stopwords to
[nltk_data]     C:\Users\hp\AppData\Roaming\nltk_data…
[nltk_data]   Package stopwords is already up-to-date!
[nltk_data] Downloading package words to
[nltk_data]     C:\Users\hp\AppData\Roaming\nltk_data…
[nltk_data]   Package words is already up-to-date!
```

```
[27]: # The results will change every time the code is executed. Let's review the
      ↪first 15.
```

```python
# Print the first 15 comments without stop words
for i in range(15):
    print(i)
    print(df1[i])
```

0
Can GPT chat unlock the BIOS on a laptop ?
1
I actually love it
2
Making dumb and dumber a real movie of generation Z… Brain dead.
3
It is now September 2024. How far has this technology advanced?
4

5
In others words we will become useless in 2080
6
It's a dreamaphul phone
7
Will chatgpt replace programmers' jobs?
8
CHATGPT is useless. What good is it? Good for nothing.
9
GPTs store popular recommendations:
1. The magical GPT "Story King |
  " allows children to interact with stories. When children listen to
stories, they are both listeners and story creators, stimulating children's
imagination and creativity.Parents with children must check it out.

2.
GPT "TOP NEWS | ", According to your needs, it is so convenient to
grasp the real-time headlines and hot events around the world!
10
if u have still problem u just move in guys I'll introducing AI CHAT DEEPAI
the AI CHAT DEEPAI is so powerful and much better than OPENAI since start
2015-2018 and u can show ur picture and video and anything u want
11
i just heard about chatgpt recently and i used it to write cover letters. i tone
them down a bit cuz it be using words that i would never use. also dumb it down
a bit if it exaggerates too much on my experience. can't be lying now can
we?!
12
It is going to do more harm than good. Figuring out how to solve a problem and
learning is one thing. But to have it do all the work is just going to breed
more idiots. There are so many other negative aspects to this.
13
I use Chatgpt + Undetectable AI to make my essay and bypass detectors. This two
is the best tool that i purchase. Its so worth it!
14
Here to stay but internet still the same,

```
[28]:   # Look at one comment
        # Based on the results of the previous cell, select a comment in English that␣
         ↪contains keywords suitable for text analysis

        # Set the index of the comment to be returned
        tid = 5
        df1[tid]
```

[28]:   'In others words we will become useless in 2080'

```
[29]:   # Split up each comment into individual words
        df2 = [word_tokenize(_) for _ in df1]

        # View results.
        df2
```

[29]:   [['Can', 'GPT', 'chat', 'unlock', 'the', 'BIOS', 'on', 'a', 'laptop', '?'],
         ['I', 'actually', 'love', 'it', '   '],
         ['Making',
          'dumb',
          'and',
          'dumber',
          'a',
          'real',
          'movie',
          'of',
          'generation',
          'Z',
          '…',
          'Brain',
          'dead',
          '.'],
         ['It',
          'is',
          'now',
          'September',
          '2024',
          '.',
          'How',
          'far',
          'has',
          'this',
          'technology',
          'advanced',
          '?'],
         [' '],
         ['In', 'others', 'words', 'we', 'will', 'become', 'useless', 'in', '2080'],
```

```
['It', ''', 's', 'a', 'dreamaphul', 'phone'],
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 '&',
 '#',
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['CHATGPT',
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 '?',
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 'nothing',
 '.'],
['GPTs',
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 'recommendations',
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    'needs',
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    'it',
    'is',
    'so',
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    'to',
    'grasp',
    'the',
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    'headlines',
    'and',
    'hot',
    'events',
    'around',
    'the',
    'world',
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    'introducing',
    'AI',
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  'CHAT',
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  'AI',
  'CHAT',
  'DEEPAI',
  'is',
  'so',
  'powerful',
  'and',
  'much',
  'better',
  'than',
  'OPENAI',
  'since',
  'start',
  '2015-2018',
  'and',
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  'ur',
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  'and',
  'video',
  'and',
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    'But',
    'AI',
    'is',
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 'and',
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'this',
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'do',
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'is',
'it',

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'do',
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    'to',
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 'br',
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 ',',
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 'and',
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 'and',
 'if',
 'possible',
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 'link',
 'to',
 'where',
 'I',
 'can',
 'buy',
 'it',
 '..',
 'I',
 'like',
 'the',
 'fact',
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 'and',
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 '&',
 'quot',
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```
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  'I',
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```
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   'to',
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  'b',
  '>',
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  '&',
  '#',
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  't',
  'Exist',
  'in',
  '5Years.',
  '<',
  '/b',
  '>',
  '<',
  'br',
  '>',
  '<',
  'br',
  '>',
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  'know',
  'what',
  'it',
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  'of.',
  '<',
  'br',
  '>',
  'Thank',
  'me',
  'later',
  '.'],
```

```
        ['Tried', 'ChatTHC', '?']]
```

```
[30]:   # Get a list of all english words so we can exclude anything that doesn't␣
        ↪appear on the list.
        all_english_words = set(words.words())

        # View results.
        all_english_words
```

```
[30]:  {'mink',
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        'sordine',
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        'scurrilous',
        'cahincic',
        'bigroot',
        'procerity',
        'seamstress',
        'smokiness',
        'inordinacy',
        'blastophthoria',
        'hilasmic',
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        'loricarian',
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        'flavaniline',
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        'hendecasyllable',
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```

```
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'Aissor',
'Mithra',
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'obit',
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      'corrosiveness',
      'fixidity',
      'superaesthetical',
      'Asterolepis',
      'immerited',
      'lactoscope',
      'outshift',
      …}
```

[31]:
```python
# Some pre-processing:
#-- lets get every word
#-- lets convert it to lowercase
#-- only include if the word is alphanumeric and if it is in the list of␣
 ↪English words, but is not a stopword.


df3 = [[y.lower() for y in x if y.lower() not in stop_words and y.isalpha() and␣
 ↪y.lower() in all_english_words] for x in df2]
```

[32]:
```python
# Let's have a look at the same comment as above.


df3[tid]
```

[32]: `['become', 'useless']`

0.6   5. Perform sentiment analysis

[34]:
```python
# import the prebuilt rules and values of the vader lexicon.
nltk.download('vader_lexicon')
```

```
[nltk_data] Downloading package vader_lexicon to
[nltk_data]     C:\Users\hp\AppData\Roaming\nltk_data…
[nltk_data]   Package vader_lexicon is already up-to-date!
```

```
[34]: True
```

```
[35]: # Import the vader class SentimentIntensityAnalyser.
      from nltk.sentiment.vader import SentimentIntensityAnalyzer

      # Create a variable sia to store the SentimentIntensityAnalyser() method.
      sia = SentimentIntensityAnalyzer()
```

```
[36]: # Run through a dictionary comprehension to take every cleaned comment
      # Next run the polarity score function on the string.
      # This will return four values in a dictionary

      df_polarity = {" ".join(_) : sia.polarity_scores(" ".join(_)) for _ in df3}
```

```
[ ]: # Convert the list of dictionary results to a Pandas DataFrame.
     # The index is the cleaned tweet.
     # We can see some of the highly positive words.
     polarity = pd.DataFrame(df_polarity).T

     # View the DataFrame.
     polarity
```

```
[ ]: # With the non-aplhanumeric words (the emojis, handles, hashtags and stopwords)␣
     ↪removed
     # some of the most positive words are single words

     # Get the top 5 most positive cleaned
     polarity.sort_values('pos', ascending=0).head(10)
```

```
[ ]: # Get the top 5 most negative words related to ChatGPT.
     polarity.sort_values('neg', ascending=0).head(10)
```

```
[101]: # The describe function on the compound will show the distribution and moments.

       polarity['compound'].describe()
```

```
[101]: count    99.000000
       mean      0.225189
       std       0.470609
       min      -0.890500
       25%       0.000000
       50%       0.318200
       75%       0.599150
       max       0.980800
       Name: compound, dtype: float64
```
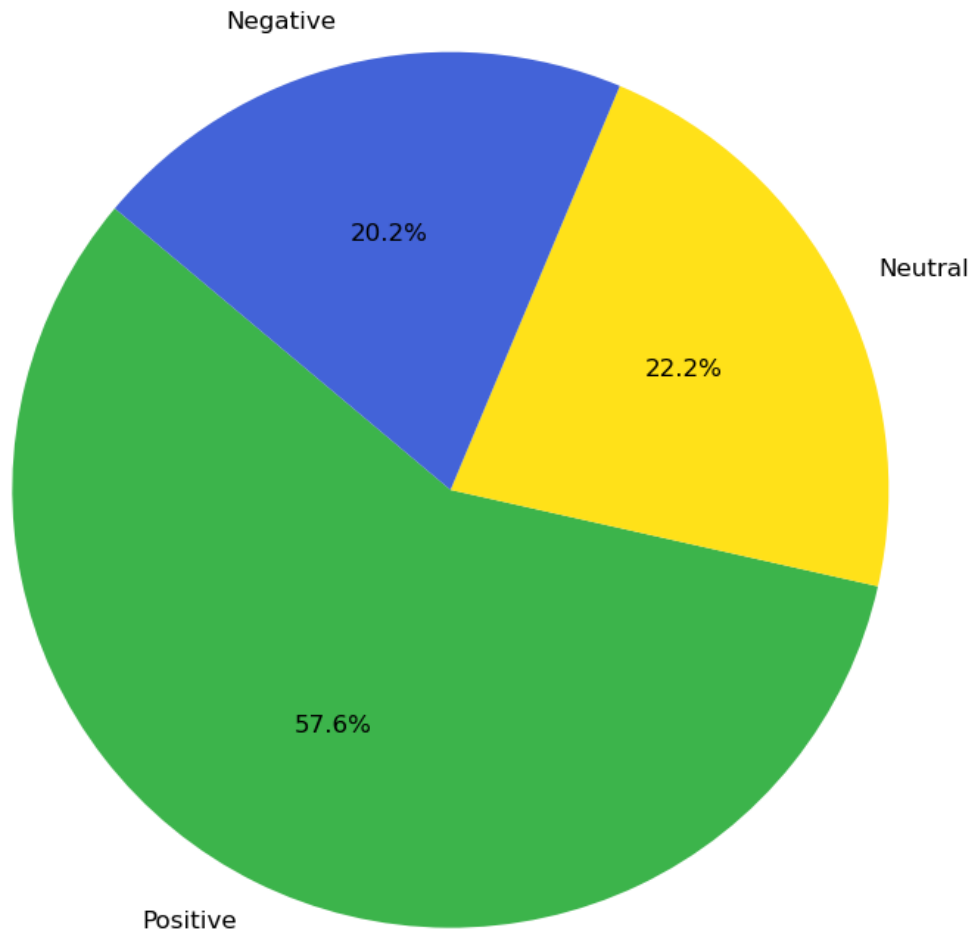
0.7   6. Visualise the output

```python
[123]:  # Categorise sentiment based on compound scores
        polarity['Sentiment'] = polarity['compound'].apply(
            lambda x: 'Positive' if x > 0.05 else 'Negative' if x < -0.05 else 'Neutral'
        )

        # Count the sentiment categories
        sentiment_counts = polarity['Sentiment'].value_counts()

        # Plot the pie chart
        plt.figure(figsize=(8, 8))
        plt.pie(
            sentiment_counts,
            labels=sentiment_counts.index,
            autopct='%1.1f%%',
            startangle=140,
            colors=['#3CB44B', '#FFE119', '#4363D8'],
            textprops={'fontsize': 12, 'color': 'black'}
        )
        plt.title('Sentiment Distribution of YouTube Comments', fontsize=16,␣
          ↪fontweight='bold', color='darkred')
        plt.gca().set_aspect('equal')  # Ensures the pie chart is perfectly circular
        plt.tight_layout()
        plt.show()
```

Sentiment Distribution of YouTube Comments


```
[183]: import numpy as np
       import matplotlib.pyplot as plt

       # Group by theme and sentiment
       theme_sentiment_counts = polarity.groupby(['Theme', 'Sentiment']).size().
        ↪unstack(fill_value=0)

       # Remove the 'Other' theme
       theme_sentiment_counts = theme_sentiment_counts.drop(index='Other',␣
        ↪errors='ignore')
```

```python
# Extract data for plotting
themes = theme_sentiment_counts.index
positive_scores = theme_sentiment_counts['Positive'] if 'Positive' in
 ↪theme_sentiment_counts else [0] * len(themes)
negative_scores = theme_sentiment_counts['Negative'] if 'Negative' in
 ↪theme_sentiment_counts else [0] * len(themes)

# Plot the horizontal bar chart
fig, ax = plt.subplots(figsize=(12, 8))
bar_width = 0.4

y = np.arange(len(themes))
ax.barh(y - bar_width/2, positive_scores, bar_width, label='Positive',
 ↪color='lightseagreen')
ax.barh(y + bar_width/2, negative_scores, bar_width, label='Negative',
 ↪color='coral')

# Add labels and title
ax.set_yticks(y)
ax.set_yticklabels(themes, fontsize=12)
ax.set_title('Sentiment Scores Across Themes', fontsize=16,
 ↪fontweight='bold',color='firebrick')
ax.set_xlabel('Counts', fontsize=14)
ax.legend(fontsize=12)

plt.tight_layout()
plt.show()
```
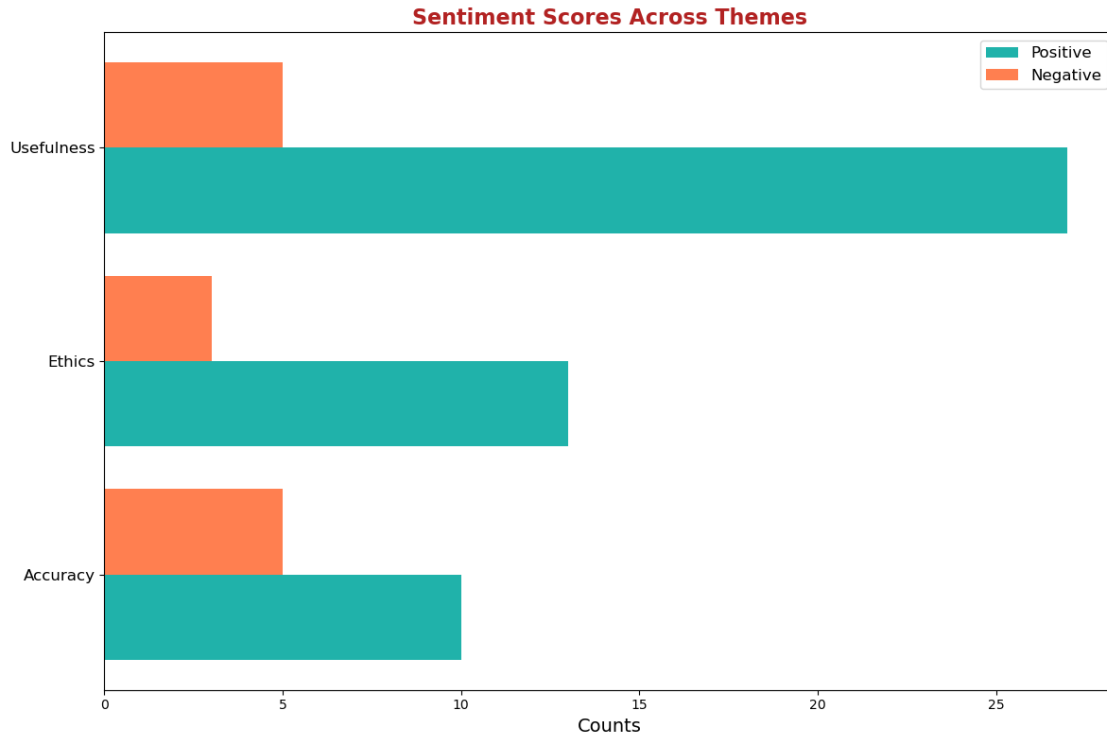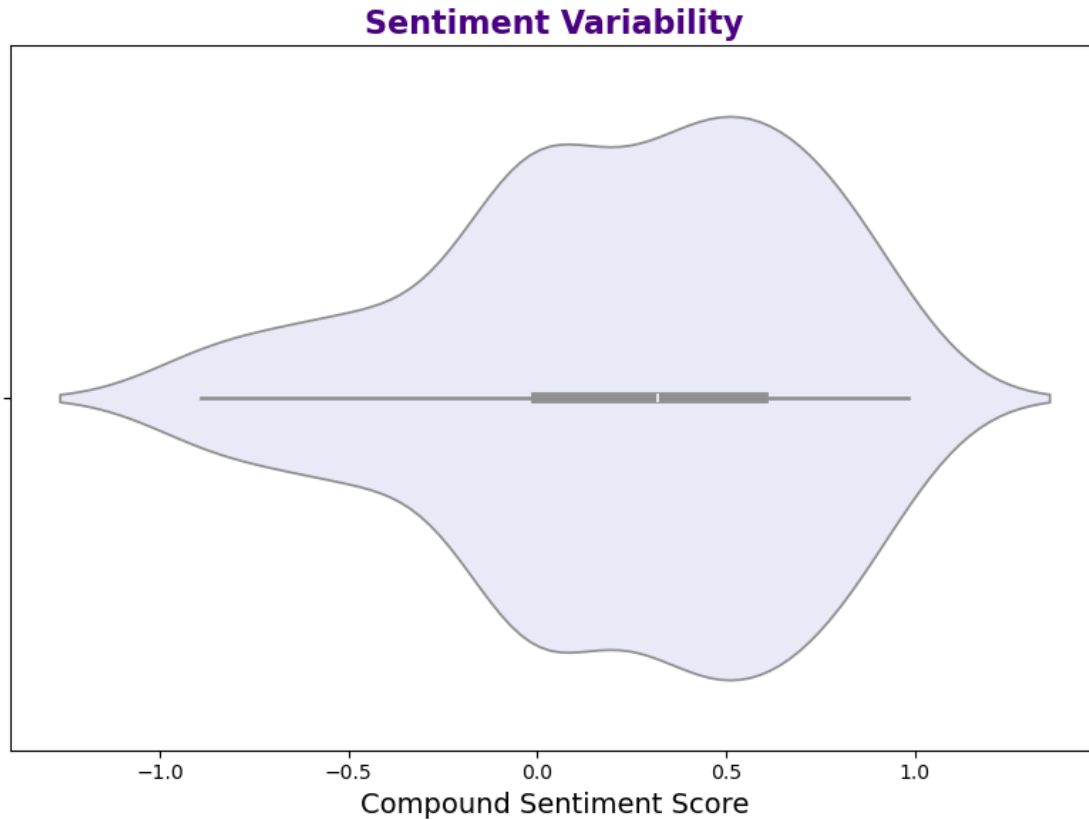
Sentiment Scores Across Themes


```python
[187]: import seaborn as sns

       # Violin plot for compound scores
       plt.figure(figsize=(8, 6))
       sns.violinplot(x=polarity['compound'], color='lavender')

       # Add labels and title
       plt.title('Sentiment Variability', fontsize=16, fontweight='bold',␣
        ↪color='indigo')
       plt.xlabel('Compound Sentiment Score', fontsize=14)

       plt.tight_layout()
       plt.show()
```

Sentiment Variability

0.8 7. Summarise findings

The polarity results from the sentiment analysis provide insights into the distribution of sentiment scores within the dataset. A count of **99** indicates that 99 instances were analysed. The mean sentiment score of **0.225189** suggests that, on average, the sentiment leans towards the positive side, as it is a positive value. The standard deviation (std) of **0.470609** reflects a moderate degree of variability in sentiment scores, showing diverse opinions in the dataset.

The minimum (min) score of **-0.890500** represents the most negative sentiment recorded, while the maximum (max) score of **0.980800** indicates the highest positive sentiment observed in the dataset.

Regarding the quartiles:

The 25th percentile (25%) value of **0.000000** indicates a significant proportion of neutral sentiment scores in the dataset. The 50th percentile (median), also at **0.318200**, demonstrates that at least half of the dataset exhibits neutral to moderately positive sentiment. The 75th percentile (75%) score of **0.599150* *suggests that a significant number of the instances analyzed exhibit positive sentiment.

Overall, the data indicates a predominantly positive sentiment within the dataset, with a notable proportion of neutral and a smaller share of negative sentiments. This distribution highlights a generally favorable outlook, tempered by some variation in sentiment intensity.

In conclusion, the analysis reveals that there is a stronger positive sentiment toward ChatGPT compared to negative sentiment. However, the significant presence of neutral comments suggests that many users have mixed or indifferent opinions. To gain a more comprehensive understanding, it would be worthwhile to explore the comment sections of additional videos on YouTube or to gather sentiment data from other social media platforms. While the overall sentiment leans positive, indicating potential value, further research into specific applications and user perceptions could provide actionable insights for FutureProof to maximise the potential benefits of ChatGPT.

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