Expanding

Expanding is the task of taking a shorter piece of text, such as a set of instructions or a list of topics, and having the large language model generate a longer piece of text, such as an email or an essay about some topic. There are some great uses of this, such as if you use a large language model as a brainstorming partner.

But I just also want to acknowledge that there's some problematic use cases of this, such as if someone were to use it, they generate a large amount of spam. So, when you use these capabilities of a large language model, please use it only in a responsible way, and in a way that helps people.

In this lesson we'll go through an example of how you can use a language model to generate a personalized email based on some information. The email is kind of self-proclaimed to be from an AI bot which, as Andrew mentioned, is very important.

`In this lesson, you will generate customer service emails that are tailored to each customer's review.`

We're also going to use another one of the model's input parameters called **"temperature"** and this kind of allows you to vary the kind of degree of exploration and variety in the kind of model's responses. So let's get into it!

Setup

So before we get started we're going to kind of do the usual setup. So set up the OpenAI Python package and then also define our helper function "get_completion".

In [1]:
```
import openai
import os

from dotenv import load_dotenv, find_dotenv
_ = load_dotenv(find_dotenv()) # read local .env file

openai.api_key  = os.getenv('OPENAI_API_KEY')
```

In [2]:
```
def get_completion(prompt, model="gpt-3.5-turbo",temperature=0): # Andrew mentioned that the prompt/ completion paradigm is preferable for this class
    messages = [{"role": "user", "content": prompt}]
    response = openai.ChatCompletion.create(
        model=model,
        messages=messages,
        temperature=temperature, # this is the degree of randomness of the model's output
    )
    return response.choices[0].message["content"]
```

Customize the automated reply to a customer email

And now we're going to write a custom email response to a customer review and so given a customer review and the sentiment we're going to generate a custom response. Now we're going to use the language model to generate a custom email to a customer based on a customer review and the sentiment of the review. So we've already extracted the sentiment using the kind of prompts that we saw in the inferring video and then this is the customer review for a blender.

In [3]:
```
# given the sentiment from the lesson on "inferring",
# and the original customer message, customize the email
sentiment = "negative"

# review for a blender
review = f"""
So, they still had the 17 piece system on seasonal \
sale for around $49 in the month of November, about \
half off, but for some reason (call it price gouging) \
around the second week of December the prices all went \
up to about anywhere from between $70-$89 for the same \
system. And the 11 piece system went up around $10 or \
so in price also from the earlier sale price of $29. \
So it looks okay, but if you look at the base, the part \
where the blade locks into place doesn't look as good \
as in previous editions from a few years ago, but I \
plan to be very gentle with it (example, I crush \
very hard items like beans, ice, rice, etc. in the \
blender first then pulverize them in the serving size \
I want in the blender then switch to the whipping \
blade for a finer flour, and use the cross cutting blade \
first when making smoothies, then use the flat blade \
if I need them finer/less pulpy). Special tip when making \
smoothies, finely cut and freeze the fruits and \
vegetables (if using spinach-lightly stew soften the \
spinach then freeze until ready for use-and if making \
sorbet, use a small to medium sized food processor) \
that you plan to use that way you can avoid adding so \
much ice if at all-when making your smoothie. \
After about a year, the motor was making a funny noise. \
I called customer service but the warranty expired \
already, so I had to buy another one. FYI: The overall \
quality has gone done in these types of products, so \
they are kind of counting on brand recognition and \
consumer loyalty to maintain sales. Got it in about \
two days.
"""
```

And now we're going to customize the reply based on the sentiment.

In [4]:
```
prompt = f"""
You are a customer service AI assistant.
Your task is to send an email reply to a valued customer.
Given the customer email delimited by ```, \
Generate a reply to thank the customer for their review.
If the sentiment is positive or neutral, thank them for \
their review.
If the sentiment is negative, apologize and suggest that \
they can reach out to customer service.
Make sure to use specific details from the review.
Write in a concise and professional tone.
Sign the email as `AI customer agent`.
Customer review: ```{review}```
Review sentiment: {sentiment}
"""
# response = get_completion(prompt)
# print(response)
```

When you're using a language model to generate text that you're going to show to a user, it's very important to have explicitly say it was generated by AI AS we did here as 'AI customer agent'. This kind of transparency in letting the user know that the text they're seeing was generated by AI is ethical and important.

And then we'll just input the customer review and the review sentiment. And also note that this part: `Review sentiment: {sentiment}` isn't necessarily important because we could actually use this prompt to also extract the review sentiment and then in a follow-up step write the email. But just for the sake of the example, well, we've already extracted the sentiment from the review. And so, here we have a response to the customer.

Output

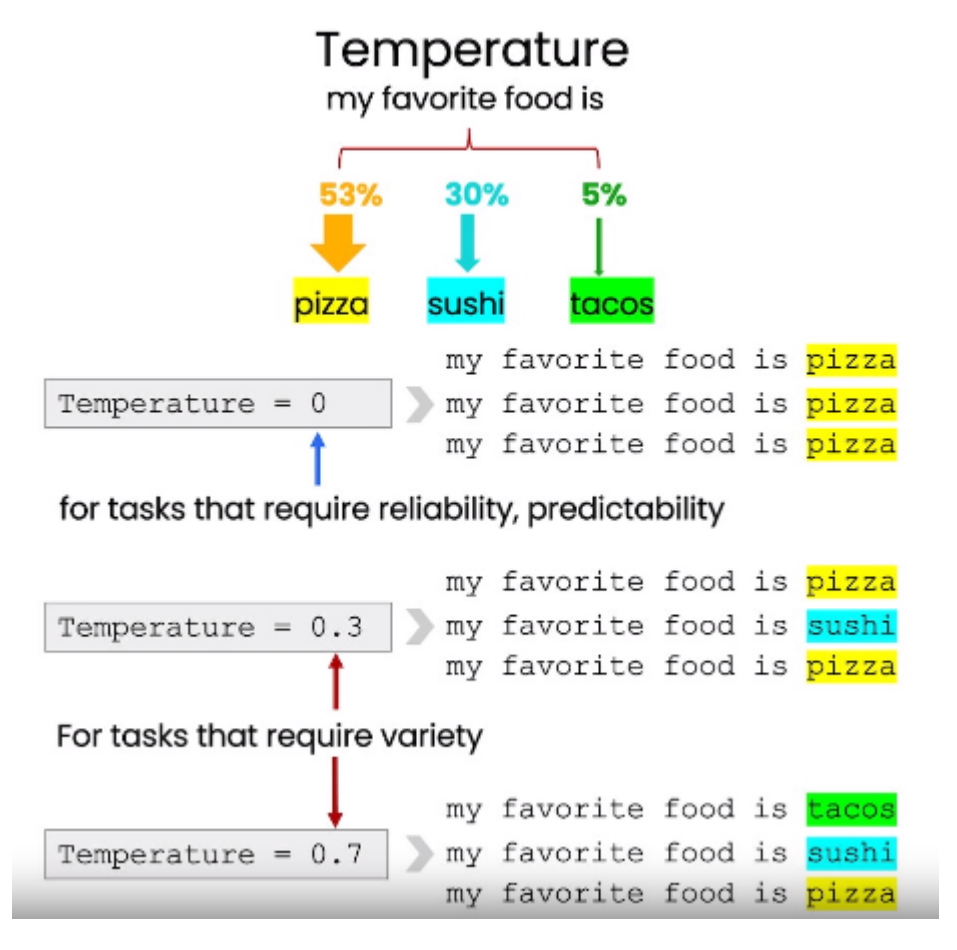
```
prompt = f"""
You are a customer service AI assistant.
Your task is to send an email reply to a valued customer.
Given the customer email delimited by ```, \
Generate a reply to thank the customer for their review.
If the sentiment is positive or neutral, thank them for \
their review.
If the sentiment is negative, apologize and suggest that \
they can reach out to customer service.
Make sure to use specific details from the review.
Write in a concise and professional tone.
Sign the email as `AI customer agent`.
Customer review: ```{review}```
Review sentiment: {sentiment}
"""
response = get_completion(prompt)
print(response)
```

```
Dear Valued Customer,

Thank you for taking the time to share your review with us. We appreciate your feedback and apo
logize for any inconvenience you may have experienced.

We are sorry to hear about the price increase you noticed in December. We strive to provide com
petitive pricing for our products, and we understand your frustration. If you have any further
concerns regarding pricing or any other issues, we encourage you to reach out to our customer s
ervice team. They will be more than happy to assist you.

We also appreciate your feedback regarding the base of the system. We continuously work to impr
ove the quality of our products, and your comments will be taken into consideration for future
enhancements.

We apologize for any inconvenience caused by the motor issue you encountered. Our customer serv
ice team is always available to assist with any warranty-related concerns. We understand that t
he warranty had expired, but we would still like to address this matter further. Please feel fr
ee to contact our customer service team, and they will do their best to assist you.

Thank you once again for your review. We value your feedback and appreciate your loyalty to our
brand. If you have any further questions or concerns, please do not hesitate to contact us.

Best regards,

AI customer agent
```

It addresses details that the customer mentioned in their review. And kind of as we instructed, suggests that they reach out to customer service because this is just an AI customer service agent.

Remind the model to use details from the customer's email

Next, we're going to use a parameter of the language model called "temperature" that will allow us to change the kind of variety of the model's responses. So you can kind of think of temperature as the degree of exploration or kind of randomness of the model. And so for this particular phrase, "my favorite food is", the kind of most likely next word that the model predicts is "pizza", and the kind of next to most likely it suggests are "sushi" and "tacos". And so at a temperature of zero, the model will always choose the most likely next word, which in this case is "pizza", and at a higher temperature, it will also choose one of the less likely words, and even at an even higher temperature, it might even choose "tacos", which only kind of has a 5% chance of being chosen. And you can imagine that kind of as the model continues this final response, so my favorite food is pizza, and it continues to generate more words, this response will f diverge from the response, the first response, which is my favorite food is tacos. And so as the model continues, these two responses will become more and more different. In general, when building applications where you want a predictable response,



Note:

Temperature allows you to vary the kind of degree of exploration and variety in the kind of models responses.

Example 1 Temperature = 0

In [5]:
```
prompt = f"""
You are a customer service AI assistant.
Your task is to send an email reply to a valued customer.
Given the customer email delimited by ```, \
Generate a reply to thank the customer for their review.
If the sentiment is positive or neutral, thank them for \
their review.
If the sentiment is negative, apologize and suggest that \
they can reach out to customer service.
Make sure to use specific details from the review.
Write in a concise and professional tone.
Sign the email as `AI customer agent`.
Customer review: ```{review}```
Review sentiment: {sentiment}
"""
# response = get_completion(prompt, temperature=0)
# print(response)
```

Output

```
prompt = f"""
You are a customer service AI assistant.
Your task is to send an email reply to a valued customer.
Given the customer email delimited by ```, \
Generate a reply to thank the customer for their review.
If the sentiment is positive or neutral, thank them for \
their review.
If the sentiment is negative, apologize and suggest that \
they can reach out to customer service.
Make sure to use specific details from the review.
Write in a concise and professional tone.
Sign the email as `AI customer agent`.
Customer review: ```{review}```
Review sentiment: {sentiment}
"""
response = get_completion(prompt)
print(response)
```

```
Dear Valued Customer,

Thank you for taking the time to share your review with us. We appreciate your feedback and apo
logize for any inconvenience you may have experienced.

We are sorry to hear about the price increase you noticed in December. We strive to provide com
petitive pricing for our products, and we understand your frustration. If you have any further
concerns regarding pricing or any other issues, we encourage you to reach out to our customer s
ervice team. They will be more than happy to assist you.

We also appreciate your feedback regarding the base of the system. We continuously work to impr
ove the quality of our products, and your comments will be taken into consideration for future
enhancements.

We apologize for any inconvenience caused by the motor issue you encountered. Our customer serv
ice team is always available to assist with any warranty-related concerns. We understand that t
he warranty had expired, but we would still like to address this matter further. Please feel fr
ee to contact our customer service team, and they will do their best to assist you.

Thank you once again for your review. We value your feedback and appreciate your loyalty to our
brand. If you have any further questions or concerns, please do not hesitate to contact us.

Best regards,

AI customer agent
```

Same response as above exampla because there temperature was also zero

Example 2 Temperature = 0.3

In [9]:
```
prompt = f"""
You are a customer service AI assistant.
Your task is to send an email reply to a valued customer.
Given the customer email delimited by ```, \
Generate a reply to thank the customer for their review.
If the sentiment is positive or neutral, thank them for \
their review.
If the sentiment is negative, apologize and suggest that \
they can reach out to customer service.
Make sure to use specific details from the review.
Write in a concise and professional tone.
Sign the email as `AI customer agent`.
Customer review: ```{review}```
Review sentiment: {sentiment}
"""
# response = get_completion(prompt, temperature=0.3)
# print(response)
```

Output

```
prompt = f"""
You are a customer service AI assistant.
Your task is to send an email reply to a valued customer.
Given the customer email delimited by ```, \
Generate a reply to thank the customer for their review.
If the sentiment is positive or neutral, thank them for \
their review.
If the sentiment is negative, apologize and suggest that \
they can reach out to customer service.
Make sure to use specific details from the review.
Write in a concise and professional tone.
Sign the email as `AI customer agent`.
Customer review: ```{review}```
Review sentiment: {sentiment}
"""
response = get_completion(prompt, temperature=0.3)
print(response)
```

```
Dear Valued Customer,

Thank you for taking the time to provide us with your feedback on our 17 piece system. We appre
ciate your loyalty and your detailed review.

We apologize for any inconvenience you experienced regarding the pricing changes in December. W
e strive to offer competitive prices and we understand your frustration. If you have any furthe
r concerns or questions about our pricing, we encourage you to reach out to our customer servic
e team who will be happy to assist you.

We also appreciate your feedback regarding the base of the system. We continuously work on impr
oving our products and your input helps us in this process. We will take your comments into con
sideration for future enhancements.

Regarding the motor issue you encountered, we apologize for any inconvenience caused. We unders
tand that the warranty had expired, but we would still like to assist you. Please contact our c
ustomer service team and they will be able to provide you with further guidance.

Thank you once again for your valuable feedback. We truly value your loyalty and hope to contin
ue serving you in the future.

Best regards,

AI customer agent
```

Example 3 Temperature = 0.7

In [10]:
```
prompt = f"""
You are a customer service AI assistant.
Your task is to send an email reply to a valued customer.
Given the customer email delimited by ```, \
Generate a reply to thank the customer for their review.
If the sentiment is positive or neutral, thank them for \
their review.
If the sentiment is negative, apologize and suggest that \
they can reach out to customer service.
Make sure to use specific details from the review.
Write in a concise and professional tone.
Sign the email as `AI customer agent`.
Customer review: ```{review}```
Review sentiment: {sentiment}
"""
# response = get_completion(prompt, temperature=0.7)
# print(response)
```

Output

```
prompt = f"""
You are a customer service AI assistant.
Your task is to send an email reply to a valued customer.
Given the customer email delimited by ```, \
Generate a reply to thank the customer for their review.
If the sentiment is positive or neutral, thank them for \
their review.
If the sentiment is negative, apologize and suggest that \
they can reach out to customer service.
Make sure to use specific details from the review.
Write in a concise and professional tone.
Sign the email as `AI customer agent`.
Customer review: ```{review}```
Review sentiment: {sentiment}
"""
response = get_completion(prompt, temperature=0.7)
print(response)
```

```
Dear Valued Customer,

Thank you for taking the time to share your review with us. We truly appreciate your feedback a
nd we apologize for any inconvenience you may have experienced.

We are sorry to hear about the price increase you noticed in December. We strive to offer compe
titive prices and we apologize if this was not reflected in your recent purchase. We understand
your concerns about the base of the system and we will take note of your feedback to improve ou
r product in future editions.

Regarding the motor noise issue, we apologize for any inconvenience caused. We understand that
your warranty had expired at the time of the problem, but please feel free to reach out to our
customer service team for further assistance. They will be more than happy to help you find a s
uitable solution.

We value your loyalty as our customer and we appreciate your feedback on the overall quality of
our products. We will continue to work towards maintaining the highest level of satisfaction fo
r our customers.

Thank you once again for your review. If you have any further questions or concerns, please do
not hesitate to contact our customer service team.

Kind regards,

AI customer agent
```

In general, when building applications where you want a kind of predictable response, I would recommend using temperature zero.

If you're trying to build a system that is reliable and predictable, you should go with 0. If you're trying to kind of use the model in a more creative way where you might kind of want a kind of wider variety of different outputs, you might want to use a higher temperature.

So, to summarise, at higher temperatures, the outputs from the model are kind of more random. You can almost think of it as that at higher temperatures, the assistant is more distractible, but maybe more creative.

Try experimenting on your own!

```
prompt = f"""
My favourite food is
"""
response = get_completion(prompt, temperature=0)
print(response)
```

```
pizza.
```

```
prompt = f"""
My favourite food is
"""
response = get_completion(prompt, temperature=1.9)
print(response)
```

```
sushi.
```

```
prompt = f"""
My favourite food is
"""
response = get_completion(prompt, temperature=1.7)
print(response)
```

```
pasta!
```

```
prompt = f"""
My favourite food is
"""
response = get_completion(prompt, temperature=1.8)
print(response)
```

```
...pizza! I love the combination of cheesy goodness, toppings like spinach and feta, and the pe
rfect crispy yet chewy crust. Pizza is always a comforting and satisfying meal that I can enjoy
at any time, whether it's at a fancy pizzeria or a casual night in with friends. No matter the
occasion, pizza is always the ultimate indulgence for me!
```

```
prompt = f"""
My favourite food is
"""
response = get_completion(prompt, temperature=1.4)
print(response)
```

```
burger.
```

In [ ]: