

Customer Support System

- Email Generation
(Automating Customer Interaction using GPT-3.5 Turbo)

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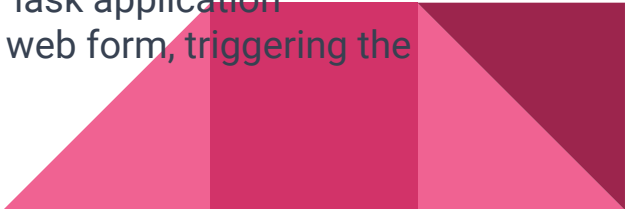
Introduction

The project aims to automate customer support interactions by generating email responses based on customer comments regarding electronic products. Leveraging GPT-3.5 Turbo, the system generates contextual responses in multiple languages for an enhanced user experience



Design

For this application going through the following procedure to get desired output :-


1. **Customer Comment Generation:** Prompt GPT-3.5 Turbo model to generate a 100-word customer comment based on the provided products' content.
 2. **Email Subject Generation:** Utilizing GPT-3.5 Turbo, proposed brief email subject in response.
 3. **Customer Comment Summary:** GPT-3.5 Turbo used to summarize the customer's comment into 50 words.
 4. **Language Translation:** I integrated translation feature that allows translating summaries into specified language.
 5. **Sentiment Analysis:** Determine sentiments (positive, negative or neutral) base on customer's comment
 6. **Customer Email Generation:** Based on the sentiment, will tailor email response
 7. **Flask Application:** The entire functionality is encapsulated in a Flask application
 8. **Web Interface & User Interaction:** On selecting a language via a web form, triggering the entire process of response generation.
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Implementation

Application Workflow:

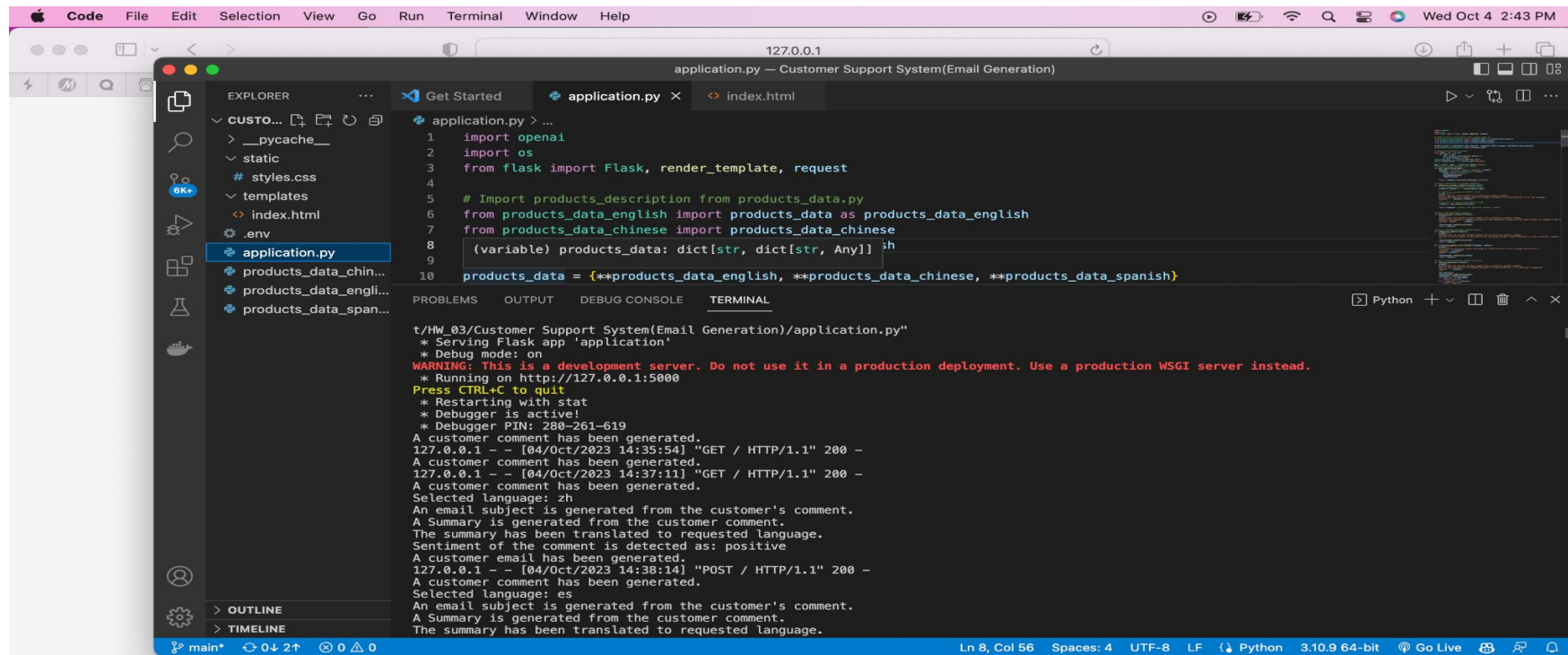
- Customer provides product comments (taking data through py files)
- GPT-3.5 Turbo processes the comments and generates suitable email responses.
- The system translates the responses in the specified language. (chinese & spanish)
- User receives a complete email response in the chosen language

Code Structure:

- The program imports product data and uses GPT-3.5 Turbo to generate responses based on customer comments.
 - It's a Flask web application where the user selects a language and provides product comments, triggering the response generation.
- 

Testing:

The application is tested by simulating user interactions on the web interface (running on port 5000 : <http://127.0.0.1:5000>)



```
Code File Edit Selection View Go Run Terminal Window Help

127.0.0.1
application.py — Customer Support System(Email Generation)

EXPLORER
  > __pycache__
  > static
  # styles.css
  > templates
  < index.html
  < .env
  application.py
  products_data_chin...
  products_data_engli...
  products_data_span...

application.py > ...
1 import openai
2 import os
3 from flask import Flask, render_template, request
4
5 # Import products_description from products_data.py
6 from products_data_english import products_data as products_data_english
7 from products_data_chinese import products_data_chinese
8 (variable) products_data: dict[str, dict[str, Any]] `h
9
10 products_data = {**products_data_english, **products_data_chinese, **products_data_spanish}

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Python + - [x]

t/HW_03/Customer Support System(Email Generation)/application.py"
* Serving Flask app 'application'
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 280-261-619
A customer comment has been generated.
127.0.0.1 - - [04/Oct/2023 14:35:54] "GET / HTTP/1.1" 200 -
A customer comment has been generated.
127.0.0.1 - - [04/Oct/2023 14:37:11] "GET / HTTP/1.1" 200 -
A customer comment has been generated.
Selected language: zh
An email subject is generated from the customer's comment.
A Summary is generated from the customer comment.
The summary has been translated to requested language.
Sentiment of the comment is detected as: positive
A customer email has been generated.
127.0.0.1 - - [04/Oct/2023 14:38:14] "POST / HTTP/1.1" 200 -
A customer comment has been generated.
Selected language: es
An email subject is generated from the customer's comment.
A Summary is generated from the customer comment.
The summary has been translated to requested language.
```

Web Interface : Language Selection

Choose the language of Email to be generated:

✓ English

Spanish

Chinese

Question (Generated Comment):

Answer (Generated Email):

Web Interface : Language Selected (English)

Choose the language of Email to be generated:

English



Question (Generated Comment):

'''I am extremely satisfied with the wide range of products offered by this electronic product company. The TechPro Ultrabook is sleek and powerful, perfect for my professional needs. The BlueWave Gaming Laptop provides an immersive gaming experience with its high-performance specifications. The PowerLite Convertible is a versatile device that seamlessly transforms from a laptop to a tablet. The TechPro Desktop is a reliable and efficient workstation for my heavy-duty tasks. The BlueWave Chromebook offers a seamless browsing experience. The SmartX ProPhone is a feature-packed smartphone that exceeds my expectations. The MobiTech PowerCase keeps my phone charged on the go. The SmartX MiniPhone is compact and convenient for my secondary phone needs. The MobiTech Wireless Charger ensures hassle-free charging. The SmartX EarBuds deliver exceptional sound quality. Lastly, the CineView 4K TV provides a stunning visual experience. Overall, I am impressed with the quality and

Answer (Generated Email):

Subject: Thank you for your feedback on our wide range of electronic products!

Dear [Customer's Name],

Thank you for taking the time to provide us with your valuable feedback. We are thrilled to hear that you are extremely satisfied with the wide range of products offered by our electronic company.

Your specific mention of our TechPro Ultrabook, BlueWave Gaming Laptop, PowerLite Convertible, TechPro Desktop, BlueWave Chromebook, SmartX ProPhone, MobiTech PowerCase, SmartX MiniPhone, MobiTech Wireless Charger, SmartX EarBuds, and CineView 4K

Process

Web Interface: Language Selected (Chinese)

Choose the language of Email to be generated:

English



Question (Generated Comment):

```I am extremely satisfied with the wide range of products offered by this electronic product company. The TechPro Ultrabook is sleek and powerful, perfect for my professional needs. The BlueWave Gaming Laptop provides an immersive gaming experience with its high-performance features. The PowerLite Convertible is a versatile device that seamlessly transforms from a laptop to a tablet. The TechPro Desktop is a reliable and efficient workstation for my heavy-duty tasks. The BlueWave Chromebook is lightweight and ideal for on-the-go productivity. The SmartX ProPhone offers cutting-edge technology and impressive camera capabilities. The MobiTech PowerCase keeps my phone charged on the go. The SmartX MiniPhone is compact and convenient for quick communication. The MobiTech Wireless Charger ensures hassle-free charging. Lastly, the SmartX EarBuds deliver exceptional sound quality. The CineView 4K TV provides a stunning visual experience with its high-resolution display. Overall, I am highly

## Answer (Generated Email):

亲爱的客户，

非常感谢您对我们广泛产品范围的反馈！我们非常高兴听到您的积极评价，并对您的满意度表示衷心的感谢。您的满意是我们的首要任务！

您特别提到了对我们的TechPro Ultrabook、BlueWave Gaming Laptop、PowerLite Convertible、TechPro Desktop、BlueWave Chromebook、SmartX ProPhone、MobiTech PowerCase、SmartX MiniPhone、MobiTech Wireless Charger、SmartX EarBuds和CineView 4K TV的满意度。我们很自豪地告诉您，这些产品的质量和性能一直是我们的重点关注。

我们将继续努力提供卓越的产品和服务，以满足您的需求。如果您有任何问题或需要进一步的帮助，

Process

# Web Interface: Language Selected (Spanish)

Choose the language of Email to be generated:

English



**Question (Generated Comment):**

'''I am extremely satisfied with the wide range of products offered by this electronic product company. The TechPro Ultrabook is sleek and powerful, perfect for my professional needs. The BlueWave Gaming Laptop provides an immersive gaming experience with its high-performance specifications. The PowerLite Convertible is a versatile device that seamlessly transforms from a laptop to a tablet. The TechPro Desktop is a reliable and efficient workstation for my heavy-duty tasks. The BlueWave Chromebook offers a seamless browsing experience. The SmartX ProPhone is a feature-packed smartphone that exceeds my expectations. The MobiTech PowerCase keeps my phone charged on the go. The SmartX MiniPhone is compact and convenient for my secondary phone needs. The MobiTech Wireless Charger ensures hassle-free charging. The SmartX EarBuds deliver exceptional sound quality. Lastly, the CineView 4K TV provides a stunning visual experience. Overall, I am impressed with the quality and

**Answer (Generated Email):**

Asunto: ¡Gracias por tus comentarios sobre nuestra amplia gama de productos electrónicos!

Estimado cliente,

Nos complace enormemente recibir tus comentarios y apreciamos tus palabras positivas. ¡Tu satisfacción es nuestra máxima prioridad!

Nos alegra saber que estás extremadamente satisfecho con la amplia gama de productos que ofrecemos en nuestra empresa de productos electrónicos. Específicamente, nos complace saber que estás satisfecho con el TechPro Ultrabook, BlueWave Gaming Laptop, PowerLite Convertible, TechPro Desktop, BlueWave Chromebook, SmartX ProPhone, MobiTech

Process

# Enhancement Ideas

1. **Integration of sentiment analysis:** tailor responses based on customer sentiment.
2. **Real-time Language Translation:** Integrate real-time language translation so that users can receive responses in their preferred language without explicit selection, enhancing user experience.
3. **Feedback Loop Integration:** Implement a feedback mechanism where users can rate generated responses. Use this data to fine-tune and improve the AI model for more accurate and suitable responses.
4. **Multi-Model Approach:** Employ a multi-model approach, using a combination of AI models specialized in different areas to provide more precise and comprehensive responses.



# Conclusion

This application (Customer Support System), is a robust solution that automates and simplifies customer interactions. It delivers timely and customized responses by using Artificial Intelligence and natural language processing. This not only saves time but significantly boosts user satisfaction by ensuring responses are pertinent and personalized. Future improvements could potentially transform automated customer support across a wide range of industries.



# References

1. <https://blog.thoriumlabs.ai/how-to-automate-cold-e-mails-using-chatgpt-and-73-lines-of-code-a77b05f3b102>
2. <https://blog.inten.to/chatgpt-for-translation-surpassing-gpt-3-e8e34f37befb>
3. <https://medium.com/@lvdeep9/sentiment-analysis-on-imdb-dataset-with-gpt-3-and-gpt-3-5-b9ae8c5bc910>



# Github Link

[https://github.com/Maryam-Zubair/MachineLearning\\_Assignment/tree/main/ChatGPT/Customer%20Support%20System\(Email%20Generation\)](https://github.com/Maryam-Zubair/MachineLearning_Assignment/tree/main/ChatGPT/Customer%20Support%20System(Email%20Generation))

