AI Email Generator

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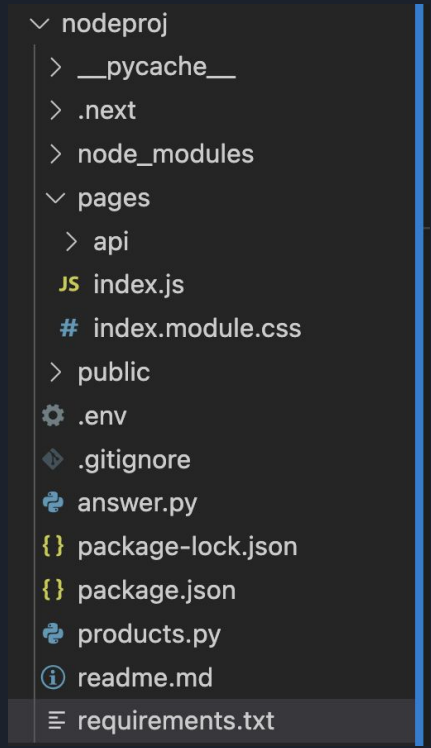
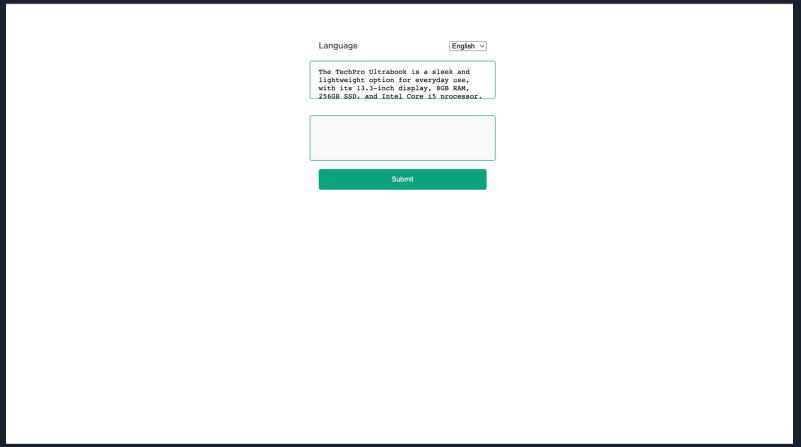


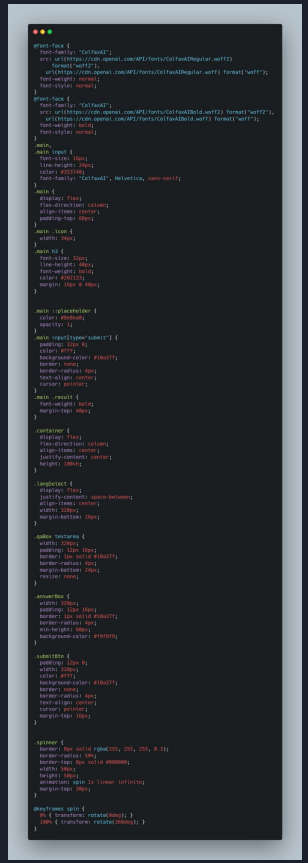


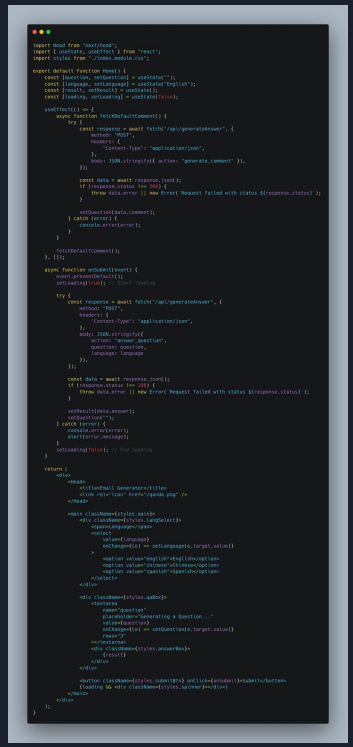
Design

- **Frontend: Built using the Next.js framework and React library. Provides the user interface for input and displaying results.**
- **Backend: Python scripts that interface with the OpenAI API. The main logic for generating content.**
- **Data Flow:**
  - **User inputs question and selects language on the frontend.**
  - **Backend receives input, processes it, and interacts with OpenAI.**
  - **Resulting content is sent back to the frontend for display.**

Implementation (Frontend)

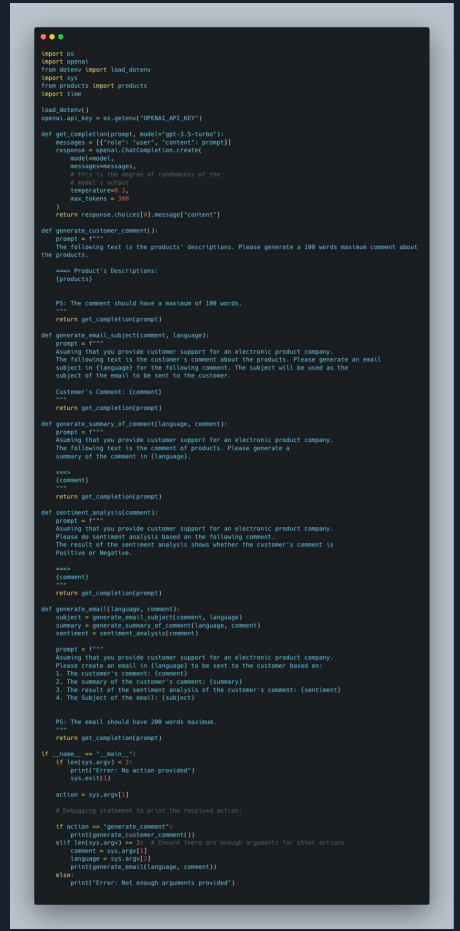
- Framework: Next.js – a React framework.
- Main Components:
  - Language Selector: Dropdown menu that lets users choose between English, Chinese, or Spanish.
  - Question Box: Textarea for inputting or viewing the default customer comment.
  - Answer Box: Area where the OpenAI-generated content is displayed.
  - Submit Button: Initiates the content generation process.
  - Loading Spinner: Indicates data fetching in progress.
- Styling: Custom CSS styles from index.module.css for layout and aesthetics.





Implementation (Backend)

- OpenAI Integration: The system uses the official OpenAI library for Python. API calls are made to generate content based on prompts.
- Main Logic in answer.py:
    - generate_customer_comment(): Creates a product comment using OpenAI.
    - generate_email_subject(): Derives an email subject from a customer comment.
    - generate_summary_of_comment(): Summarizes a comment.
    - sentiment_analysis(): Assesses sentiment of a comment.
    - generate_email(): Constructs a full email from a comment, its sentiment, summary, and a subject.
- Product Data in products.py: Contains a dictionary of product details used as a foundation for generating comments.



```python
import os
import openai
from dotenv import load_dotenv
import sys
from products import products
import time

load_dotenv()
openai.api_key = os.getenv("OPENAI_API_KEY")

def get_completion(prompt, model="gpt-3.5-turbo"):
    messages = [{"role": "user", "content": prompt}]
    response = openai.ChatCompletion.create(
        model=model,
        messages=messages,
        # this is the degree of randomness of the
        # model's output
        temperature=0.1,
        max_tokens = 300
    )
    return response.choices[0].message["content"]

def generate_customer_comment():
    prompt = f"""
    The following text is the products' descriptions. Please generate a 100 words maximum comment about
the products.

    ===> Product's Descriptions:
    {products}


    PS: The comment should have a maximum of 100 words.
    """
    return get_completion(prompt)

def generate_email_subject(comment, language):
    prompt = f"""
    Asuming that you provide customer support for an electronic product company.
    The following text is the customer's comment about the products. Please generate an email
    subject in {language} for the following comment. The subject will be used as the
    subject of the email to be sent to the customer.

    Customer's Comment: {comment}
    """
    return get_completion(prompt)

def generate_summary_of_comment(language, comment):
    prompt = f"""
    Asuming that you provide customer support for an electronic product company.
    The following text is the comment of products. Please generate a
    summary of the comment in {language}.

    ====
    {comment}
    """
    return get_completion(prompt)

def sentiment_analysis(comment):
    prompt = f"""
    Asuming that you provide customer support for an electronic product company.
    Please do sentiment analysis based on the following comment.
    The result of the sentiment analysis shows whether the customer's comment is
    Positive or Negative.

    ====>
    {comment}
    """
    return get_completion(prompt)

def generate_email(language, comment):
    subject = generate_email_subject(comment, language)
    summary = generate_summary_of_comment(language, comment)
    sentiment = sentiment_analysis(comment)

    prompt = f"""
    Asuming that you provide customer support for an electronic product company.
    Please create an email in {language} to be sent to the customer based on
    1. The customer's comment: {comment}
    2. The summary of the customer's comment: {summary}
    3. The result of the sentiment analysis of the customer's comment: {sentiment}
    4. The Subject of the email: {subject}


    PS: The email should have 200 words maximum.
    """
    return get_completion(prompt)

if __name__ == "__main__":
    if len(sys.argv) < 2:
        print("Error: No action provided")
        sys.exit(1)

    action = sys.argv[1]

    # Debugging statement to print the received action:

    if action == "generate_comment":
        print(generate_customer_comment())
    elif len(sys.argv) >= 3:  # Ensure there are enough arguments for other actions
        comment = sys.argv[2]
        language = sys.argv[3]
        print(generate_email(language, comment))
    else:
        print("Error: Not enough arguments provided")
```

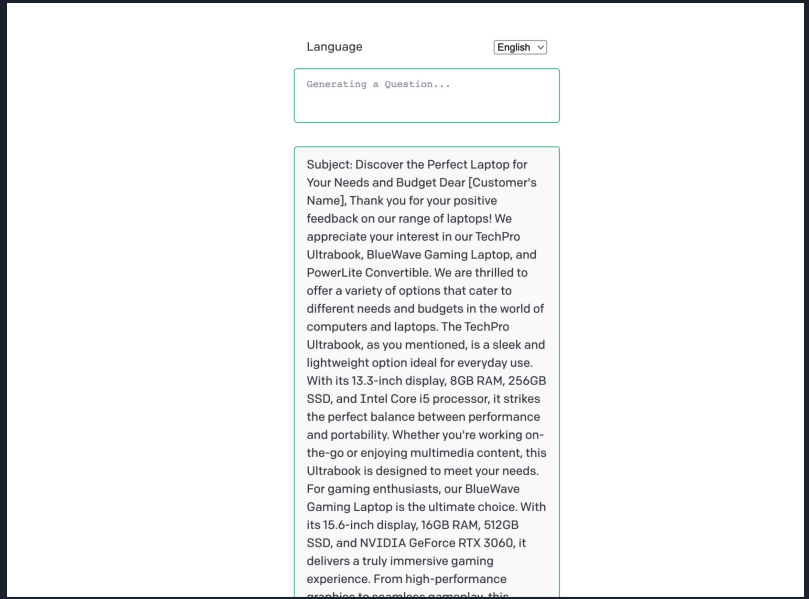
Test

- Initial Load: On the first load, the system fetches a default comment to display.
- User Interaction: On submission, the frontend communicates with the /api/generateAnswer endpoint, passing the user's question and selected language.
- Backend Processing: Python script (answer.py) is executed, and the OpenAI API is queried.
- Result Display: The frontend then displays the generated content in the answer box.

```
abderrahmane@Abderrahmanes-MacBook-Pro nodeproj % npm run dev

> openai-qa@0.1.0 dev
> next dev

ready - started server on 0.0.0.0:3000, url: http://localhost:3000
info  - Loaded env from /Users/abderrahmane/Desktop/ai-projects/nodeproj/.env
event - compiled client and server successfully in 192 ms (150 modules)
wait  - compiling / (client and server)...
event - compiled client and server successfully in 49 ms (170 modules)
wait  - compiling /api/generateAnswer (client and server)...
event - compiled successfully in 15 ms (46 modules)
Executing command: python3 answer.py generate_comment
API resolved without sending a response for /api/generateAnswer, this may result in stalled requests.
wait  - compiling /_error (client and server)...
event - compiled client and server successfully in 52 ms (182 modules)
warn  - Fast Refresh had to perform a full reload. Read more: https://nextjs.org/docs/messages/fast-refresh-reload
```



Improvement Suggestions

- Expand Language Options: Incorporate more languages for broader user reach.
- Advanced Error Handling: Implement better error handling for edge cases or unexpected OpenAI API behaviors.
- User Customizations: Allow users to specify the type and style of content they want.
- Optimize for Mobile: Ensure the platform is fully responsive for mobile users.

Conclusion

- Achievements: Successfully built a system that leverages OpenAI to generate email content based on user input and product details.
- Applications: Can be extended to other domains such as customer support, content generation, marketing, and more.

Bibliography & Github Link

- https://github.com/Alami64/cs589_week3_hw2_customer_email
- https://hc.labnet.sfbu.edu/~henry/sfbu/course/deeplearning_ai/chatgpt_prompt_eng_for_developer/slide/exercise_chatgpt_prompt_eng_for_developer.html