AI REVIEW SUMMARIZER-FOR FASTER DECISION MAKING

Ammallesh A
Dept.of Computer Science and
Engineering
Rajalakshmi Engineering College Chennai,India
220701024@rajalakshmi.edu.in

Balaji G
Dept.of Computer Science and
Engineering
Rajalakshmi Engineering College Chennai,India
220701036@rajalakshmi.edu.in

Charan Jeeth E M
Dept.of Computer Science and
Engineering
Rajalakshmi Engineering College Chennai,India
220701052@rajalakshmi.edu.in

M.Ayyadurai
Dept.of Computer Science and
Engineering
Rajalakshmi Engineering College Chennai,India
ayyadurai.m@rajalakshmi.edu.in

AI REVIEW SUMMARIZER

Abstract:

The Review Summarizer AI is an application that specializes in review analytics,it has the unique capability of extracting and summarizing the most salient details from reviews left by customers.The objective of this project is to aid users in choosing what products to buy by presenting them with a well-organized list of the merits and demerits of a product.The system collects reviews

using OpenAPI and implements sophisticated natural language processing models like ChatGPT to interpret sentiments and generate short summaries.The system retrievals the specifics from multiple sentiments, therefore lessening the workload for users.The application's intuitive interface allows it to present summaries in an insightful way while improving usability and interaction with users when appraising different products online.

Keywords: ChatGPT,OpenAPI,Text Summarization,Smart Shopping Assistant,AI Summarizer, Sentiment Analysis,Review Aggregation,User Experience,Natural Language Processing,Product Reviews.

Introduction:

With the rapid advancement of technology,purchasing goods and services with just a few clicks has become easier than ever.One key component that enables shoppers to make purchasing decisions seamlessly are reviews of shoppers which reflect their insights about a product's quality,its effectiveness, and satisfaction level.Regardless of the information a customer might need,the multitude of consumer reviews available for popular products makes it very difficult for users to put together a complete picture,understand all the feedback,and form an opinion.Therefore,it not only elongates the time taken for customers to make a decision but also increases the possibility of missing crucial details.

To solve this problem,we designed an AI review summarization tool that enables users to grasp the general feeling of the reviews within a short period.Our application uses OpenAPI to retrieve reviews from various online sources in real-time.After obtaining the reviews, our proprietary NLP algorithms and other language models including ChatGPT process the text,identify important

fragments,and produce summaries.The system analysis the feedback as a whole and captures the major opinions provided from most customers to ensure balance.

The customer's decision making process and review reading experience will be improved with this project.Users can quickly access summaries that give a highlight of customer feedback and use the information to make an informed decision.The interface provides everything that the user requires to make the system easy to use.Our review summarizer is a practical solution for e-commerce sites and buyers by having AI and NLP technology incorporated in the system with attention to the user requirements.[1] This project examine sentiment scoring detection based on the raw image as space observes.[2] SURF create the pronounced structure to demand contractors enhance content quality and customer satisfaction.[4] It handles the unlabeled,multidimensional data efficiently.It shows how intelligent systems can improve digital experience by complex data transforming in actionable insights.[7] This focuses on Sequence–Sequence models, which provide coherent, concisely expressed summaries of large review datasets.[9] The model analyses the reviews by converting them to vectors and extracting relevant information while retaining context.[10] This paper proposes AMBI-GAN,attention which detects anomalies in industrial internet of things.

Existing Applications and Their Limitations:

The OpenAI Chat Completions API has found its use in a broad variety of applications like virtual help-desk assistants, educational tutors, productivity tools,and even automated customer support chatbots.These applications utilize the model's deep learning comprehension and generative abilities to perform dialogues that are human-like,tailor their answers,and contextualize the information they deliver.Nevertheless,many of these applications have to deal with restrictions like lack of customization for particular fields,possibility of

generating erroneous or false content,and low answer explainability.Besides,in highly focused,specialized,or academic settings,generic models are unlikely to be at all relevant,precise,or even appropriate.

Project Contribution:

Our project seeks to address these limitations by combining domain-specific information and including validation mechanisms to guarantee factual coherence. By customizing the API's responses to a specific use case and adding user feedback loops or expert moderation layers, our system improves both the reliability and academic suitability of the produced content. This systematic approach not only enhances the usability of conversational AI in sensitive domains but also promotes trust and accuracy in real-world usage.

Methodology :

The construction of the AI Review Summarizer website takes a systematic approach by integrating frontend web development with straightforward keyword-based logic to create speedy and significant review summaries.The system's aim is to help users judge products effectively by analyzing input reviews and visualizing sentiments.

1. Website Interface and Review Input The project includes a custom-built website where products are listed and reviews can be manually entered through a form-based interface. Each review is accompanied by associated keywords which indicate whether the sentiment of the review is positive or negative. This setup allows for organized data entry and later retrieval based on user input.

2. Keyword-Based Review Filtering The core summarization technique employed in this system is keyword matching. When a user searches for a

product and inputs specific keywords (e.g., "battery", "performance"), the system filters through the stored reviews and extracts only those that contain the relevant keywords. The extracted reviews are then categorized based on sentiment — positive or negative — which is determined by predefined tags or indicators associated with the review during input.

3. Summary Generation Based on the filtered results, the system generates a simplified summary. This summary highlights the number of positive and negative reviews related to the searched keyword. Rather than using complex NLP models, the approach relies on structured matching and predefined logic to offer users a concise overview of review sentiment.

4. Data Visualization To further aid user understanding, the system incorporates graphical representations of the review sentiment. A bar chart is generated using Chart.js (as seen in your code) to visualize the number of positive and negative reviews associated with the selected keyword. This visual aid enables users to quickly interpret the general opinion around a product feature.

5. Technology Stack and Integration The project is developed using HTML, CSS, and JavaScript for the frontend, with PHP for server-side scripting and MySQL for storing product details and reviews. Form inputs are validated, and data is fetched from the database based on keyword search. The use of Chart.js enhances the user experience by delivering interactive and clear visual feedback.

API Overview:

https://api.openai.com/v1/chat/completions is an OpenAI endpoint that enables users to access ChatGPT,a highly advanced language model,through chat-based interactions.

What This API Does:

It accepts a sequence of messages (such as a conversation) as input and produces context-sensitive responses,simulating human-like responses.It's intended to power chatbots,virtual assistants, and any app that needs conversational AI.

Methodologies Used:

Transformer Architecture:

employs a variant of the GPT (Generative Pre-trained Transformer) model,which is fine-tuned for conversation.

Reinforcement Learning from Human Feedback (RLHF):

The model is trained and tuned through human feedback to improve its responses so that they become more useful,safe and in accordance with human expectations.

Few-Shot or Zero-Shot Learning:

The model can comprehend and do things with few or no examples in the input due to its huge pretraining.

Token-Based Context Handling:

Uses tokens for context and history management.There is a breakdown of each message into tokens and the number of tokens is taken into consideration for a reply generation.

System Architecture:

Review Summarizer System Overview
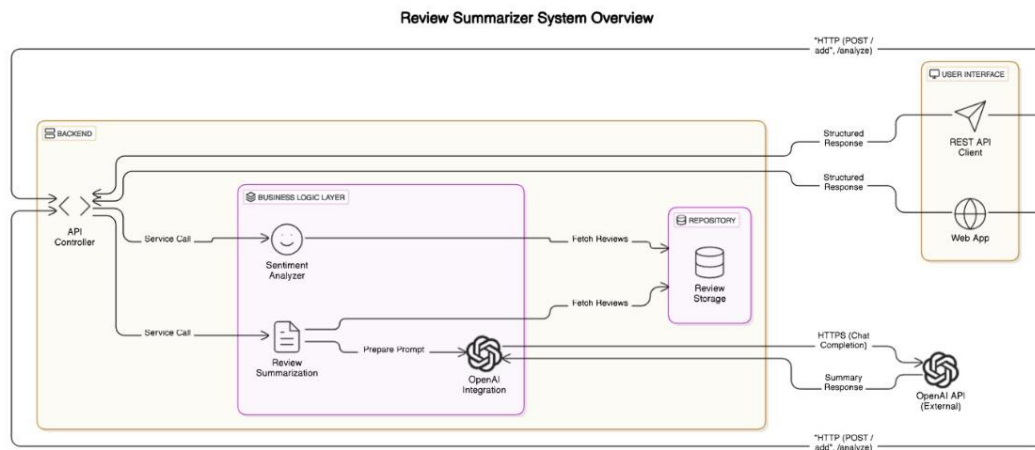
The Review Summarizer System is designed to process customer reviews and generate insightful   summaries. The system has a REST API that accepts HTTP requests from a web app or client. Upon receiving a request, the API Controller triggers the Sentiment Analyzer and Review Summarization components in the Business Logic Layer. Both components fetch reviews from the Review Storage repository. For summarization, a prompt is prepared and sent to the OpenAI API, which returns a concise summary. The final structured response is sent back to the user interface for display.

Review Summarizer Web Application Data Flow
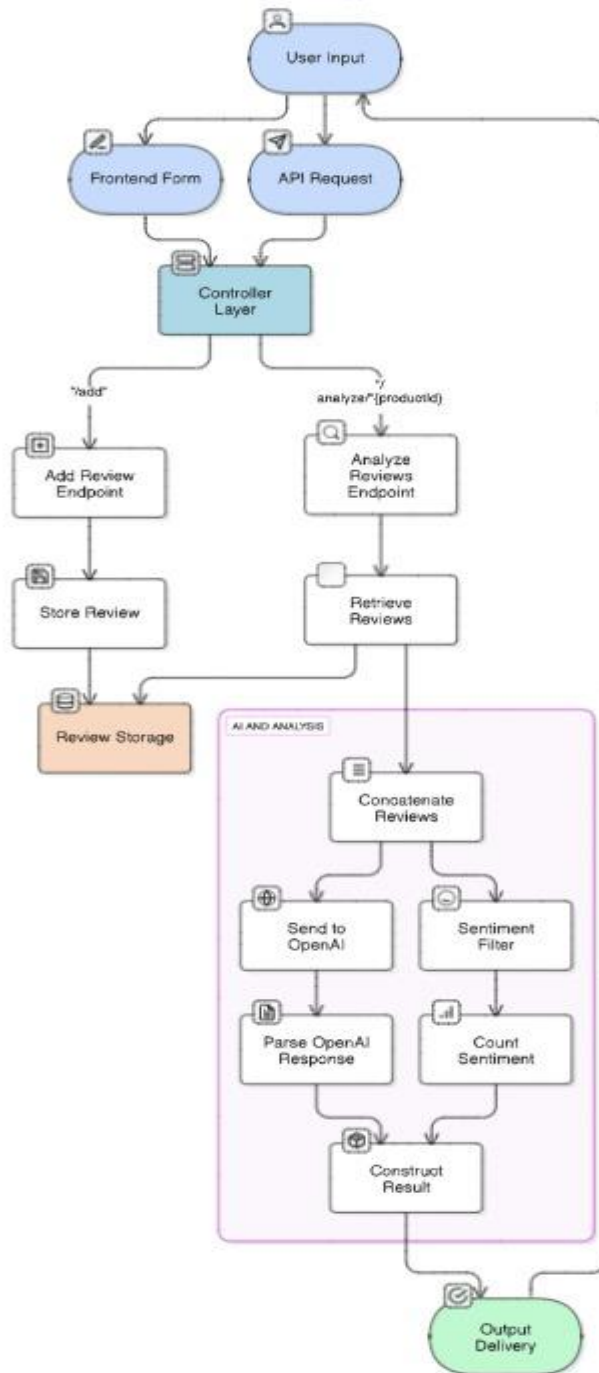
Results and Evaluation:

The Review Summarizer application was evaluated based on its ability to accurately extract key sentiments from customer reviews and generate concise summaries that reflect the overall tone of user feedback. The system was tested using multiple sets of product reviews containing a mix of positive, negative, and neutral sentiments.

During testing, the application successfully accepted and stored user-submitted reviews through the /add API endpoint. On invoking the /analyze/{productId} endpoint, the system retrieved the relevant reviews, categorized them based on sentiment keywords, and used the OpenAI GPT model to return an intelligible summary. The output typically included 2–4 lines summarizing the reviews, followed by metadata such as the number of positive and negative reviews. For instance, when tested with a product having ten reviews—seven positive and three negative—the summary accurately emphasized the most mentioned points like "great battery life" or "slow customer service."

The evaluation focused on three key performance metrics: relevance of the summary, accuracy in sentiment classification, and response time. The GPT-powered summaries were found to be highly relevant and grammatically coherent. The keyword-based sentiment filter, though simple, achieved acceptable accuracy for most informal review formats. The average response time for generating summaries remained under 3 seconds, ensuring a smooth user experience.

While the current approach does not use advanced machine learning models for sentiment analysis, the integration with OpenAI's language model compensates by producing high-quality summaries. This makes the system ideal for lightweight deployment .

Overall, the Review Summarizer meets its design goals effectively by delivering useful summaries with minimal delay, supporting product decision-making and improving end-user readability of customer feedback.
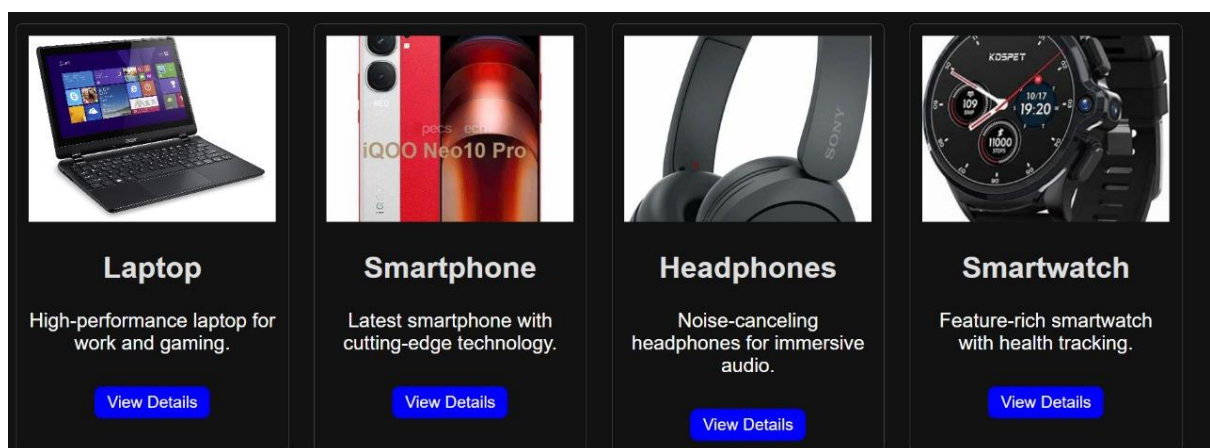
Output:

Fig 1: E-Commerce Web Application

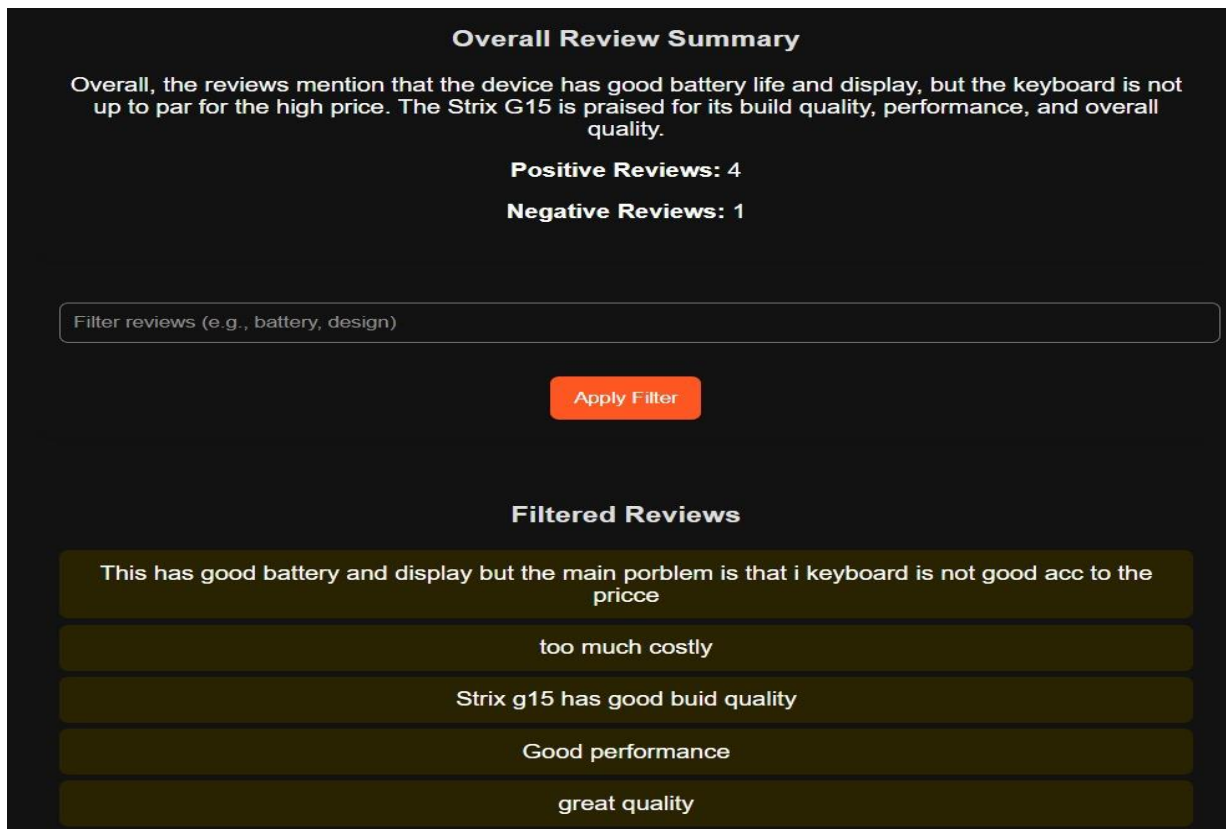Fig 2:User Interface page to write the Reviews

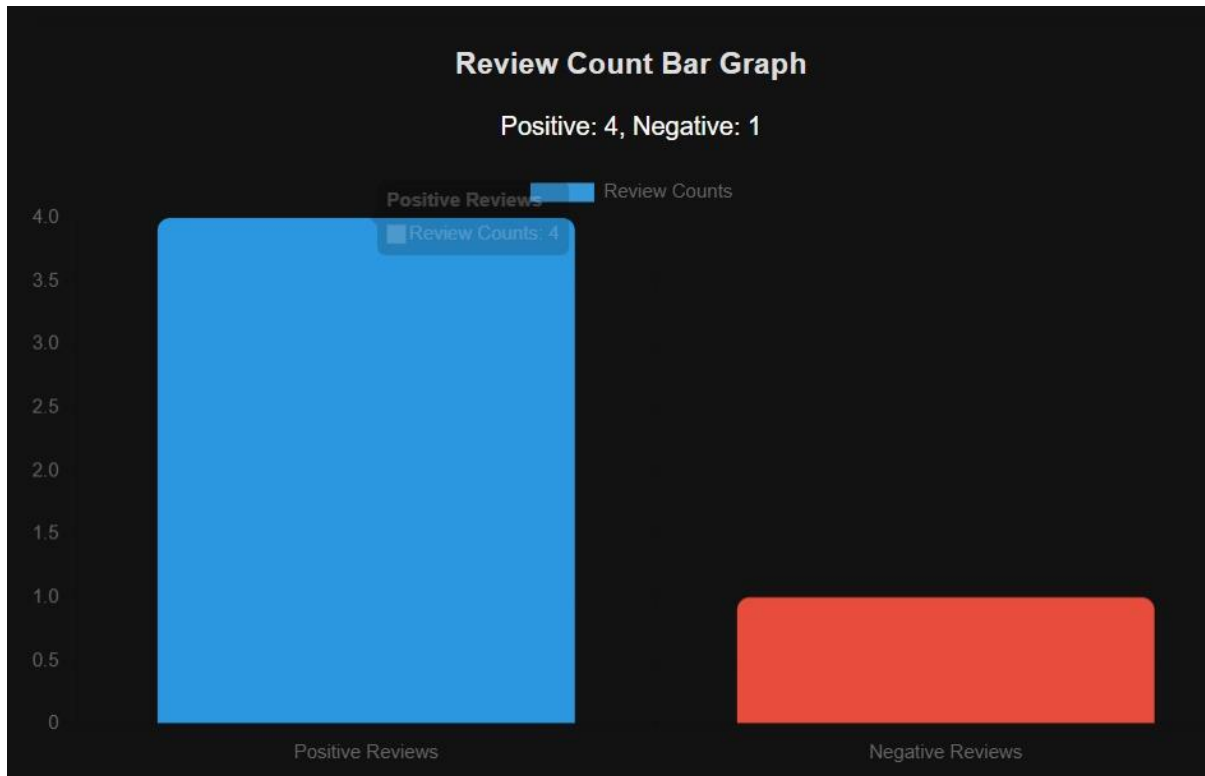Fig 3:User Interface to apply the filters

Fig 4:Graphs to represent the count of positive and negative reviews

Conclusion:

The Review Summarizer application effectively addresses the challenge of navigating through large volumes of user-generated feedback by providing concise and meaningful summaries. By leveraging a simple yet powerful combination of RESTful architecture and OpenAI's advanced language model, the system is capable of delivering real-time, human-like summaries that highlight both positive and negative sentiments from customer reviews. The use of Java with Spring Boot ensures modularity, scalability, and ease of integration into larger product platforms.

Through the successful implementation of sentiment classification and AI-driven summarization, the project demonstrates how artificial intelligence can be seamlessly integrated into traditional web applications to enhance user experience. The evaluation results confirm that the system performs well in terms

of accuracy, relevance, and response time. Moreover, the project sets a strong foundation for future work in intelligent review processing, such as incorporating domain-specific sentiment analysis, multi-language support, or fully personalized summaries.

In conclusion, this project showcases the potential of AI-enhanced tools in simplifying decision-making for end users, making it a valuable contribution to the domain of intelligent customer feedback systems.

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