

ENHANCING ACCESS AND USER EXPERIENCE IN K-DRAMA CONSUMPTION: DEVELOPMENT AND EVALUATION OF THE 'K-DRAMA UNIVERSE' APPLICATION

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Abstract.

In recent decades, the South Korean entertainment industry has experienced rapid growth, particularly in the production and distribution of Korean dramas (K-Dramas). Despite their global popularity, fans often face challenges in finding comprehensive and reliable information about these dramas. This research addresses these issues by developing the "K-Drama Universe" chatbot, designed to provide an interactive, user-friendly, and real-time source of information. Utilizing data collected from MyDramaList.com through web scraping, the chatbot offers features such as an extensive K-Drama library, actor profiles, sentiment analysis of reviews, and personalized drama recommendations. The development process involved meticulous data cleaning, ensuring accuracy and consistency, and integrating advanced algorithms for generating relevant recommendations. The chatbot's interface, inspired by platforms like ChatGPT and Google Gemini, enhances user experience by offering a seamless and intuitive navigation. The successful deployment of this chatbot significantly improves the accessibility and quality of information available to K-Drama enthusiasts, ultimately enhancing their viewing experience.

Keywords: K-Drama, chatbot, MyDramaList.com, data cleaning, interactive application

INTRODUCTION

In recent decades, the entertainment industry of South Korea has experienced rapid and dynamic growth, particularly in the production and distribution of Korean dramas (K-Dramas). This surge in the entertainment sector has not only positioned K-Dramas as a favorite pastime within South Korea but has also catapulted them to significant global popularity[1]. The rise of K-Dramas can be attributed to a combination of factors that have collectively contributed to their widespread appeal and international acclaim.

One of the primary factors driving the success of K-Dramas is their compelling storylines. Korean dramas often feature intricate and engaging plots that captivate audiences from the very first episode [2]. These storylines frequently explore a diverse range of themes, from romance and family dynamics to historical sagas and contemporary social issues. The ability to weave complex narratives with emotional depth and unexpected twists has made K-Dramas a unique and addictive form of entertainment, keeping viewers eagerly anticipating each new episode.

High production quality is another key element that has elevated K-Dramas to global prominence. South Korean production companies invest significantly in the technical aspects of drama production, including cinematography, set design, and special effects[3]. This commitment to high standards ensures that K-Dramas are visually stunning and professionally crafted, rivaling the quality of productions from other major entertainment industries. The polished aesthetics and meticulous attention to detail have made K-Dramas visually appealing and immersive experiences for viewers around the world[4].

The captivating performances of talented actors and actresses further contribute to the allure of K-Dramas. South Korea is home to a vast pool of skilled performers who bring characters to life with authenticity and charisma. The ability of these actors to convey a wide range of emotions and create relatable, multi-dimensional characters has resonated deeply with audiences[5]. Many K-Drama stars have gained international fame, attracting viewers not only through their performances but also through their personal charm and public personas.

The global reach of K-Dramas has been facilitated by the availability of subtitles and the strategic distribution of content through various online streaming platforms. Viewers from different countries, including the United States, Japan, China, and Indonesia, can easily access and enjoy K-Dramas in their native languages. This accessibility has played a crucial role in building a diverse and dedicated international fanbase, fostering a sense of community among viewers who share a common love for Korean dramas[1].

With the increasing number of K-Drama productions each year, audiences face challenges in accessing complete, accurate, and up-to-date information about these dramas. Required information typically includes drama reviews, actor profiles, personalized drama recommendations, and sentiment analysis

from viewer reviews. Moreover, ease of access and the speed of obtaining this information are crucial factors for K-Drama enthusiasts worldwide[6].

Addressing these needs, our team has developed a chatbot application named “K-Drama Universe.” This application is designed to provide interactive, user-friendly, real-time information services regarding K-Dramas released between 2015 and 2023.

A chatbot is an artificial intelligence (AI) software designed to simulate a conversation with human users, typically through text or voice interactions[7]. These virtual assistants can be integrated into websites[8], messaging apps[9], mobile applications[10], or even standalone devices, providing users with automated responses to their inquiries. Chatbots are used in various industries, including customer service, healthcare, e-commerce, and entertainment, to enhance user engagement, streamline operations, and provide instant support. They can perform a range of tasks, from answering frequently asked questions and processing orders to offering personalized recommendations and troubleshooting issues.

Chatbots operate based on predefined rules or more advanced AI and machine learning (ML) techniques. Rule-based chatbots follow a set of scripted responses and are ideal for handling simple and straightforward interactions[11]. These chatbots use if-then-else logic to respond to user inputs. For example, if a user asks about store hours, the chatbot will provide the relevant information based on the predefined script. While effective for specific tasks, rule-based chatbots have limited flexibility and cannot handle complex queries or learn from interactions[12].

In contrast, AI-powered chatbots utilize natural language processing (NLP) and machine learning algorithms to understand and respond to user inputs more dynamically. NLP allows chatbots to interpret and process human language, enabling them to understand context, detect intent, and generate relevant responses. These chatbots can handle more complex conversations, adapt to user preferences, and improve over time through continuous learning[7]. Machine learning enables chatbots to learn from past interactions, refining their responses and becoming more accurate as they accumulate data[13].

The development of this application is supported by a dataset sourced from MyDramaList.com. Data was collected using web scraping techniques and comprehensively processed to ensure accurate, error-free information. Data

cleansing processes included type validation, appropriate column renaming, handling missing values, and eliminating duplicates. Clean data was then exported in CSV format and uploaded to the cloud for optimal accessibility and availability. Furthermore, the K-Drama Universe application is designed for easy access anytime, anywhere, providing users with the convenience of swiftly obtaining the information they need. With reliable data and advanced interactive features, the application aims to enhance user experience in enjoying K-Dramas.

Our team also recommends further development initiatives, such as expanding the dataset to deliver more relevant results and enhancing user engagement through a more interactive chatbot design. Routine evaluation of the chatbot model using prompt engineering techniques is also proposed to ensure more relevant and accurate responses[14].

Through the development and refinement of the K-Drama Universe application, we aim to make a positive contribution by facilitating access to K-Drama information, enhancing user experience, and supporting the continued growth of South Korea's entertainment industry in reaching a broader audience.

METHODS

The project aims to address several common issues faced by fans of Korean dramas. One of the primary challenges that many fans encounter is the difficulty in finding comprehensive and reliable information about the dramas they are interested in. This includes essential details such as reviews, recommendations, and actor profiles. Often, the available information is scattered across different platforms, making it a cumbersome task for fans to gather all the relevant data they need in one place. This fragmented approach not only consumes time but also creates frustration among users who are seeking a seamless viewing experience.

In addition to the scattered nature of information, we often find that reviews on various platforms lack clear sentiment analysis. This can make it challenging for users to determine whether a drama has predominantly positive or negative feedback from other viewers[15]. Without a clear understanding of the general sentiment, it might be difficult for fans to decide if a particular drama is worth watching. The ambiguity in reviews can lead to uncertainty and potentially discourage viewers from exploring new dramas that they might otherwise enjoy.

Furthermore, the recommendations provided by various platforms often don't align with user preferences. These recommendations can be irrelevant and lead to a less satisfying viewing experience. Users may receive suggestions for dramas that don't match their tastes or interests, causing disappointment and reducing their engagement with the platform. Effective recommendations are crucial for enhancing user satisfaction and ensuring that viewers discover content that resonates with their preferences.

Lastly, the dispersion of information related to dramas across multiple sources poses a significant challenge. Fans often have to switch between different platforms to gather complete information about a drama. For example, they might need to visit one site for reviews, another for actor details, and yet another for recommendations. This fragmented approach is not only inconvenient but also detracts from the overall viewing experience. A centralized source of information would greatly benefit users by providing all necessary details in one place, streamlining their search process, and enhancing their enjoyment of Korean dramas.

To address these problems, our team has developed a chatbot application called "K-Drama Universe." This application offers several key solutions. It provides a comprehensive and up-to-date database of Korean dramas from 2015 to 2023. Additionally, it delivers detailed reviews of actors and dramas, including sentiment analysis of drama reviews. Using recommendation algorithms, the app suggests dramas that match user preferences, based on review data and the preferences of similar users. Designed with a user-friendly interface, the application can be accessed anytime and anywhere, offering reliable and complete real-time information.

The core components of a chatbot include the user interface, NLP engine, and backend systems. The user interface is the front end where users interact with the chatbot, typically through a chat window or voice interface. The NLP engine is responsible for processing and understanding user inputs, converting them into structured data that the chatbot can work with[16]. This involves tasks such as tokenization, part-of-speech tagging, entity recognition, and sentiment analysis. The backend systems handle the business logic, data retrieval, and integration with other services[17]. For example, if a user asks for weather information, the backend system will query a weather API and return the relevant data to the chatbot for display[7].

The interaction flow of a chatbot generally follows several steps. When a user sends a message, the chatbot receives the input and uses the NLP engine to analyze and interpret it. The chatbot then determines the user’s intent and extracts any necessary entities (such as dates, locations, or product names)[14]. Based on this information, the chatbot queries its backend systems or knowledge base to retrieve the relevant response[18]. Finally, the chatbot generates a response and sends it back to the user, completing the interaction. Advanced chatbots can also handle follow-up questions, manage multi-turn conversations, and maintain context across interactions, providing a more human-like experience[19].

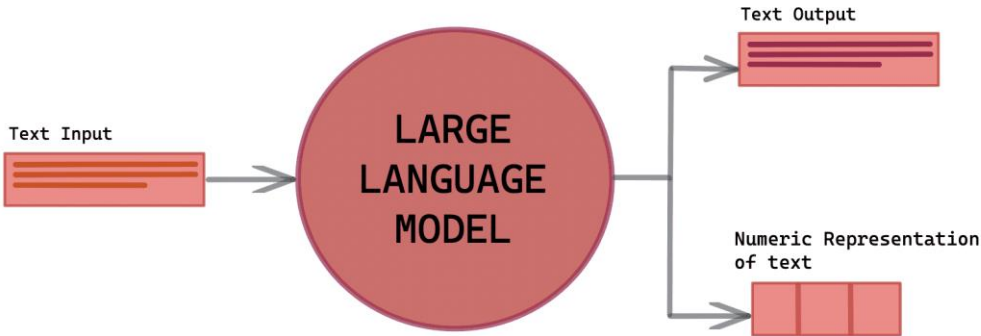


Fig. 1. Large Language Model

The data used in this project encompasses information related to Korean dramas, drama reviews, drama recommendations, and actor profiles from 2015 to 2023. The collected data consists of various datasets: the Korean Drama Dataset, Recommendations Dataset, Reviews Dataset, and Actors Dataset. Each dataset has varying column counts and conditions, including columns with missing values and an absence of duplicate data. Data was collected using web scraping techniques from MyDramaList.com, allowing for automatic and efficient data extraction from the website.

To ensure data accuracy, consistency, and usability, the project underwent a thorough data cleaning process. Initial steps included checking and removing duplicate values from the datasets. Then, the team verified that all data types were correct and appropriately renamed columns. Missing values were addressed by either filling in or removing the missing data points. Typographical errors within the data were corrected to ensure precision. Finally, all cleaned datasets were exported to CSV format and uploaded to S3 for optimal accessibility and reliability. By following these methodological steps, the project aims to provide an effective solution to the challenges faced by K-Drama fans, improving their experience and access to relevant information.

RESULT AND DISCUSSION

The development of the “K-Drama Universe” application began with a comprehensive analysis of the issues faced by Korean drama fans. The primary challenges identified included difficulties in finding reliable and comprehensive information about dramas, unclear sentiment in reviews, irrelevant recommendations, and limited accessibility to information spread across various platforms. These insights laid the foundation for designing an application that addresses these specific problems effectively. The primary objective was to create a solution that addresses the difficulties in finding comprehensive and reliable information about dramas, actor profiles, reviews, and recommendations. The initial phase involved extensive research and requirement analysis to ensure that the chatbot would meet user expectations and provide a seamless, user-friendly experience.

The initial phase of the project focused on data collection. Using web scraping techniques, data was gathered from MyDramaList.com, which provided detailed information on Korean dramas, actor profiles, user reviews, and recommendations. This data collection process was automated to ensure efficiency and completeness, resulting in a robust dataset covering dramas from 2015 to 2023. The collected data was then organized into four main datasets: the Korean Drama Dataset, Recommendations Dataset, Reviews Dataset, and Actors Dataset.

Following data collection, a meticulous data cleaning process was undertaken. The first step involved checking for and removing duplicate values to ensure data integrity. Next, the data types were verified and columns were appropriately renamed to maintain consistency and clarity. Missing values were

addressed by either filling in gaps or removing incomplete data entries. Typographical errors were corrected to ensure that the dataset was accurate and reliable. Once the cleaning process was completed, the datasets were exported to CSV format and uploaded to S3, making them easily accessible for further development and analysis.

With clean and well-organized data, the development team proceeded to build the application. The “K-Drama Universe” app was designed with a user-friendly interface to ensure ease of use. Key features such as a comprehensive drama library, detailed actor and drama reviews, sentiment analysis, and personalized drama recommendations were integrated into the app. The recommendation system utilized advanced algorithms to analyze user preferences and suggest relevant dramas, enhancing the overall user experience.

The application was also designed to be interactive and accessible, allowing users to obtain real-time information anytime and anywhere. Regular testing and iterations were conducted to refine the app’s functionality and ensure a seamless user experience. The final product aimed to provide a reliable and comprehensive solution for K-Drama enthusiasts, addressing the primary challenges they face in accessing and enjoying their favorite dramas. Key features such as a comprehensive drama library, detailed actor and drama reviews, sentiment analysis of reviews, and personalized drama recommendations were integrated into the chatbot. Advanced algorithms were used to analyze user preferences and generate relevant recommendations, enhancing the user experience by suggesting dramas that matched their tastes.

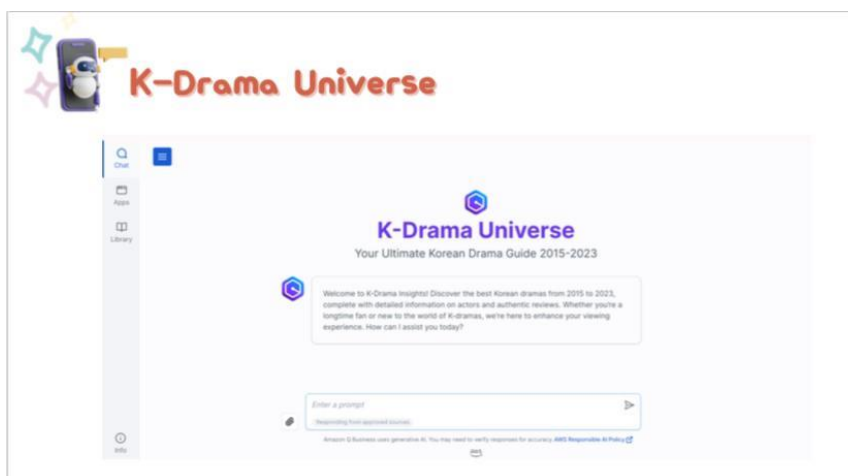


Fig. 2. Application Interface on Start

The integration phase involved combining the processed data with the chatbot's interface and functionality. This required robust backend development to ensure the chatbot could efficiently handle user queries and provide accurate, real-time information. The chatbot was subjected to rigorous testing to identify and fix any bugs or issues. Various testing methods, including unit testing, integration testing, and user acceptance testing, were employed to ensure the chatbot performed reliably and met user expectations.

Once the chatbot passed all testing phases, it was deployed for public use. However, the development process did not end there. Continuous monitoring and user feedback were essential for further refinement. The team implemented regular updates and enhancements based on user interactions and feedback to improve the chatbot's performance and usability. Advanced techniques like prompt engineering were used to fine-tune the chatbot's responses, ensuring they remained relevant and accurate.

The “K-Drama Universe” chatbot was designed with an interface that mirrors the familiar and user-friendly layout of platforms like ChatGPT and Google Gemini. This design choice was intentional to ensure that users would feel comfortable and intuitively understand how to interact with the chatbot from the moment they open the application. By leveraging the established design principles of these popular AI platforms, the development team aimed to create a seamless and engaging user experience.

Similar to ChatGPT, users can type in their queries or requests in a chat-like format and receive immediate, contextually relevant responses. This

conversational style makes the interaction feel natural and effortless, allowing users to ask for information about their favorite dramas, actors, or even get personalized recommendations in a straightforward and engaging manner. The chatbot's responses are designed to be clear and informative, providing detailed insights just like a conversation with a knowledgeable friend.

The layout of “K-Drama Universe” also includes intuitive navigation options similar to those found in Google Gemini. Users can easily switch between different sections of the app, such as the drama library, actor profiles, reviews, and recommendations, with simple clicks or taps. The interface is designed to be visually appealing, with clean lines, modern typography, and vibrant images that enhance the overall user experience. Each section is organized in a way that allows users to quickly find the information they need without feeling overwhelmed by clutter.

Incorporating elements of interactivity, the chatbot also supports multi-turn conversations, enabling users to dive deeper into specific topics. For example, if a user starts by asking for the latest popular dramas, they can follow up with questions about specific actors or request sentiment analysis of user reviews for those dramas. This dynamic interaction model is inspired by the conversational capabilities of platforms like ChatGPT, making the experience richer and more engaging for users.

Moreover, the design ensures that the chatbot is accessible across various devices, whether users are on their desktops, tablets, or smartphones. The responsive design adapts to different screen sizes and orientations, ensuring that the application is convenient to use on-the-go or from the comfort of home. This cross-platform compatibility, akin to that of Google Gemini, ensures that users have a consistent and enjoyable experience regardless of their device.

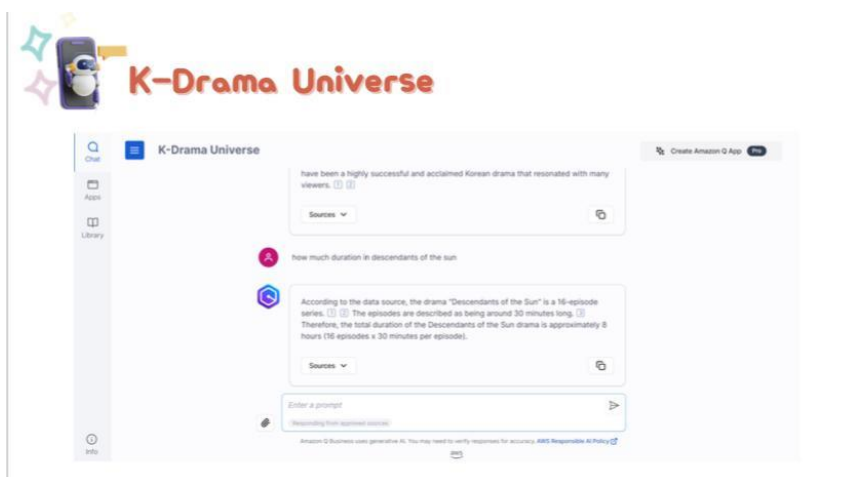


Fig. 3. K-Drama Universe Chatbot

CONCLUSION

The development and deployment of the “K-Drama Universe” chatbot have successfully addressed the common challenges faced by fans of Korean dramas, including difficulties in finding reliable and comprehensive information, unclear sentiment in reviews, irrelevant recommendations, and the dispersion of information across multiple platforms. By integrating advanced data collection and cleaning techniques, alongside a user-friendly interface modeled after popular AI platforms like ChatGPT and Google Gemini, the chatbot offers an intuitive and engaging experience. The app provides real-time, accurate, and detailed information on K-Dramas, actor profiles, and user reviews, while also delivering personalized recommendations that align with user preferences. Through continuous monitoring and iterative improvements, the “K-Drama Universe” chatbot ensures a seamless and satisfying experience for K-Drama enthusiasts worldwide, enhancing their ability to enjoy and connect with their favorite content. This project not only meets the immediate needs of K-Drama fans but also sets a precedent for future developments in the realm of interactive entertainment information systems.

ACKNOWLEDGMENTS

Deepest gratitude is extended to PT Revolusi Cipta Edukasi for the invaluable support and facilitation provided throughout the internship. The

commitment to fostering a conducive environment for learning and research played a crucial role in the successful completion of this study. The resources, guidance, and encouragement provided by the team at PT Revolusi Cipta Edukasi were instrumental in navigating the complexities of this project and achieving the research objectives.

Particular thanks are given for the mentorship and expertise shared by supervisors and colleagues at PT Revolusi Cipta Edukasi. The insights and feedback provided were essential in refining the approach and ensuring the quality of the work. The collaborative spirit and dedication to excellence within the organization were sources of inspiration, pushing the boundaries of capabilities and striving for outstanding results.

This research would not have been possible without the unwavering support and encouragement from everyone at PT Revolusi Cipta Edukasi. Gratitude is expressed for the opportunity to be part of such a dynamic and forward-thinking company. Appreciation is given for believing in the potential and for providing the platform to develop and showcase skills.

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