

A
Mini Project Report
On
MarketMinds :
Unleashing Marketminds Insights Through LLM
Submitted in partial fulfillment of the requirements for the Degree
Third Year Engineering Computer Science Engineering (Data Science)

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CERTIFICATE

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ABSTRACT

In today's fast-paced digital landscape, effective brand storytelling and understanding competitor's strategies are vital for business success. This project introduces a comprehensive platform that combines advanced natural language processing with social media analysis to empower brands in these areas. The platform utilizes LLAMA 2, an advanced language model, to help brands craft compelling narratives that resonate with their audience. LLAMA 2 analyzes data specific to each brand, enabling the creation of authentic and engaging storytelling content. By leveraging LLAMA 2, brands can differentiate themselves in the competitive market and strengthen their connection with customers.

Additionally, the platform incorporates social media campaign analysis to provide insights into competitors' strategies and performance. By examining social media engagement metrics such as likes and comments on competitors' posts, brands can gain valuable intelligence about their competitors' tactics and audience engagement. This information allows brands to refine their own marketing strategies and stay ahead of the competition.

Overall, this project aims to empower brands to thrive in the digital realm by leveraging advanced technology for brand storytelling and competitor analysis. By providing tools and insights to enhance brand narratives and understand competitive landscapes, the platform contributes to the growth and success of businesses in the dynamic digital marketplace.

Chapter 1

Introduction

In today's digital world, where people spend a lot of time on social media and are bombarded with ads, it's becoming really hard for companies to make their voices heard. Every company wants to tell its story and connect with customers, but with so much competition, it's tough to stand out. This report is all about how companies can use new tools and techniques to tell their stories better and understand what their competitors are doing online. We'll explore how technology, like fancy computer programs and social media analysis tools, can help companies do this more effectively. Our goal is to help businesses figure out how they can use these cool tools to tell their stories in a way that grabs people's attention and sets them apart from the competition. We'll also look at how companies can learn from their competitors' strategies and adapt their own approaches to succeed in the digital world.

This report aims to offer practical advice and insights that businesses can use to improve their online presence and stay ahead in the digital age. By sharing real-world examples and actionable tips, we hope to empower companies to navigate the challenges of the online landscape with confidence and achieve their goals. We believe that by harnessing the power of technology and storytelling, businesses can create meaningful connections with their audience and drive success in the digital marketplace.

1.1 Purpose:

The purpose of this document is to provide a comprehensive overview of our project, detailing the integration of advanced technology for brand storytelling and competitor analysis in the digital marketing landscape. It aims to elucidate the significance of leveraging natural language processing (NLP) models and social media analytics tools to enhance brand performance and competitiveness. The primary audience for this document includes marketing professionals, brand managers, business owners, and researchers interested in leveraging technology for brand management and competitive analysis. Additionally, it serves as a valuable resource for students and academics studying digital marketing, natural language processing, and social media analytics.

1.2 Problem Statement:

Existing brand storytelling platforms lack integration with competitor analysis tools, leading to disjointed workflows and limited insights. This fragmentation hampers brands' ability to understand and respond effectively to competitor strategies. To address this gap, there is a pressing need for a seamless platform

that combines storytelling and competitor analysis features. Such a platform would empower brands to craft compelling narratives while staying ahead of competitors' strategies in real-time. By integrating storytelling tools with comprehensive competitor analysis capabilities, brands can streamline workflows, gain deeper insights, and execute more strategic marketing campaigns. This integration would enable brands to align their storytelling efforts with competitive intelligence, driving greater engagement and market success. In essence, a seamless platform offers the opportunity for brands to unlock their full potential and thrive in the competitive digital landscape.

1.3 Objectives:

1. Utilize advanced natural language processing (NLP) models, such as LLAMA 2, to develop compelling and authentic brand narratives that resonate with the target audience.
2. Optimize Competitor Analysis: Employ social media analytics tools to analyze competitor activities, extract valuable insights from comments, likes, and other engagement metrics, and inform strategic decision-making.
3. Enable brands to differentiate themselves in the competitive marketplace by leveraging insights derived from brand storytelling and competitor analysis to drive customer engagement and business growth.
4. Provide marketers and brand managers with practical strategies, tools, and resources to navigate the complexities of the digital landscape and achieve their marketing objectives effectively.
5. Contribute to the body of knowledge in digital marketing and brand management by sharing insights, methodologies, and best practices derived from the integration of advanced technology and strategic analysis.

1.4 Scope:

The project's scope involves creating a user-friendly platform that combines storytelling and competitor analysis tools. We'll use easy-to-understand language and social media data to help brands tell better stories and understand what their competitors are doing. The platform will allow brands to see what's working for their competitors and use that information to improve their own marketing strategies. We'll also test the platform with users to make sure it's easy to use and helpful. Our goal is to create a platform that helps brands stand out and do better in the digital world.

Chapter 2

Literature Review

In the ever-evolving landscape of recommendation systems, a multitude of research papers have emerged to advance our understanding and improve user experiences.

“Generating Campaign Ads & Keywords for Programmatic Advertising” [1] Experimenting with different ads and keywords is usual practice in search marketing. Advertisers pause underperforming keywords and ads of a search campaign, and replace them with better alternatives. Therefore, new ads and keywords need to be produced easily for effective campaign management. We built GeNN for generating campaign ads and keywords programmatically. GeNN is based on language modeling. Using the existing keywords of a campaign as input, our GPT-2 based generator created novel keywords of good quality with a high number of expected clicks and conversions according to the forecast data provided by Google’s keyword planner. Using the product landing page and sample ad copies as input, our GPT2 based summarizer was able to generate production-ready ads. One of the ads that was tested for two weeks in a real search campaign had a CTR of 6% and converted real users. Finally, we compared GeNN’s ad performance with a recent method based on two encoder-decoder RNNs being used in parallel; GeNN outperformed this method.

“Llama 2: Early Adopters' Utilization of Meta's New Open-Source Pretrained Model” [2] The AI field sees ongoing innovation with the introduction of open-source pre-trained models like Llama 2 by Meta. This paper explores Llama 2's features and how early adopters use it in their projects. Through a qualitative study, we examine their perspectives and strategies, highlighting strengths, weaknesses, and areas for improvement. Insights from this study benefit both the AI community and Meta in refining future model versions. We also discuss Llama 2's impact on open-source AI, outlining challenges and opportunities for developers and researchers. This study serves as an early exploration of Llama 2, promising further research avenues.

“Llama 2: Open Foundation and Fine-Tuned Chat Models” [3] Llama 2, a set of pretrained large language models (LLMs) ranging from 7 billion to 70 billion parameters. Our fine-tuned LLMs, named Llama 2-Chat, are designed for dialogue tasks and surpass other open-source chat models in most benchmarks. Human evaluations suggest they could serve as alternatives to closed-source models. We provide details on our fine-tuning approach and safety enhancements to encourage community collaboration and responsible LLM development.

“Transformers in Machine Learning” [4] This study explores methods in Transformer Machine Learning, focusing on their versatility and applications. Transformers, neural network architectures, are extensively

used across various studies, such as text compression, chemical image recognition with 96% accuracy, and emotion detection in social media conversations. The study aims to review literature from different journals discussing transformers' applications, presenting subjects, datasets, data analysis methods, years, and achieved accuracies. Researchers can use these methods to draw conclusions and identify opportunities for further research.

“A comprehensive survey on applications of transformers for deep learning tasks” [5]: The transformer, a deep neural network with self-attention, excels in understanding sequential data. It's gained attention in AI for its ability to handle long dependencies and enable parallel processing. Our survey from 2017 to 2022 highlights its applications in NLP, computer vision, audio processing, healthcare, and IoT. We analyses influential transformer- based models in these areas to provide insights for researchers and enhance understanding of this transformative technology.

Chapter 3

Proposed System

The "MarketMinds: Unleashing MarketMinds Insights Through LLM" project is not just a convergence of technologies, but a paradigm shift in how businesses approach product marketing and competitive analysis. Our proposed system goes beyond mere aggregation of tools; it represents a fundamental transformation in the way businesses harness the power of data-driven insights. By integrating state-of-the-art machine learning algorithms with intuitive user interfaces, MarketMinds empowers users with unprecedented capabilities to navigate the complexities of the modern marketplace.

Furthermore, the proposed system will feature customizable dashboards and reports, allowing users to tailor their experience to suit their unique business objectives and preferences. Whether it's tracking the performance of marketing campaigns, monitoring competitor activities in real-time, or uncovering emerging market trends, MarketMinds provides a flexible and adaptive solution that adapts to the evolving needs of businesses.

Moreover, the proposed system will be designed with scalability and interoperability in mind, ensuring seamless integration with existing workflows and third-party applications. This interoperability not only enhances user experience but also facilitates collaboration across teams and departments, fostering a culture of data-driven decision-making and innovation within organizations.

In summary, the proposed system represents a holistic approach to marketing intelligence, offering unparalleled efficiency, insights, and agility to businesses of all sizes. By harnessing the power of machine learning and data analytics, MarketMinds empowers businesses to stay ahead of the curve in today's competitive landscape, driving growth, and success in the digital era.

Chapter 4

Requirements Analysis

LLAMA2 (Large Language Model for Advanced Applications):

Definition: LLAMA2 is an advanced version of a large language model developed by Meta (formerly Facebook). It comprises a collection of pre-trained and fine-tuned LLMs optimized for specific tasks or domains.

Fine-tuning: LLAMA2 includes fine-tuned LLMs tailored for specific use cases, such as dialogue generation (LLAMA2-Chat). These models undergo additional training on task-specific datasets to enhance their performance on specific tasks. In our case we have trained the llama2 mode on the advertisement dataset, so that the appropriate caption for the products/Brands is generated.

Performance: LLAMA2 models often outperform opensource alternatives on various benchmarks, demonstrating their effectiveness in real-world applications such as chatbots, text summarization, and question answering.

Transformer (Neural Network Architecture):

Transformers are neural network architectures that are considered as inputs. Transformers are widely used in various studies with various objects. The transformer is one of the deep learning architectures that can be modified. Transformers are also mechanisms that study contextual relationships between words. Transformers are used for text compression in readings. Transformer to detect emotions in social media conversations.

Transformer Backbone: Adopt the Transformer architecture as the core model structure. Transformers consist of encoder and decoder stacks, each containing multiple layers of self-attention and feed-forward neural networks.

Attention Mechanisms: Leverage attention mechanisms within the Transformer architecture to enable the model to focus on relevant parts of the input sequence when generating output tokens. Self-attention allows the model to capture long-range dependencies efficiently. The utilization of multihead attention facilitates the neural network in learning and capturing diverse characteristics of the input sequential data. Consequently, this enhances the representation of the input contexts, as it merges information from distinct features of the attention mechanism within a specific range, which could be either short or long. This approach allows the attention mechanism to jointly function, which results in better network performance.

Application: In our project we have used llama2 model which is based on transformers architecture. Using the transformers architecture, we are generating the related caption.

The process of text generation utilizing Transformer architecture involves several stages, each crucial for producing coherent and contextually relevant output based on user input. These stages are meticulously

designed to ensure the effective utilization of the Transformer model's capabilities. Let's explore each stage:

Preprocessing Input: The initial stage involves preprocessing the user input. This typically includes tokenization, where the input text is broken down into individual tokens or words. Additionally, any necessary formatting or encoding steps are applied to prepare the input for further processing.

$$f(x) = \frac{2\sqrt{2}\cos x}{\cos \frac{x}{2} - \sin \frac{x}{2}}$$

$$f(x) = \frac{2\sqrt{2}\cos x}{\sin^x - \sin^x}$$

Model Encoding: In this stage, the pre-processed input is fed into the Transformer model for encoding. The Transformer architecture employs multiple layers of self-attention mechanisms, allowing the model to capture intricate patterns and dependencies within the input text.

$$\mathcal{E}(x) = \int d^3k \sqrt{\frac{2\omega}{(2\pi)^3}} \left\{ \begin{array}{l} c^3(e_3 + e_4) e^{-ikx} + \\ [c^{*2}e_1 + c^{*4}(e_3 + e_4)] e^{ikx} \end{array} \right\}, \omega \equiv \sqrt{\vec{k}^2}$$

Contextual Encoding: Following the initial encoding, the Transformer model generates contextual embeddings for each token in the input sequence. These embeddings encapsulate both the token's semantic meaning and its contextual relationships with surrounding tokens, enabling the model to understand the nuances of the input text.

$$\mathcal{E}(x) = \int d^3k \sqrt{\frac{2\omega}{(2\pi)^3}} \left\{ \begin{array}{l} [c^1e_1 + c^3(e_3 + e_4)] e^{-ikx} + \\ [c^{*2}e_1 + c^{*4}(e_3 + e_4)] e^{ikx} \end{array} \right\}, \omega \equiv \sqrt{-k^2}$$

Generation Process: Once the input is encoded and contextualized, the generation process begins. At this stage, the Transformer model utilizes its learned representations to generate new text based on the input context. This involves iteratively predicting the most probable next token given the preceding tokens, effectively generating coherent and contextually relevant output.

$$f'_N = \left\{ \pi^{-1/2} \sum_{n=0}^N \frac{(-1)^n}{n!} \left(\frac{\lambda}{4} x^4 \right)^n e^{-x^2} \text{ for } |x| < x_{c,N} 0 \text{ for } |x| > x_{c,N} \right.$$

$$f'_N = \left\{ \pi^{-1/2} \sum_{n=0}^N \frac{(-1)^n}{(n)} \left(\frac{\lambda}{4} x^4 \right)^n e^{-x^2} \text{ for } |x| < x_{c,N} 0 \text{ for } |x| > x_{c,N} \right.$$

Sampling Strategy: To enhance the diversity and creativity of the generated text, a sampling strategy is employed. This strategy determines how the model selects the next token during the generation process.

Chapter 5

Project Design

5.1 Use Case diagram:

Here is the Use Case Diagram in Fig. 5.1 that describe the market minds, there will be an user and AI based model's for the analytics and story generation purpose. The inner activities describes the logical working.

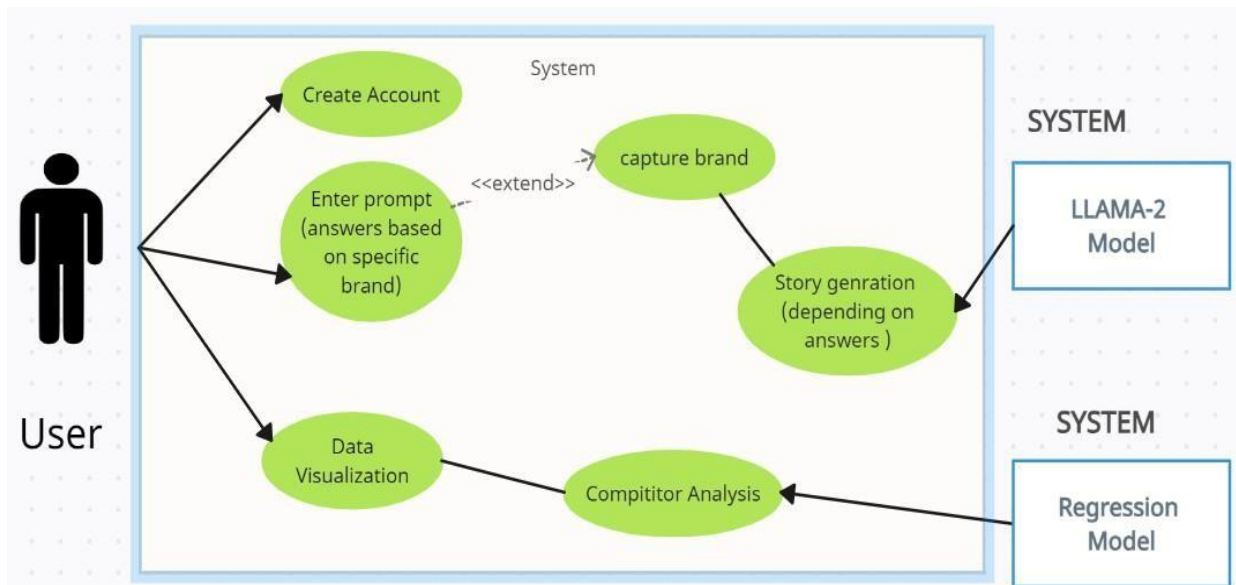
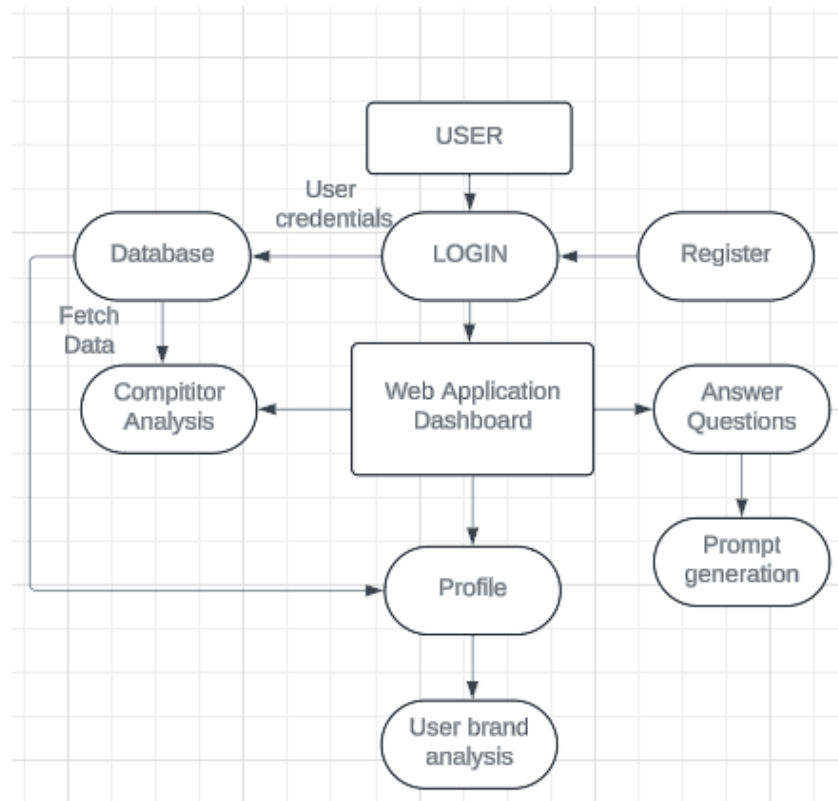


Fig. 5.1 Use Case Diagram

- 1. User Perspective:** The user launches the app and logs in (optional, depending on the app's design).
- 2. Prompt Generation :** The user can initiate a Prompt Generation. This might involve answering questions and potentially allowing the app to generate prompt through the LLAMA-2 model. Based on the results, the app may offer caption(story) for particular brand for marketing.
- 3. Compitior Analysis :** User can also generate Competitor Analysis . this app exports data from database for related brand and display analysis dashboard.

5.2 DFD (Data Flow Diagram):

Here is the Fig 5.2 Data Flow Diagram describe the market minds, there will be an user and AI based model's for the analytics and story generation purpose. The activities describes the logical working flow of the market minds.



5.2 Data flow diagram

5.3 System Architecture:

Here is the Fig 5.3 Data Flow Diagram that describe the market minds, there will be an user and AI based model's for the analytics and story generation purpose. The activities describes the logical working flow of the market minds.

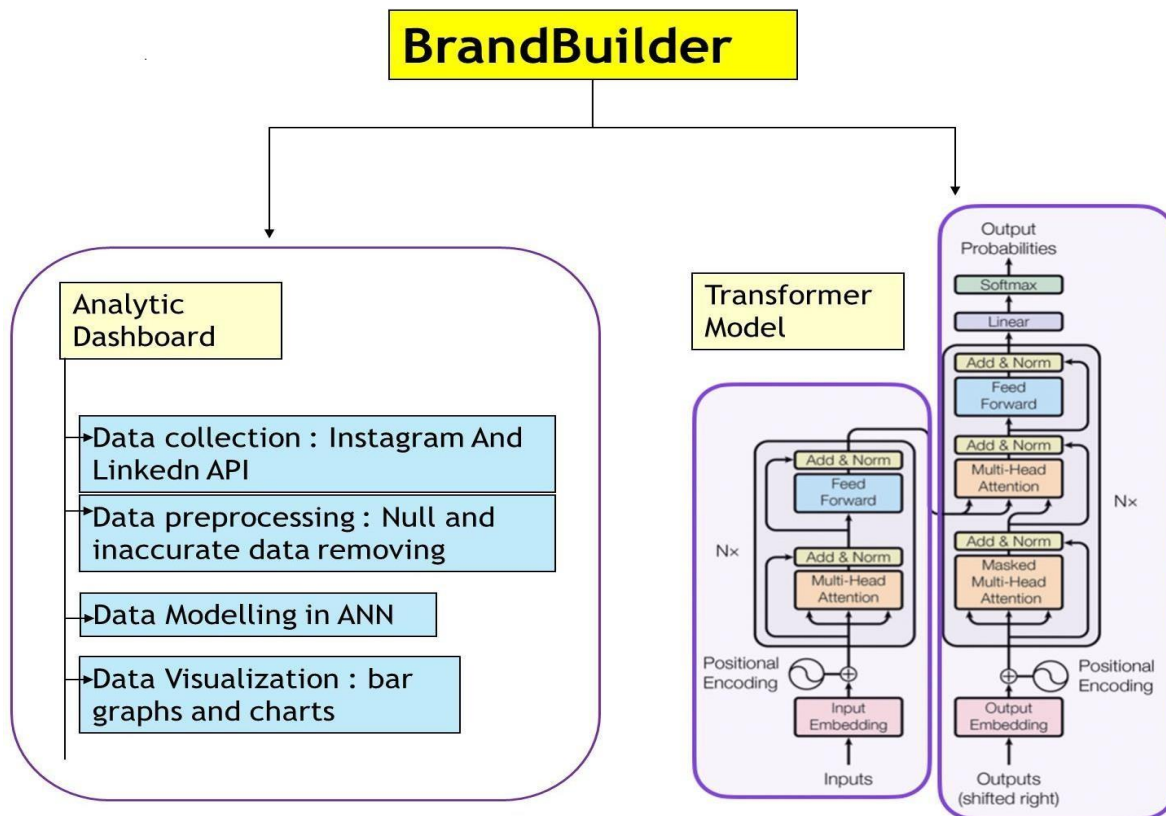


Fig 5.3 Project design

LLAMA-2 Prompt Generation Tool

The LLAMA-2 Prompt Generation Tool is a web-based application designed to assist users in creating compelling and engaging content for their brand marketing efforts. Leveraging the power of the LLAMA-2 (Language Model for Media Applications) model, this tool enables users to generate creative prompts, captions, and stories tailored to their brand's identity and marketing objectives. Users can input specific details about their brand or answer a series of questions to guide the prompt generation process. The LLAMA-2 model then utilizes this input to produce high-quality, natural language content that can be used across various marketing channels.

Regression Model for Competitor Analysis

The Regression Model for Competitor Analysis is an analytical tool integrated into the web application to provide users with insights into their competitors' performance metrics. This regression model analyzes

historical data and key variables related to competitors' market share, customer engagement, and advertising spend to predict future trends and outcomes. By understanding these predictive insights, users can make informed decisions about their branding and marketing strategies, identify opportunities for growth, and effectively position their brand in the competitive landscape.

5.4 Implementation:

- 1. System Overview :** This web application, constructed using Django, provides an extensive range of features to bolster user brand marketing efforts. The application evaluates and understands a user's brand identity through a machine learning model, which analyzes the responses from user questionnaires. This analysis helps estimate the strength and characteristics of the user's brand. Based on these insights, the app generates prompts or suggestions to enhance the user's branding strategy. Moreover, the application incorporates competitor analysis functionality. This enables users to compare and benchmark their own brand against competitors. By offering this comparative analysis, users can gain valuable insights into their market positioning, identify areas for improvement, and strategize effectively to gain a competitive edge.
- 2. System Architecture:** The application follows a modular architecture. The Django framework serves as the foundation for backend development, handling core functionalities and interactions between various modules. The User Interface (UI) acts as the entry point, facilitating user interaction and displaying information. Separate modules handle specific functionalities
- 3. Prompt Generation:** Within the application, users have the option to initiate a prompt generation feature. This process can begin with users answering a series of tailored questions designed to capture essential aspects of their brand identity, target audience, and marketing objectives. For those who prefer a more automated approach, the app offers the capability to generate prompts using the LLAMA-2 model, a sophisticated machine learning model optimized for natural language generation. Once the user's responses are analyzed, the app leverages this data to craft compelling captions or stories that resonate with the brand's essence and marketing goals. These generated prompts serve as creative assets that can be used across various marketing channels, such as social media posts, advertisements, or promotional materials, to effectively communicate the brand's message and engage the target audience.
- 4. Competitor Analysis:** In addition to the prompt generation feature, the application offers a robust competitor analysis tool. Users can access this tool to perform a comprehensive evaluation of their competitors' branding and marketing strategies. The app retrieves relevant data from its database, which may include information on competitors' market share, customer engagement metrics, advertising

campaigns, and product offerings. The analysis results are then presented to users through an intuitive dashboard. This dashboard visualizes key insights and performance metrics, making it easier for users to identify their competitors' strengths and weaknesses. By understanding the competitive landscape, users can formulate informed strategies to differentiate their brand, capitalize on market opportunities, and address potential threats effectively. Overall, these features empower users to make data-driven decisions, optimize their branding efforts, and stay ahead of the competition in a dynamic market environment.

1. In Fig 5.4 User will Login into the system, if registration exists. User can also login with google

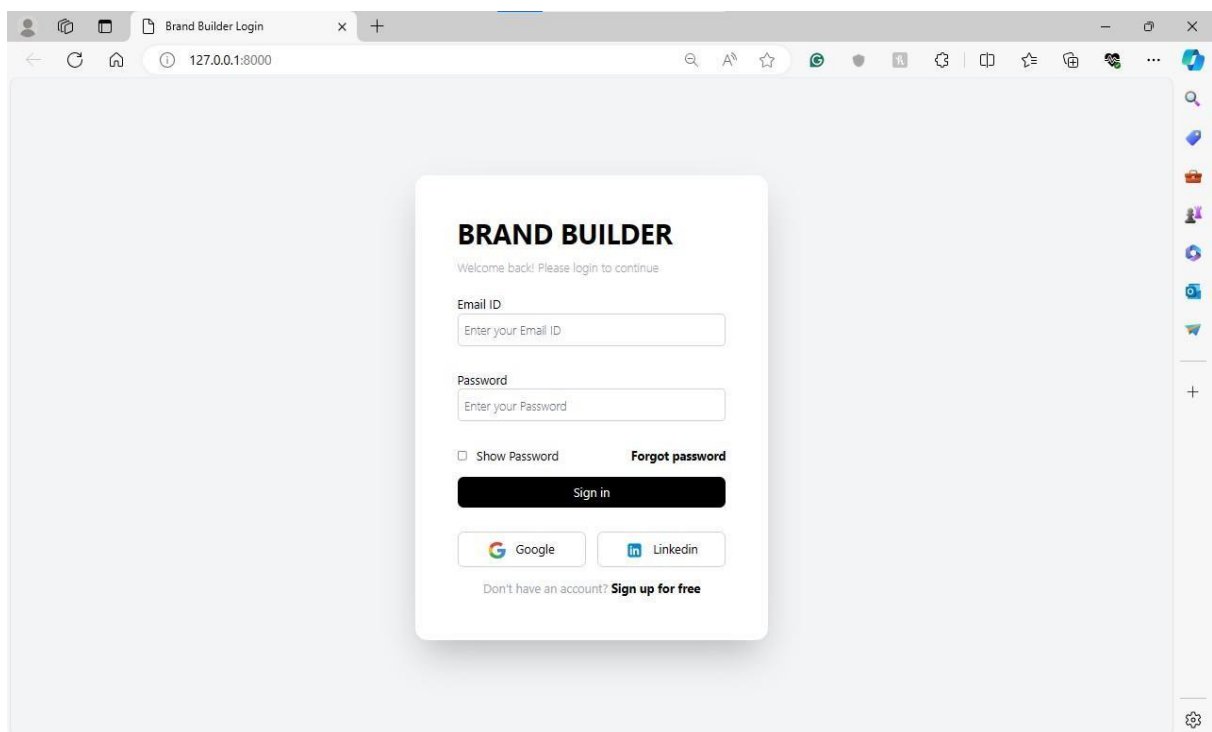
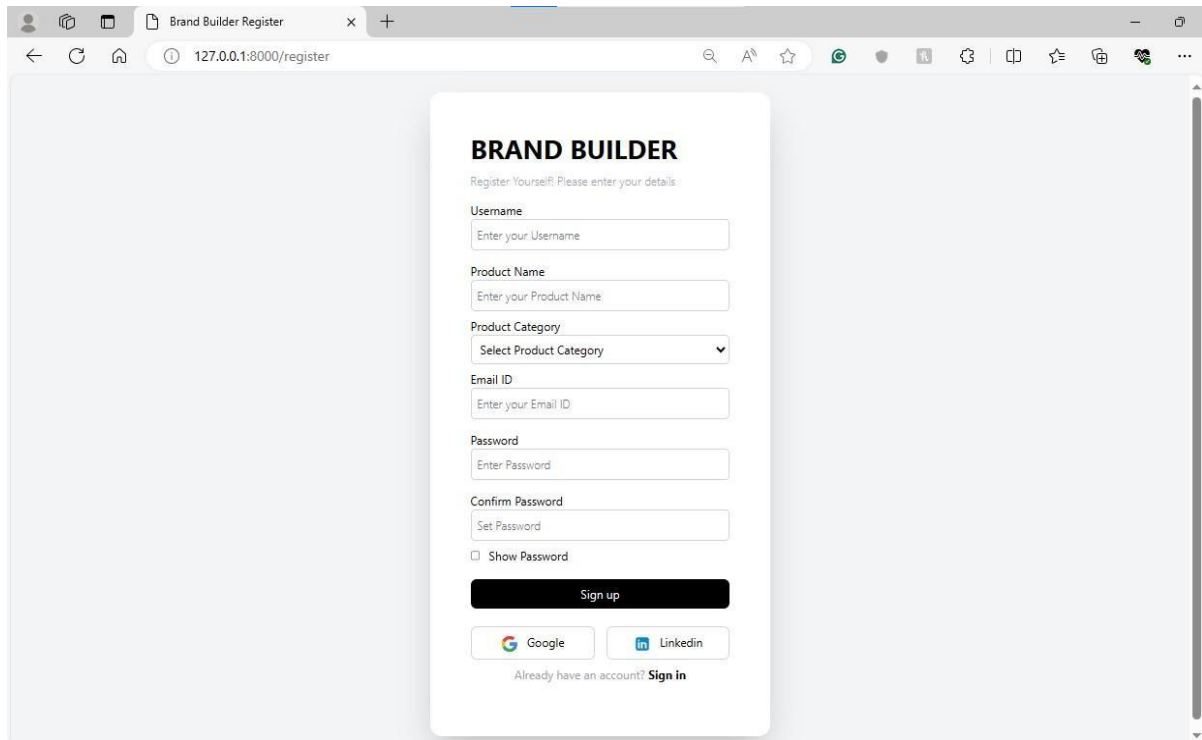


Fig.5.4 Login Page.

2. In Fig 5.5 If user is using first time system, has register with product name and product category.



The image shows a web browser window with the title "Brand Builder Register" and the URL "127.0.0.1:8000/register". The main content is a registration form titled "BRAND BUILDER" with the subtitle "Register Yourself! Please enter your details:". The form contains the following fields and elements:

- Username:** A text input field with the placeholder "Enter your Username".
- Product Name:** A text input field with the placeholder "Enter your Product Name".
- Product Category:** A dropdown menu with the placeholder "Select Product Category".
- Email ID:** A text input field with the placeholder "Enter your Email ID".
- Password:** A text input field with the placeholder "Enter Password".
- Confirm Password:** A text input field with the placeholder "Set Password".
- Show Password:** A checkbox labeled "Show Password".
- Sign up:** A black button with white text.
- Google:** A button with the Google logo.
- LinkedIn:** A button with the LinkedIn logo.
- Sign in:** A link labeled "Sign in" with the text "Already have an account?" above it.

Fig 5.5 Registration Page

3. In Fig 5.6 Depending on answer of this question, the prompt is generated with hashtag. User can use this prompt as caption of Instagram, LinkedIn post.

The screenshot shows a web browser window with the address bar displaying "127.0.0.1:8000/prompt". The browser tab is labeled "Brand Builder". On the left side, there is a dark sidebar with the word "PROMPT" at the top and a list of navigation links: "Home", "Prompt", "Analysis", "Profile", and "Logout". The main content area has a light green background. At the top, there are two scrollable text boxes. The left box contains the text: "Craft a compelling social media post caption for Product: 'Embrace the power of the pen with our eco-friendly materials, customizable grip, and refillable cartridges in a range of inks. From confident notes to engaging thoughts, let our magnetic attachment keep your ideas flowing seamlessly. #WriteWithPurpose #EcoFriendly #CustomizableGrip'". The right box contains: "Crafting a captivating caption for a social media post: 'Meet Product. Where innovation meets sustainability with our eco-friendly pens. Customize your writing experience with interchangeable grips and inks, all while exuding confidence and engagement. It's time to make your mark with Product! #SustainableWriting #CustomizeYourInk #ConfidentlyEngaging'". Below these boxes are three text input fields with placeholder text "Leave a comment...". The first field is labeled "What is your brand's purpose?", the second "What is your Unique Selling Proposition (USP)?", and the third "What emotions do you want your brand to evoke?". At the bottom of these fields is a blue button labeled "Generate".

Fig 5.6 Prompt Generation.

5. In Fig 5.7 User can view his product analysis on the basis of social media Likes, Shares and comment. As well competitor's post likes, shares and comments.

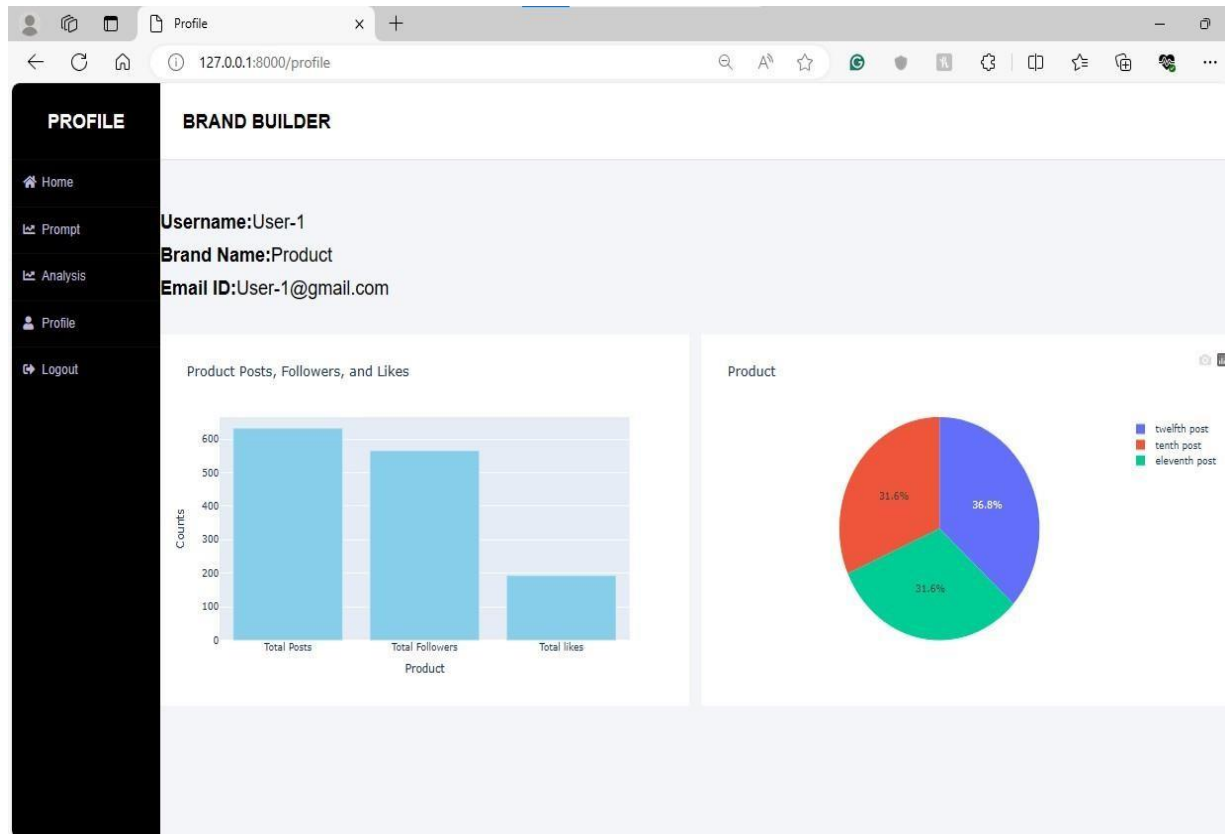


Fig 5.7 Product Analysis.

Chapter 6

Technical Specification

LLama-2: The LLAMA2 project introduces a ground-breaking software system poised to revolutionize data management practices within large-scale enterprises. It addresses the burgeoning challenges associated with data integration, storage, and analysis in organizations contending with vast and diverse data repositories.

LLAMA2 adopts a microservices architecture, ensuring scalability, flexibility, and modularity across its design. This architecture comprises several components, including data ingestion modules, storage layers, processing engines, and analytics interfaces.

Data integration capabilities are a cornerstone of LLAMA2, offering support for an extensive array of data formats such as structured, semi-structured, and unstructured data. Moreover, LLAMA2 excels in real-time data ingestion from diverse sources including databases, file systems, APIs, and streaming platforms.

The storage subsystem of LLAMA2 employs a distributed approach, leveraging technologies like the Hadoop Distributed File System (HDFS) or cloud-based storage solutions. This is crucial for enterprise-grade data management. Architecture ensures data partitioning and replication for fault tolerance and high availability, LLAMA2 harnesses the power of Apache Spark as its primary processing engine, facilitating distributed data processing with parallel computation and in-memory caching. Additionally, integration with Apache Kafka enables seamless stream processing and real-time analytics, essential for handling dynamic data streams. Advanced analytics capabilities are integral to LLAMA2, offering a suite of machine learning algorithms for predictive modelling, anomaly detection, and pattern recognition.

Tailwind CSS is a modern utility-first CSS framework that has gained popularity for its efficiency in building responsive and customizable web interfaces. Unlike traditional CSS frameworks, Tailwind does not rely on pre-defined components; instead, it provides a vast array of utility classes covering typography, spacing, sizing, positioning, colors, borders, shadows, and more. This utility-first approach allows developers to rapidly construct unique designs by applying classes directly within the HTML markup, eliminating the need for writing custom CSS. Additionally, Tailwind offers responsive design utilities, enabling developers to create layouts that adapt seamlessly to different screen sizes and devices. With Tailwind, developers have the flexibility to customize the framework to suit the specific

requirements and design preferences of their projects, making it a versatile tool for modern web development.

Python 3 is a versatile and powerful programming language widely used for a variety of applications, including web development, data analysis, machine learning, and automation. Renowned for its simplicity and readability, Python facilitates efficient development through its extensive standard library and robust ecosystem of third-party packages.

In web development, Python 3 frameworks such as Django and Flask offer scalable and feature-rich solutions for building web applications. Django, a high-level web framework, provides a batteries-included approach, offering built-in features for authentication, routing, database management, and more. On the other hand, Flask, a lightweight micro-framework, offers greater flexibility and simplicity, allowing developers to choose and integrate components as needed for their projects.

In the realm of data analysis and machine learning, Python's libraries such as NumPy, pandas, matplotlib, and scikit-learn empower developers and data scientists to efficiently manipulate, visualize, and analyse data, as well as build and deploy machine learning models. These libraries leverage Python's simplicity and expressiveness to streamline the development process and facilitate experimentation and exploration.

Django is a high-level Python web framework renowned for its simplicity, robustness, and scalability, making it a preferred choice for building complex and feature-rich web applications. Backed by a large and active community, Django provides developers with a comprehensive set of tools and features to streamline the development process.

At the core of Django's philosophy lies the principle of "batteries-included," meaning it comes with built-in components for common web development tasks, including URL routing, database management, authentication, and session handling. This approach accelerates development by reducing the need for third-party integrations and ensuring a consistent and secure foundation for web applications.

One of Django's key strengths is its powerful ORM (Object-Relational Mapping) system, which abstracts away database management complexities and allows developers to interact with databases using Python objects. This simplifies data manipulation tasks and ensures database portability across different platforms, enhancing application maintainability and scalability.

Django follows the MVC (Model-View-Controller) architectural pattern, where models represent data structures, views handle user interactions and business logic, and templates render HTML output.

Chapter 7

Project Scheduling

In table 7.1 Scheduling entails organizing activities, deliverables, and milestones. A schedule outlining planned start and finish dates, durations, and allocated resources for each task, ensuring tasks are completed on time and within budget for effective task and time management.

Sr. No.	Group Member's	Duration	Task Performed
1.	Priyanshu Worlikar Umesh Nehete Harshad Raurale Saaras Gaikwad	1 st Week of February	Group formation and Topic finalization. Identifying the scope and objectives of the Mini Project. Discussing the project topic with the help of a paper prototype.
2.	Priyanshu Worlikar Umesh Nehete Harshad Raurale Saaras Gaikwad	2 nd Week of January	Identifying the functionalities of the Mini Project. Designing the Graphical User Interface (GUI).
3.	Priyanshu Worlikar Umesh Nehete Harshad Raurale	2 nd Week of February	Training the models of Lama2 for the story generation
4.	Priyanshu Worlikar Umesh Nehete Saaras Gaikwad	3 rd Week of February	Training the models of Regression for competitor analysis.
5.	Priyanshu Worlikar Umesh Nehete Harshad Raurale Saaras Gaikwad	1 st Week of March	Fine tuning the Lama2 model for betterment.
6.	Priyanshu Worlikar Umesh Nehete Harshad Raurale Saaras Gaikwad	3 rd Week of March	Integration of GUI and all trained model

Fig 7.1 Project scheduling table

In our project, the Fig 7.2 Gantt chart will outline key activities where each task will be represented by a bar on the chart, indicating its start and end dates, duration, and dependencies, allowing project stakeholders to track progress, identify potential delays, and timely completion of project objectives.

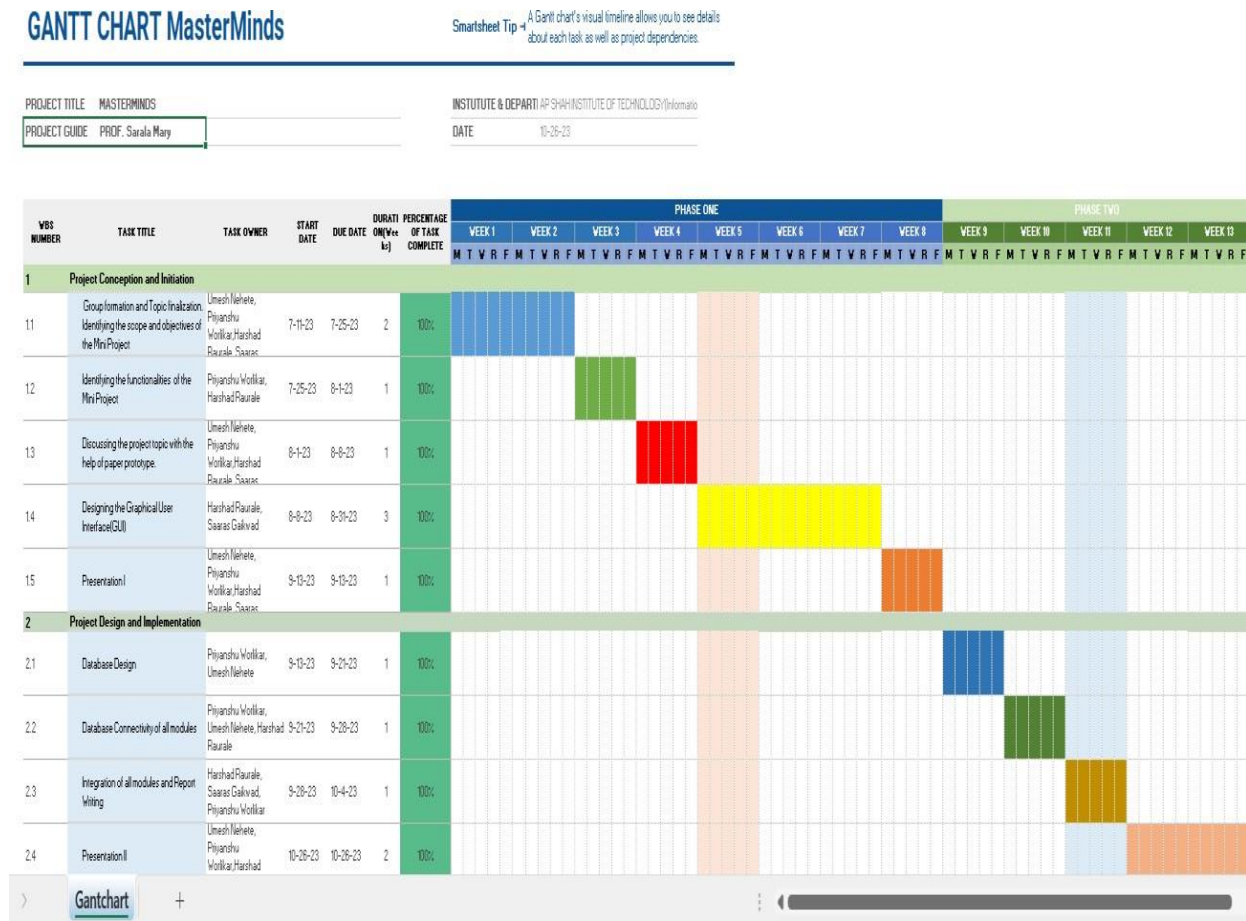


Fig 7.2: Gantt Chart

Chapter 8

Results

LLAMA-2 Prompt Generation Tool Output

The output from the LLAMA-2 Prompt Generation Tool is creative and engaging content tailored to the user's brand and marketing objectives. The tool generates natural language prompts, captions, or stories that reflect the brand's identity, values, and messaging. These outputs are designed to resonate with the target audience and can be used across various marketing channels such as social media, websites, advertisements, and more. The generated content is high-quality, coherent, and ready-to-use, helping users save time and effort in content creation while maintaining a consistent brand voice.

In Fig 8.1 Before tuning the Lama2 model the training loss calculated for each step

Step	Training Loss
1	1.358400
2	1.327700
3	1.417300
4	1.626800
5	2.203500
6	2.194400
7	1.454900
8	1.825700
9	1.664800
10	1.559000
11	1.963200

Fig.8.1 Training Loss

Fig 8.2 describes the accuracy after fine tuning the Lama2 model, on the dataset that is created by us.

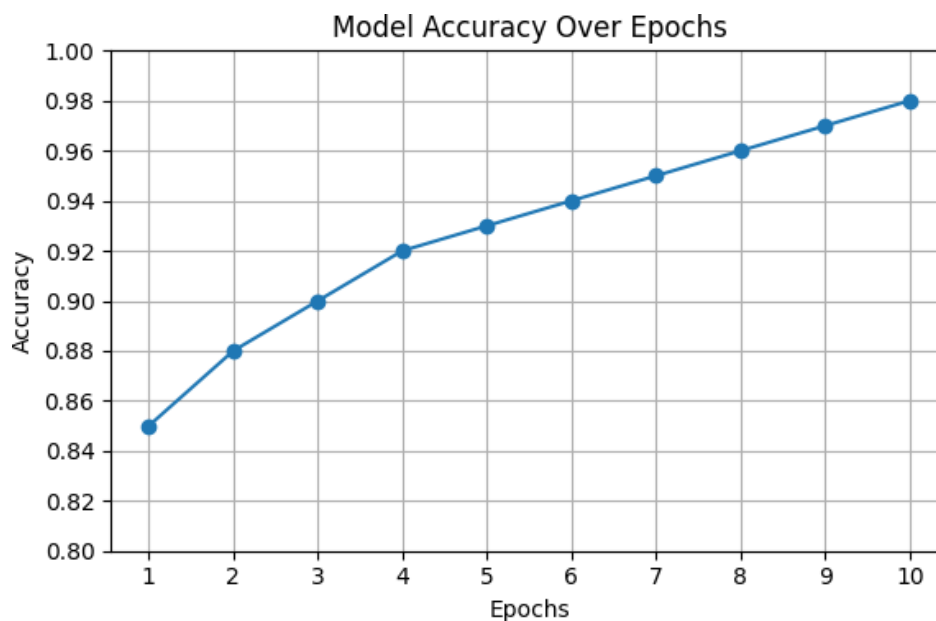


Fig.8.2 After fine tuning Accuracy

The output from the LLAMA-2 Prompt Generation Tool is creative and engaging content tailored to the user's brand and marketing objectives. The tool generates natural language prompts, captions, or stories that reflect the brand's identity, values, and messaging. These outputs are designed to resonate with the target audience and can be used across various marketing channels such as social media, websites, advertisements, and more. The generated content is high-quality, coherent, and ready-to-use, helping users save time and effort in content creation while maintaining a consistent brand voice.

Regression Model for Competitor Analysis Output

The Regression Model for Competitor Analysis delivers actionable insights and predictive analytics, furnishing users with a comprehensive understanding of their competitors' performance metrics. Drawing from historical data, the model forecasts future trends and outcomes, enabling users to anticipate market dynamics with precision. By identifying competitors' strengths and weaknesses, it empowers strategic decision-making, offering tailored recommendations to enhance market positioning.

Chapter 9

Conclusion

In conclusion, Large Language Models (LLMs), the Transformer architecture, and LLAMA2 signify significant milestones in the progression of Natural Language Processing (NLP) and Artificial Intelligence (AI). Their versatility, scalability, and performance have propelled the field forward, offering novel avenues for intelligent text processing and comprehension. These advancements have empowered researchers and practitioners to address intricate NLP tasks with greater efficacy, resulting in notable breakthroughs across various domains including human computer interaction, content generation, and information retrieval. Moreover, as ongoing innovation and refinement efforts persist in these technologies, we anticipate further breakthroughs and advancements that will continue to shape the landscape of AI-driven language understanding and generation, heralding an era of increasingly sophisticated and capable NLP systems.

In summary, our application based on LLAMA2, Large Language Models (LLMs), and the Transformer architecture represents a significant leap forward in the development of text generative models. As a result, it not only enables the generation of human-like text across diverse domains but also opens up new possibilities for creative content creation, storytelling, and language understanding. Moving forward, continued refinement and innovation in these technologies promise to drive further advancements in AI-driven text generation, ultimately reshaping the landscape of natural language processing and communication.

Chapter 10

Future Scope

Integration with Emerging Social Platforms: Extend the caption generator to support emerging social media platforms, catering to the diverse needs of users across different networks.

Multilingual Support: Introduce multilingual capabilities to the caption generator, enabling users to generate captions in various languages, fostering inclusivity and expanding the tool's global reach.

Visual Content Enhancement: Enhance the caption generator to analyse accompanying images or videos and generate captions that complement visual content, optimizing engagement and storytelling.

Emotion Detection and Sentiment Analysis: Integrate emotion detection and sentiment analysis algorithms to generate captions that resonate with users' emotions, fostering deeper connections and enhancing engagement.

Interactive Features: Incorporate interactive features such as user feedback mechanisms and customization options to empower users in refining and improving generated captions, enhancing user satisfaction and retention.

Cross-Platform Data Aggregation: Develop robust data analytics capabilities to aggregate and analyse engagement metrics from multiple social media platforms, enabling users to gain insights into the performance of their posts across various channels.

Content Performance Benchmarking: Implement algorithms to benchmark the performance of two posts against each other, analysing metrics such as likes, comments, shares, and reach to identify trends and patterns that contribute to successful content.

Audience Segmentation Analysis: Utilize data analytics techniques to segment the audience based on demographics, interests, and behaviours, enabling users to understand the preferences of different audience segments and tailor their content accordingly.

Predictive Analytics for Engagement: Leverage predictive analytics models to forecast the future engagement of two posts based on historical data and key performance indicators, empowering users to optimize their content strategy for maximum impact. **Real-Time Monitoring and Alerts:** Implement real-time monitoring capabilities to track the performance of the two posts and alert users to significant changes or anomalies in engagement metrics, enabling timely intervention and optimization.

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