InstaPrompt AI – Lightning-Fast Prompt Generator

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Abstract: With the rapid growth of Generative Artificial Intelligence, the quality of results produced by AI systems largely depends on the prompts provided by users. Many users find it difficult to write clear and effective prompts, which often leads to unsatisfactory outputs. To address this challenge, we developed Prompt Studio, an AI-based Prompt Generator that helps users transform simple ideas into structured and professional prompts. The system uses advanced generative AI technology to automatically expand and refine user input. The application is designed with a simple and interactive interface that allows users to generate prompts quickly, manage their prompt history, and download results for future use. The project focuses on improving the accessibility of prompt engineering and making AI tools easier to use for students, developers, researchers, and content creators.

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I. INTRODUCTION

Generative AI technologies have become widely used in fields such as content creation, software development, research, and education. These systems rely on prompts provided by users to generate responses. However, writing effective prompts requires experience and understanding of how AI systems interpret instructions.

Many users struggle with prompt engineering because they do not know how to structure their ideas clearly. As a result, they may receive vague or incomplete responses from AI models. This creates a need for tools that can help users create better prompts without requiring advanced technical knowledge.

Prompt Studio was developed to solve this problem. The system allows users to enter a simple idea or concept, and the AI automatically converts it into a detailed and well-structured prompt. The platform is designed with an easy-to-use interface and additional features such as prompt history and settings. By simplifying the prompt creation process, the system helps users interact more effectively with AI technologies.

➤ *Ease of Use*

One of the main goals of the Prompt Studio application is to ensure that the system is easy to use for people with different levels of technical knowledge.

The interface is designed in a clean and simple way so that users can quickly understand how the system works. The main screen allows users to type their idea in a text box and generate a prompt with a single click. The system then processes the request using AI and displays the generated prompt in a formatted manner.

Additional features such as New Chat, History, and Settings improve the overall user experience. The History section allows users to view previously generated prompts, while the Settings section provides options for managing system behavior. These features make the application practical and user-friendly.

II. PREPARE YOUR PAPER BEFORE STYLING

Before applying formatting and styling to a research paper, it is important to organize the content properly. Authors should ensure that the ideas, explanations, and sections of the paper are clearly structured. This helps improve readability and makes the paper easier to understand.

➤ *Abbreviations and Acronyms*

When using abbreviations or acronyms in a research paper, it is important to define them the first time they appear. For example, Artificial Intelligence (AI) and Large Language Models (LLMs) should be explained before being used repeatedly throughout the paper. This helps readers who may not be familiar with these terms.

➤ *Units*

Units are commonly used in scientific papers to measure physical quantities such as time, length, or energy. In the case of the Prompt Studio system, traditional measurement units are not used. Instead, the system works with computational factors such as processing time, text tokens, and memory usage. These parameters help evaluate the efficiency of the application.

➤ *Equations*

Mathematical equations are often used to represent system processes or algorithms. In this project, the core concept can be described as a transformation process where a simple user idea is converted into a professional prompt using an AI model.

• *For Example:*

$P\_out = f (P\_in, M)$

Where:

P_in = User input idea

M = AI model used for processing

P_out = Generated professional prompt

This equation represents how the AI system processes the input to generate a refined output.

➤ *Some Common Mistakes*

While writing research papers, authors often make common mistakes such as unclear explanations, incorrect formatting, or improper referencing. Another frequent issue is the overuse of technical terms without proper explanation. To avoid these problems, authors should focus on clarity, proper structure, and correct citation of sources.

III. UNITS

In most research papers, units are used to measure physical quantities such as length, time, or energy. However, in the case of the Prompt Studio system, traditional physical units are not directly involved because the application is based on software and AI processing.

Instead, the system works with computational parameters such as text tokens, processing time, and memory usage. Tokens represent the number of words or characters processed by the AI model during prompt generation. Processing time refers to the amount of time the system takes to generate a response after receiving user input. Memory usage indicates the amount of system resources required while the application is running.

These parameters help in understanding the performance and efficiency of the system.

➤ *Helpful Hints*

While developing and using AI-based applications such as Prompt Studio, certain best practices can help improve the overall performance and reliability of the system.

First, API keys used to access AI services should always be stored securely using environment variables or protected configuration files. This helps prevent unauthorized access to the system.

Second, maintaining session state is important for saving user activity such as prompt history. This ensures that users can view previously generated prompts without losing their data.

Another important factor is designing a simple and responsive user interface so that users can interact with the system easily.

Clear instructions should also be provided to the AI model so that it can generate more accurate and consistent prompts.

Finally, proper error handling should be implemented to manage API failures or network issues without causing the application to crash.

IV. PUBLICATION PRINCIPLES

The development and documentation of this project follow standard publication principles to ensure academic integrity and quality.

The content presented in this paper is original and created specifically for the project. All tools, technologies, and external resources used during the development process are properly acknowledged.

The project also promotes the ethical use of artificial intelligence. AI-generated outputs are used responsibly, and the system is designed to assist users in creating better prompts rather than replacing human creativity.

Additionally, the paper follows standard formatting guidelines and presents the objectives, methodology, and results in a clear and structured manner to make the research easy to understand.
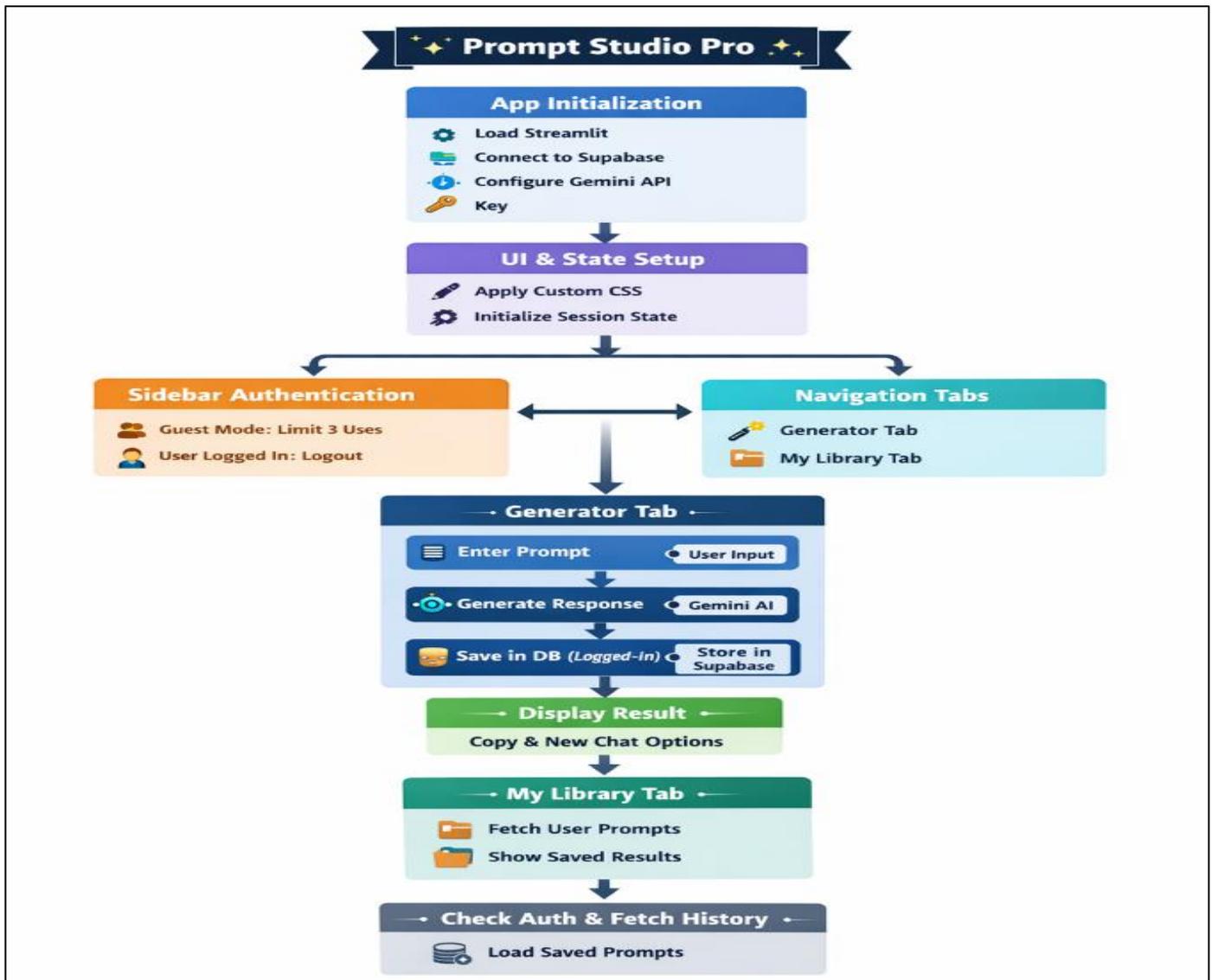
➢ *Workflow*

Fig 1 Workflow Diagram

➢ *Flowchart Description*

The flowchart shows the working process of the Prompt Studio Pro application. The system first initializes Streamlit, connects to the Supabase database, and configures the Gemini API. Users can log in, sign up, or continue as guests with limited usage.

In the Generator tab, users enter a prompt and the Gemini AI model generates a response. The result is displayed and can be copied or saved. Logged-in users can also view their previously generated prompts in the My Library section.

V. CONCLUSION

This paper presented Prompt Studio, an AI-based Prompt Generator designed to simplify the process of prompt engineering.

The system allows users to convert simple ideas into well-structured prompts using advanced generative AI technology.

The application focuses on providing an easy-to-use interface, efficient prompt generation, and useful features such as prompt histo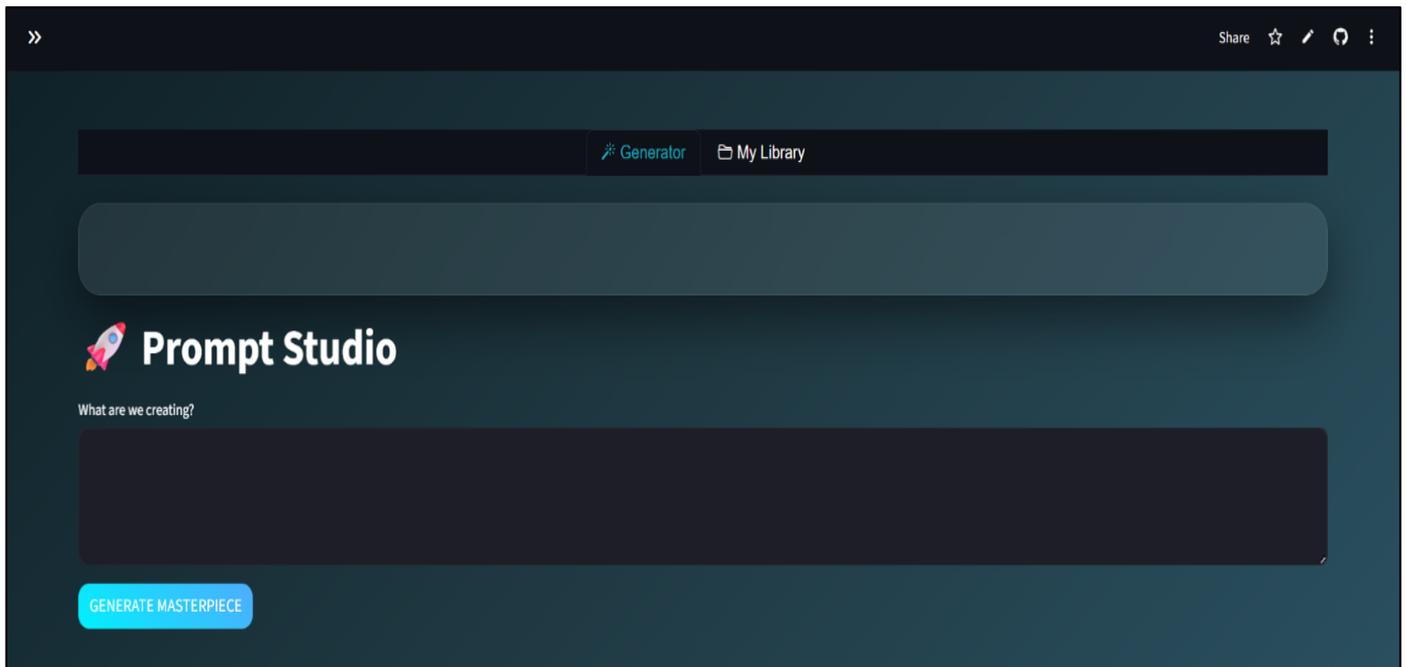ry and system settings. By automating the prompt creation process, the system helps users obtain better responses from AI models and reduces the effort required to write complex prompts.

The project demonstrates how AI-powered tools can improve productivity and make advanced technologies more accessible to a wider audience. In the future, additional features such as prompt templates, multi-language support, and improved customization options can further enhance the system's capabilities.

➢ *Final Result*

Fig 2 Final Output

ACKNOWLEDGMENT

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