AI POWERED SERVER LOG MANAGEMENT SOFTWARE

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ABSTRACT

A server log is a file that is implicitly created and maintained by a server, consisting of list of activities that it performs. An example is a web server log which maintains the history. Every time any client request for any resource such as a page, java-script file, etc. from the server, it adds this entry in the log file. Information about each and every primitive task executed by the server hits the log entry. The various types of logs are error logs, access logs, etc. In general, the system list down the errors in the log file. One way of eliminating these errors is to monitor each log manually and work upon the probable solution. In this paper, we propose to automate the process of finding knowledge-based solution for critical error logs. The process of web crawling suggests the relevant link as their possible solutions.

An AI-powered server log management system represents a significant advancement in IT infrastructure monitoring and management. This abstract explores the integration of artificial intelligence (AI) technologies into server log management, focusing on its capabilities, benefits, and implications. AI in server log management also raises challenges such as data privacy concerns, the need for skilled AI practitioners, and the potential for algorithmic biases. Addressing these challenges requires a balanced approach involving robust data governance, continuous monitoring, and regular algorithm audits.

1 INTRODUCTION

2.INTRODUCTION

In contemporary computing environments, managing vast and intricate server logs is a critical aspect of maintaining system integrity, performance, and security. This project introduces an innovative AI-powered Server Log Management Software, poised to redefine log analysis by harnessing the capabilities of artificial intelligence. The software is designed to automate and optimize log monitoring, analysis, and anomaly detection, addressing the challenges associated with the ever-growing volume and complexity of server logs.

The AI-powered solution utilizes advanced machine learning algorithms to intelligently categorize, correlate, and interpret server log entries. By automating the analysis process, the software enables IT professionals to identify patterns, anomalies, and potential security threats with greater speed and precision. The system evolves over time through continuous learning, adapting to changing log patterns and proactively identifying emerging issues. AI-powered server log management software signifies a leap forward in handling and optimizing the vast amounts of

data generated by servers. This innovative software leverages artificial intelligence to analyze, interpret, and act on log data in real-time.

Index Terms—-Machine Learning.

Literature Survey

TITLE: AI Powered System Providing Knowledge Based Solution for Errors in Server Logs

AUTHORS: Pratik Padman; Atharva Narlawar;

ABSTRACT:

The AI server log abstract outlines the essential elements of an artificial intelligence server's logging mechanism. It covers the logging of activities, errors, and transactions pertinent to AI operations. This abstract highlight the importance of logging for system monitoring, debugging, and performance optimization. Key components include log formats, data collection methods, and integration with monitoring tools for real-time insights. The abstract also touches on security considerations and compliance with data protection regulations in logging practices. A server log is a file that is implicitly created and maintained by a server, consisting of list of activities that it performs. An example is a web server log which maintains the history.

3 IMPLEMENTATION STUDY

Existing System:

Traditional Log Management Solutions The current landscape of log management relies on traditional solutions that predominantly involve manual processes. In this setup, IT professionals are required to poses several disadvantages, including a susceptibility to oversights and delays in issue identification. Traditional systems may lack advanced anomaly detection capabilities, making it manually sift through and analyze server logs, a time-intensive and laborious task.

PROPOSED SYSTEM & ALOGIRTHAM

AI-Powered Server Log Management Software In response to the limitations of the existing system, the proposed AI-Powered Server Log Management Software introduces a paradigm shift in log analysis. This innovative solution harnesses the power of artificial intelligence to automate the log analysis process, significantly reducing the manual effort required for monitoring and analysis. With advanced anomaly detection capabilities, the system excels in identifying anomalies, patterns, and potential security threats in real-time, enabling swift response and issue resolution. Embracing a proactive security approach.

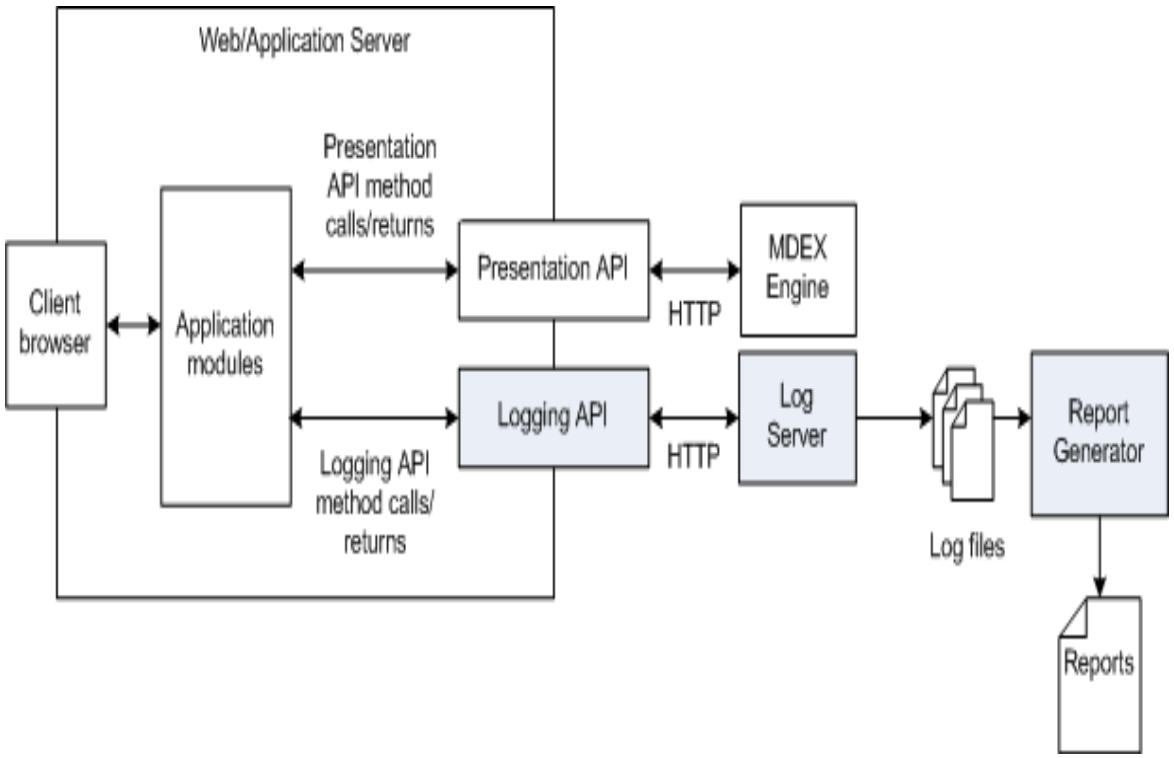


Fig: System Architecture

IMPLEMENTATION

SOFTWARE ENVIRONMENT

Python is a high-level general purpose open-source programming language. It is both object oriented and procedural. Python is an extremely powerful language. This language is very easy to learn and is a good choice for most of the professional programmers.

Python is invented by **Guido Van Rossum** at CWI in Netherland in 1989. It is binding of **C, C++, and Java**. It also provides a library for GUI.

Python Features and Characteristics:

- Python is a **high level, open source, general purpose** programming language.
- It is **object oriented, procedural** and **functional.**
- It has library to support **GUI**.
- It is extremely powerful and easy to learn.
- It is open source, so free to available for everyone.
- It supports on **Windows, Linux** and **Mac OS**.

As code is directly compiled with byte code, python is suitable for use in scripting languages.

5 RESULTS AND DISCUSSION

. SCREENSHOTS

Al Powered Server Log Management Software Increasing technology giving rise to errors and there is no automatic way to provide solution to generated error. Users always suffer from error and search solutions by sending queries to different servers and all servers will report some solutions and user has to identify correct solution from all those server responses which is very time consuming and difficult task.

To provide easiest solutions we are obtaining all servers logs with errors and then providing solution to all those server errors and then training all those error questions and possible solutions with Artificial Intelligence algorithm.

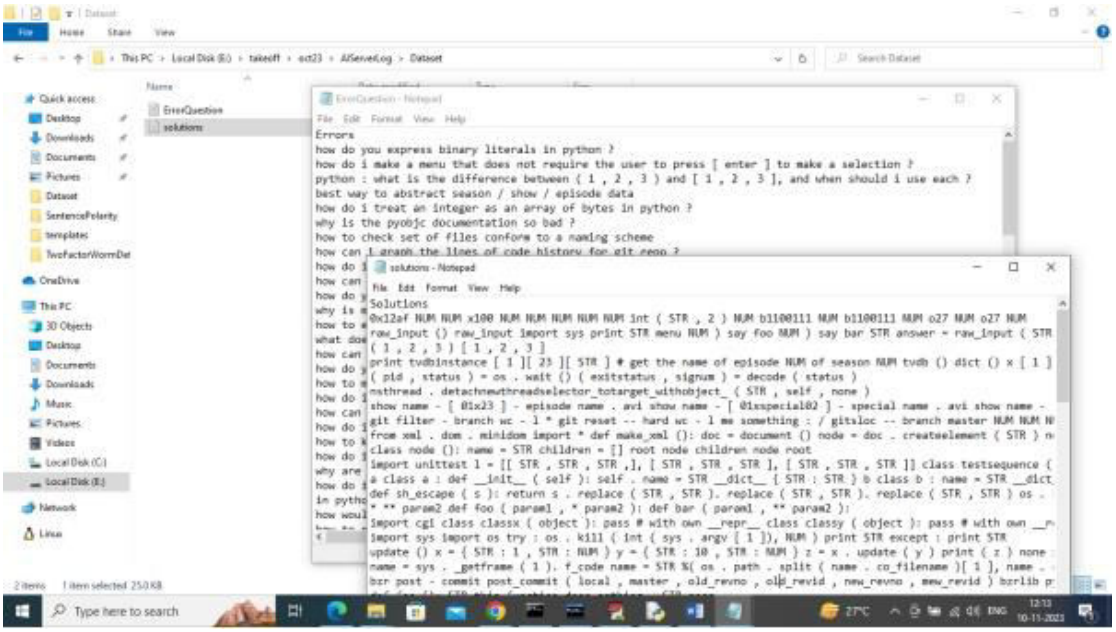
Trained AI model can take user test error as input and then predict possible close solution to given error. With this AI model user has to search and get solution from single model and can avoid searching from different servers which can save time and reduce user burden.

So, by using above AI trained model user will get solution from single one stop server without searching in different servers

You ask to get solution from online websites like BING, Google and other servers but all this server may not give accurate result and Google will give 100's of results which is difficult to train and suggest close answer. So we have gather some possible questions and answers related to OS and programming and then use those questions and answers to train AI model.

If you want you can add new questions and answers to currently available dataset and you can add for other domains like OS errors, all programming errors and solutions and many more.

In below screen we are showing some errors/question and answers dataset details



In above dataset folder we have errors and solution dataset and by using above datasets will train and test AI algorithm.

To implement this project, we have designed following modules

Admin Module: admin can login to web application by using username and password as ‘admin’ and ‘admin’ and then train AI model and make it ready to take user errors and to provide solutions. Admin can view list of registered users to track his website usage

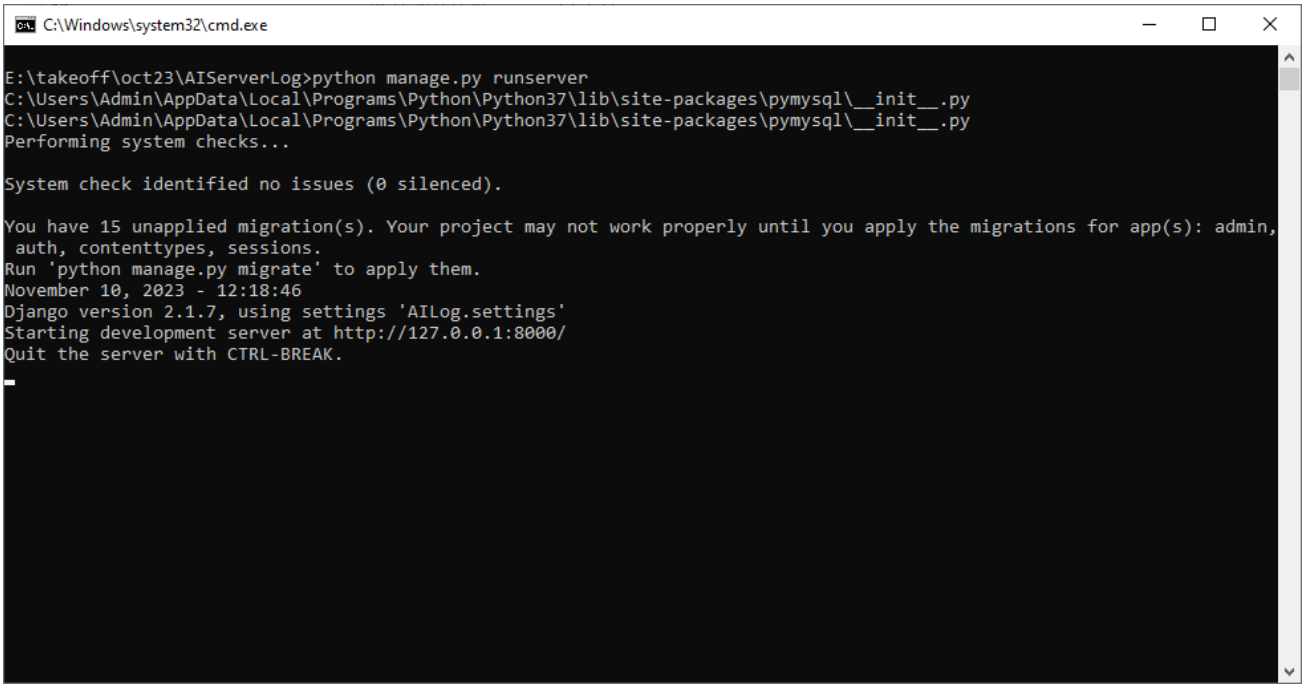
User Module: user can sign up and login to system and then enter his error details to get solution.

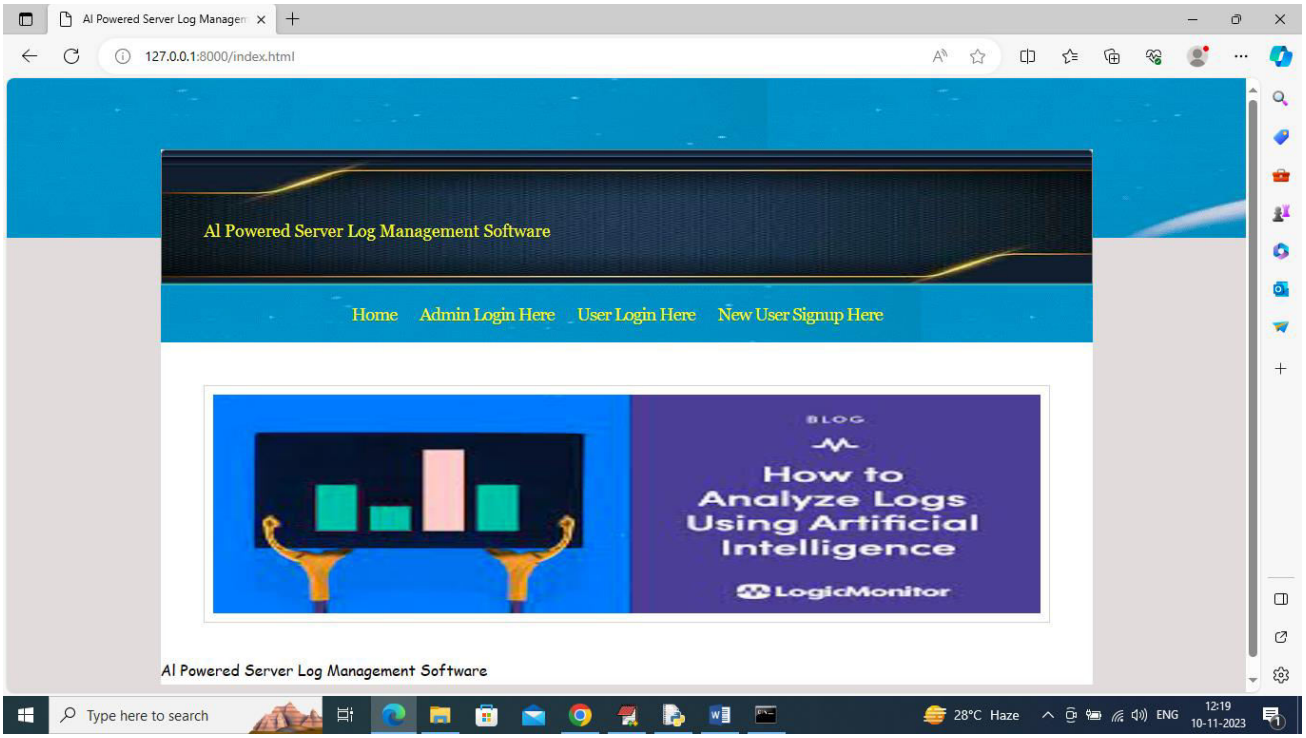
To clean all questions text we have used NLP (Natural language tool kit API) like stemming, lemmatization and stop word removal and special symbol removal to make solution prediction accurate.

To run project first we need to create database by copying content from DB.txt file and paste in MYSQL

SCREEN SHOT

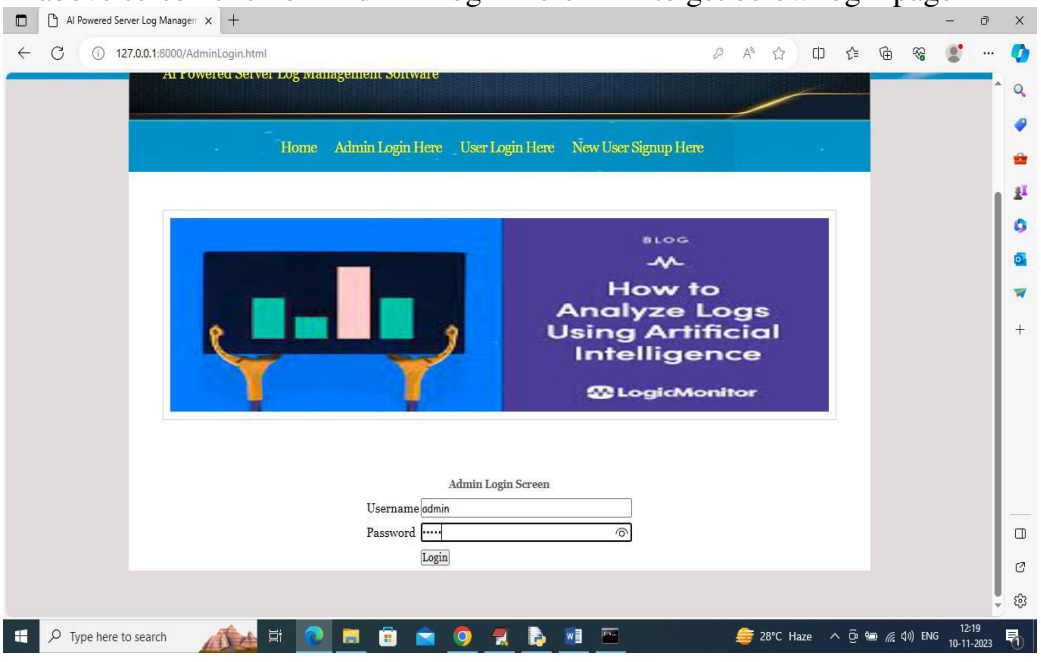
To run project double click on ‘run.bat’ file to start python DJANGO server and get below output



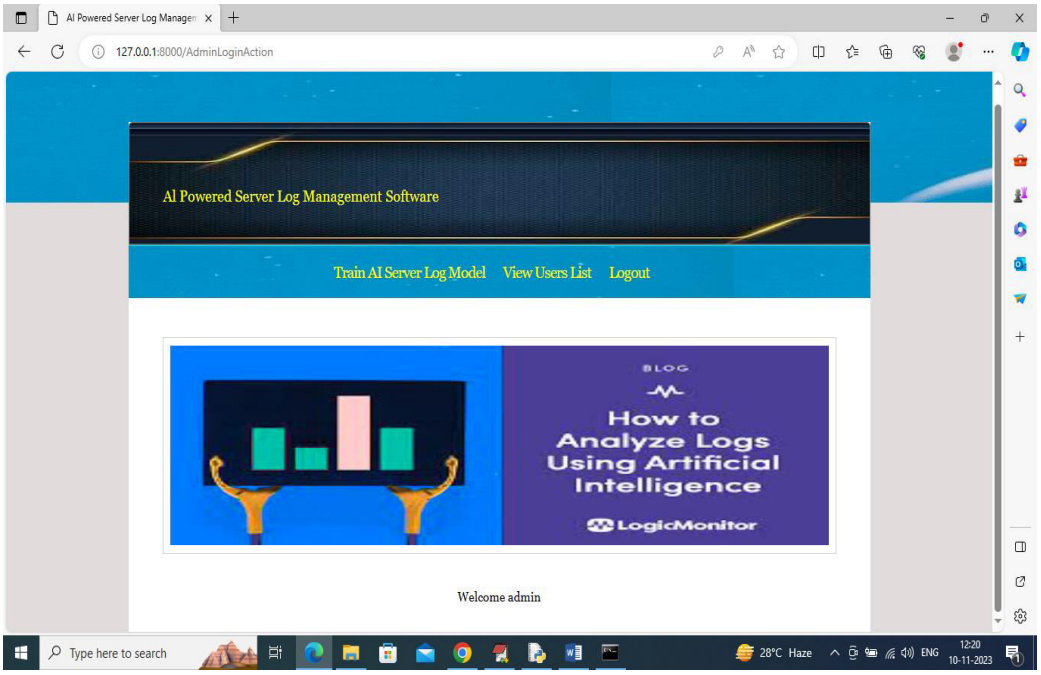


In above screen python server started and now open browser and enter URL as http://127.0.0.1:8000/index.html and press enter key to get below page

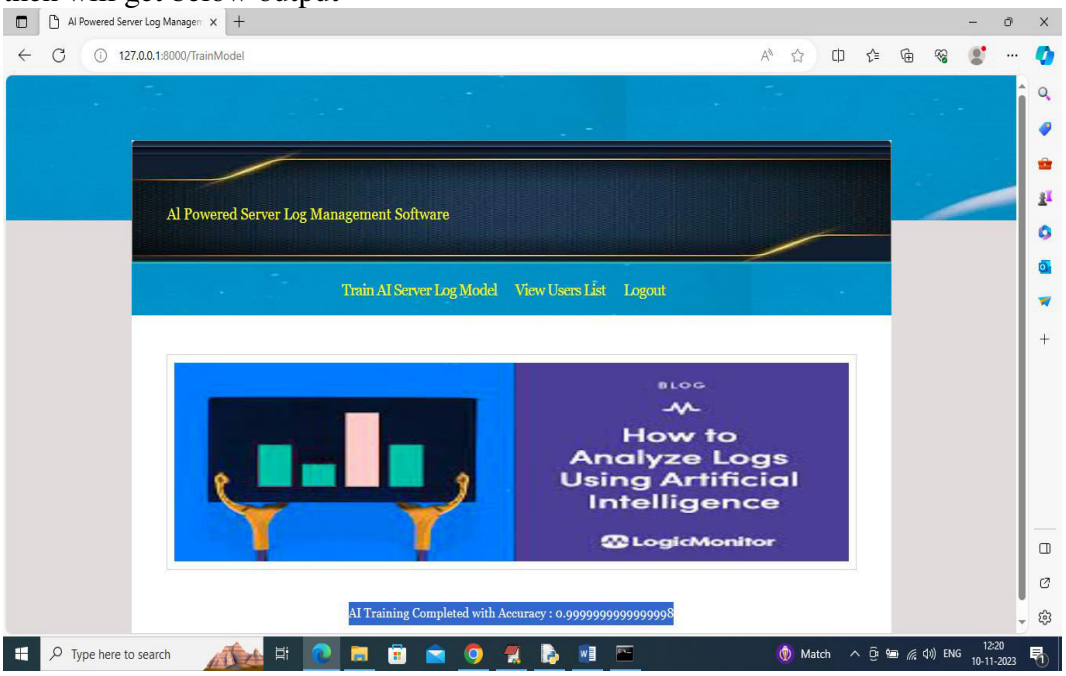
In above screen click on 'Admin Login Here' link to get below login page



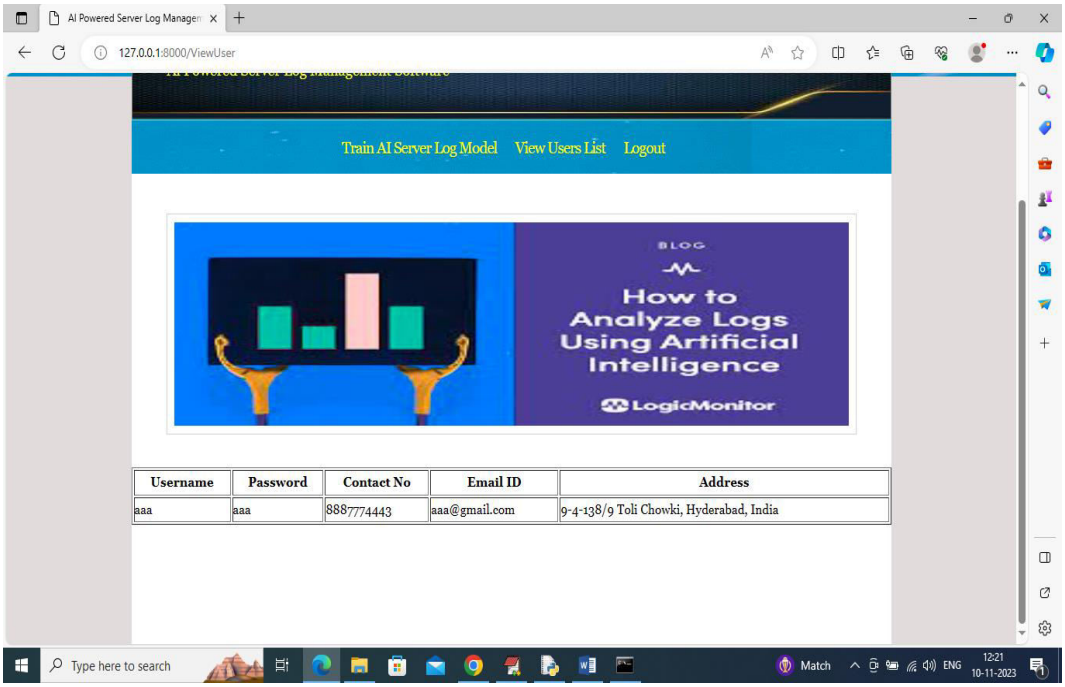
In above screen admin is login and after login will get below page



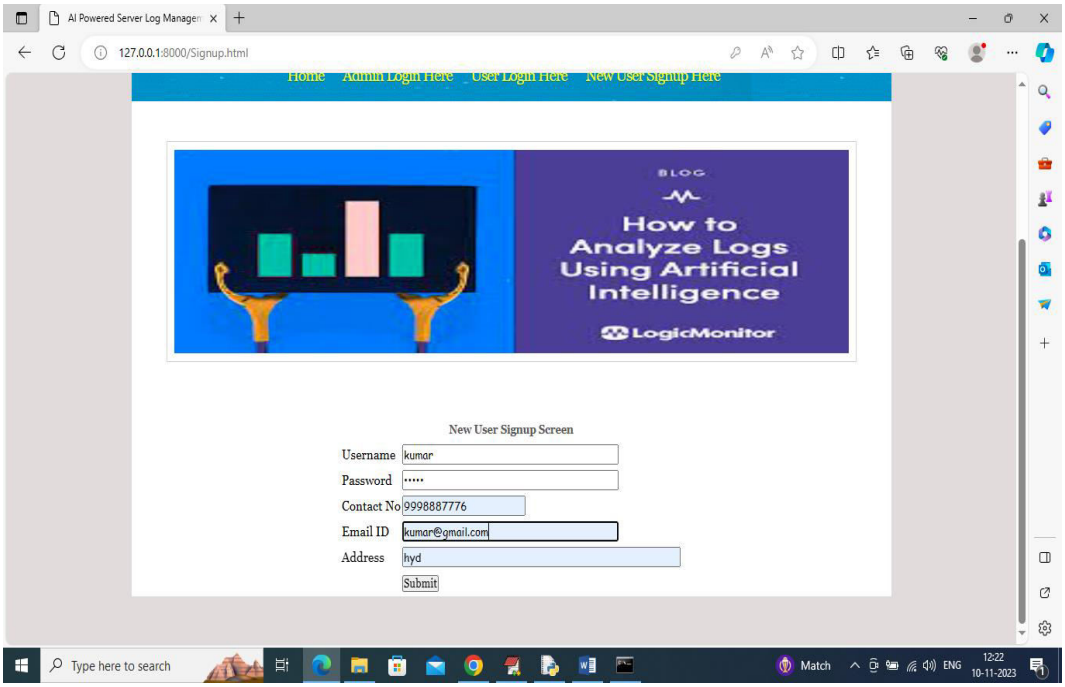
In above screen admin can click on 'Train Server Log Model' link to train AI model on dataset and then will get below output



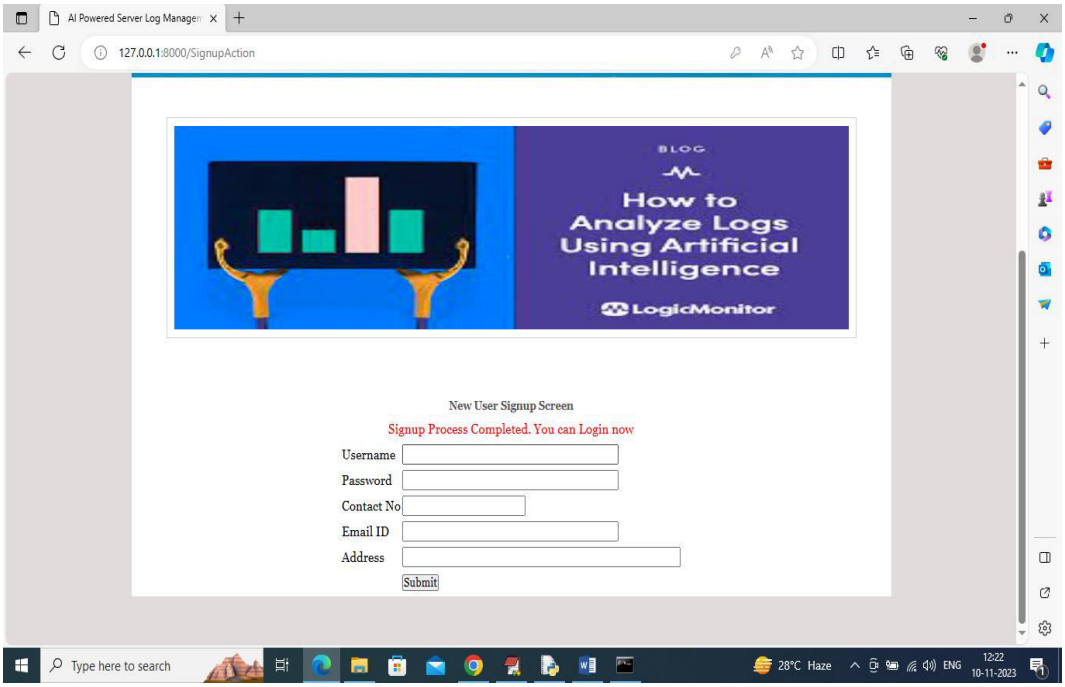
In above screen AI model training completed and its prediction accuracy is 0.99% and now click on 'View Users List' to get below page



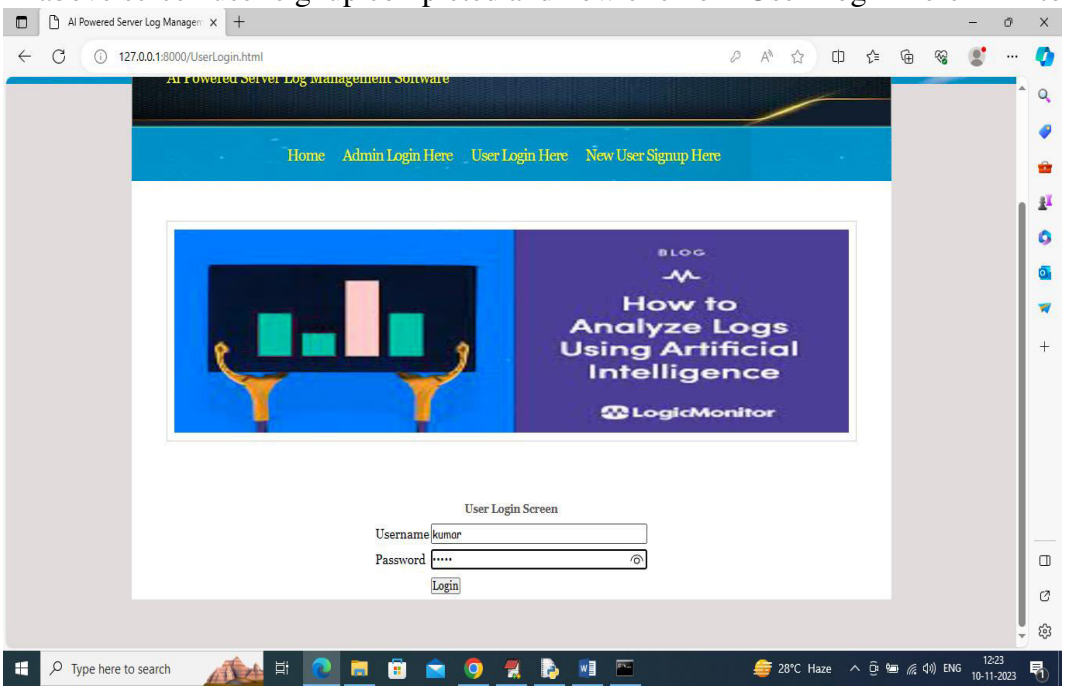
In above screen admin can view list of registered users and now logout and register one user to ask error from AI model



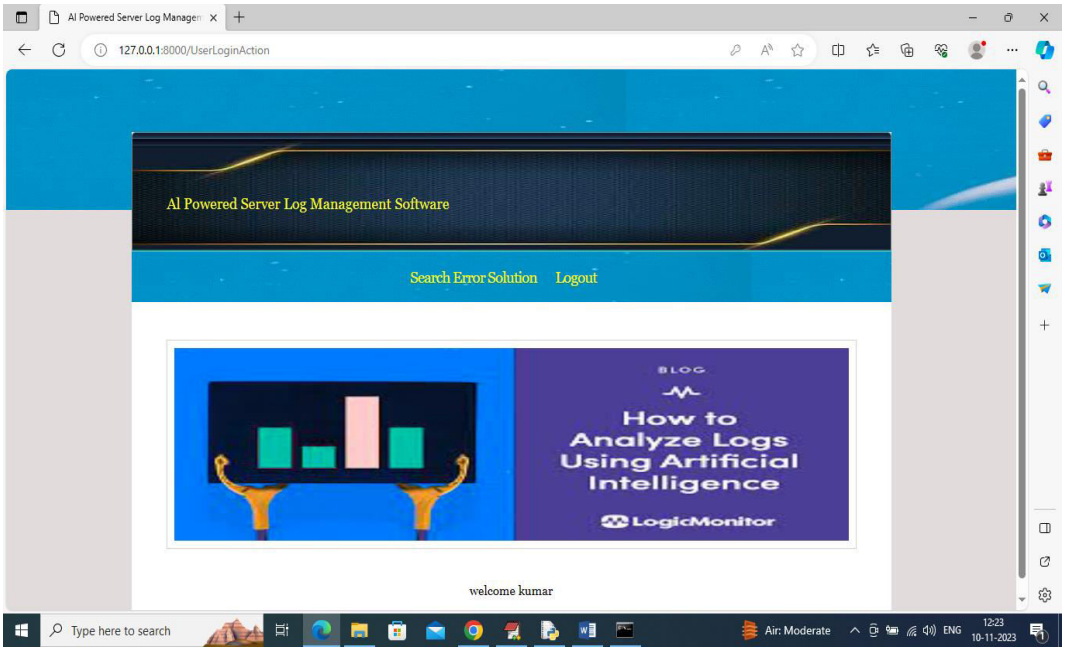
In above screen user is getting signup and then press button to get below page



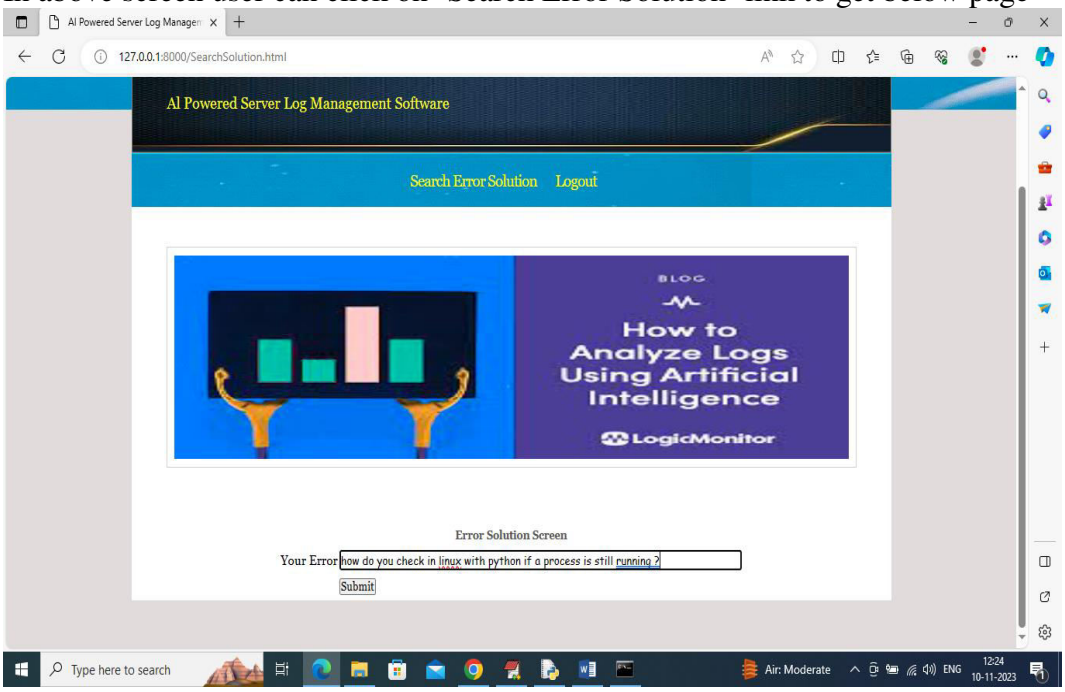
In above screen user signup completed and now click on 'User Login Here' link to get below page



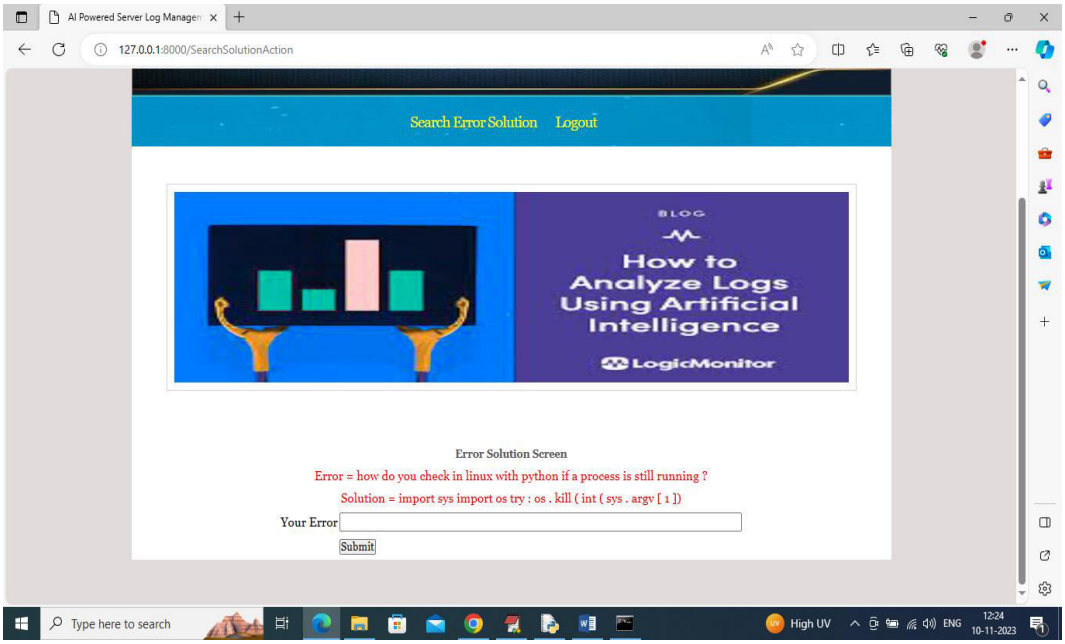
In above screen user is login and after login will get below page



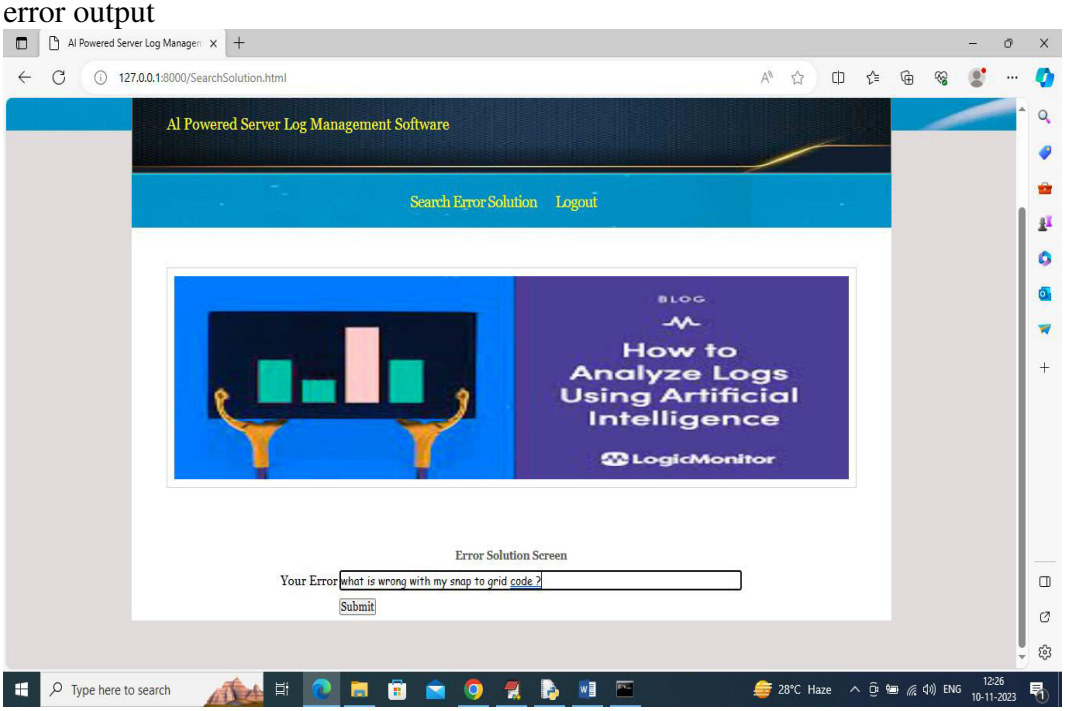
In above screen user can click on 'Search Error Solution' link to get below page



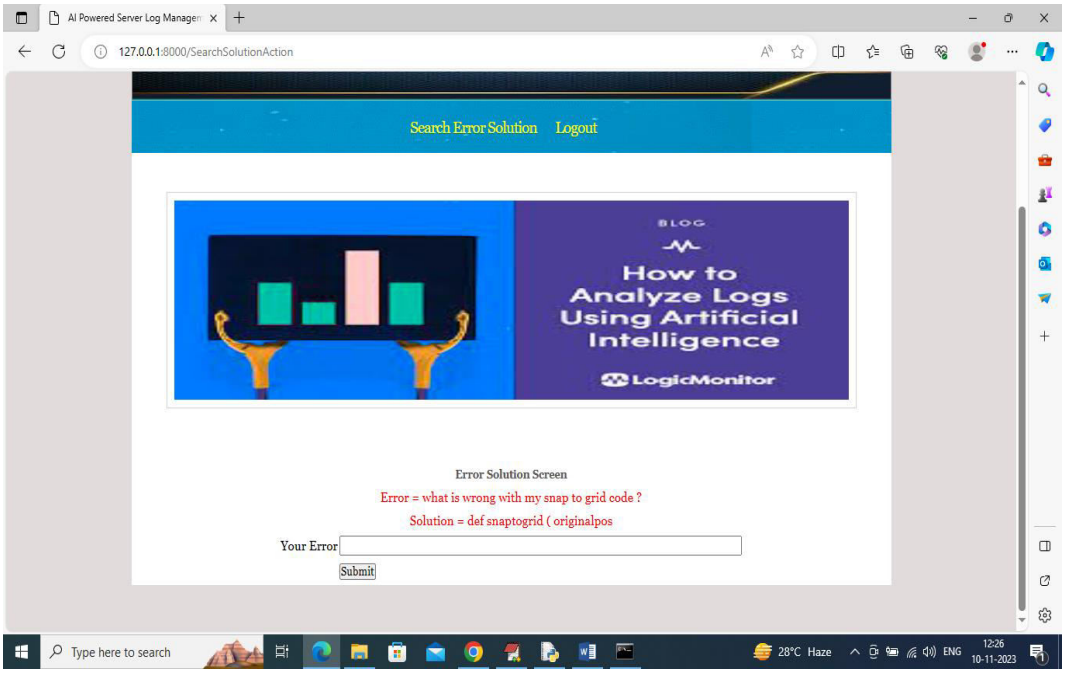
In above screen I entered some error query and then press button to get below output



In above screen in red colour text can see Error question and its possible solution and similarly you can enter any question and get output. If you want you can use some questions from 'testQuestions.txt' file which is available inside code folder and in below screen displaying another error output



In above screen entering some other error and below is the output



Similarly, by following above screens you can ask any question from AI model to get solution

6. CONCLUSION AND FUTURE WORK

CONCLUSION

The development and implementation of the AI-Powered Server Log Management Software mark a significant stride in addressing the challenges associated with the escalating complexity of server logs within modern IT infrastructures. By leveraging advanced artificial intelligence techniques, the project successfully achieves its objectives of automating log analysis, enhancing anomaly detection, and fortifying system reliability and security. The automated log analysis capabilities of the software significantly reduce the manual effort traditionally required for this task, empowering IT professionals to focus on strategic initiatives rather than routine log monitoring. The incorporation of machine learning algorithms ensures the intelligent categorization of logs, enabling the system to adapt and evolve over time. Real-time anomaly detection enhances the system's ability to identify and address potential issues swiftly, contributing to a more resilient IT environment.

7. REFRENCES

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