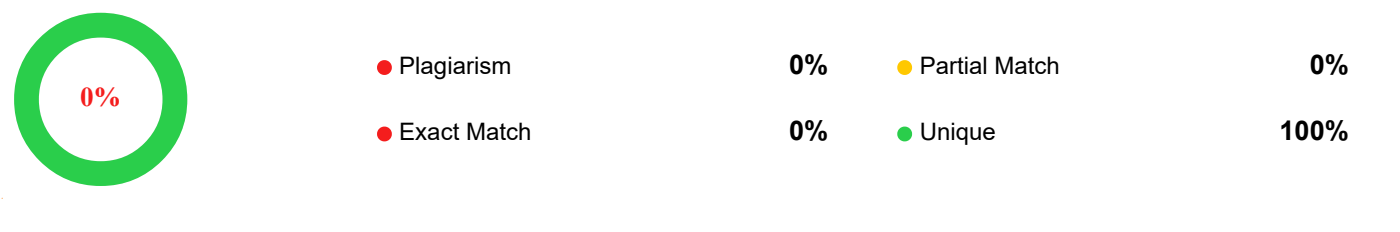


Plagiarism Detection Report by SmallSEOTOOLS



Scan details

Total Words	Total Characters	Plagiarized Sentences	Unique Sentences
867	6601	0	42 (100%)

#1 100% Unique

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The digital transformation in education has amplified the demand for immediate and accessible information, making automated support systems increasingly vital. Traditional, manual information dissemination methods often prove inefficient and fail to meet the dynamic needs of students accustomed to instant digital interactions. This project introduces JusLab, an AI-powered chatbot designed to address this critical need within the Post Graduate Diploma in Information Technology (PGDIT) program at Jahangirnagar University. JusLab aims to provide a modern, efficient, and interactive solution for information retrieval and administrative support, leveraging artificial intelligence to enhance the overall educational experience.

1.2 PROBLEM STATEMENT

The JusLab project was initiated to bridge a significant gap in the PGDIT program's existing information and support systems. Prospective and current students frequently struggle to access up-to-date academic information, curriculum details, administrative procedures, and faculty contacts. This leads to information overload, delayed and inconsistent responses, a high workload on administrative staff handling repetitive queries, and a lack of 24/7 support. JusLab directly addresses these issues by streamlining information access, providing consistent and immediate responses, and ultimately improving user interaction and satisfaction within the PGDIT program. By automating routine inquiries, the system aims to free human resources for more complex tasks while empowering students with self-service capabilities.

1.3 OBJECTIVES

The primary objectives guiding the development of the JusLab project are:

To develop an interactive AI chatbot specifically designed for the PGDIT program: Creating a conversational agent tailored to understand and respond to PGDIT-specific queries (curriculum, admissions, schedules, faculty), capable of guiding users through multi-step processes.

- To enhance user engagement and provide streamlined access to program-related information: Making information readily available and easily digestible, reducing the time and effort users spend searching.
- To integrate cutting-edge Natural Language Processing (NLP) methodologies for effective and accurate query processing: Powering the chatbot's intelligence with advanced NLP techniques for robust intent recognition, entity extraction, and sentiment analysis to ensure high accuracy in understanding diverse user inputs.
- To ensure the developed system is scalable, secure, and user-friendly for all stakeholders: Guaranteeing the system can handle increasing query volumes, protects data privacy through robust encryption and access controls, and offers an intuitive interface requiring minimal technical expertise.

1.4 SCOPE AND LIMITATIONS

The scope of the JusLab project is defined as follows:

- Target Audience: Prospective and current PGDIT students at Jahangirnagar University.
- Information Domain: Primarily PGDIT program-related information, including admission requirements, curriculum details, faculty contacts, and common administrative FAQs.
- Functionality: Understanding natural language, providing instant text-based responses, guiding users to relevant resources, handling basic conversational turns, and offering a fallback mechanism for unanswerable queries.
- Platform: Initial deployment is a web-based interface.

The project is subject to certain limitations:

- Real-time Dynamic Data Integration: Initial reliance on pre-processed or regularly updated static knowledge bases, without direct real-time integration with live university databases.
- Complex Administrative Transactions: The chatbot will guide users on how to perform complex transactions (e.g., course registration, payments) but will not execute them directly.
- Emotional Intelligence and Nuance: Limited capacity for advanced emotional intelligence or handling highly

subjective/personal queries.

- Language Support: Initial version primarily supports English.
- Reliance on Training Data Quality: Accuracy is dependent on the quality and diversity of training data.
- General Knowledge Limitations: Knowledge base confined to the PGDIT program domain.

1.5 IMPORTANCE OF STUDY

The JusLab study holds significant importance for both the PGDIT program and broader educational technology:

- Enhanced Student Experience: Provides 24/7 instant access to information, reducing frustration and improving student navigation of program requirements.
- Operational Efficiency for the Institution: Automates responses to FAQs, reducing administrative workload and allowing staff to focus on complex tasks.
- Improved Information Consistency and Accuracy: Centralized, AI-driven knowledge ensures consistent and accurate information, building trust.
- Modernization of Educational Support: Positions the PGDIT program at the forefront of educational innovation, potentially attracting more students.
- Data-Driven Insights: Generates valuable data on common student queries, informing continuous improvement of the knowledge base and program.
- Scalability of Support: Offers an efficient way to scale support capabilities as the PGDIT program grows.

CHAPTER 2

LITERATURE REVIEW

2.1 CHATBOT EVOLUTION / CHATBOT HISTORY

Chatbots have evolved significantly since their inception in the mid-20th century. Early systems like ELIZA (1966) and PARRY (1972) were rudimentary, relying on pattern matching and rigid rules, lacking true language understanding or adaptability. The 1990s saw the rise of knowledge-based systems like A.L.I.C.E., which used more extensive rule sets but remained largely pattern-driven.

The 2000s marked a shift towards Machine Learning and Statistical NLP, employing techniques like SVMs and HMMs for text classification and entity recognition. This era saw the emergence of early virtual assistants like Apple's Siri (2011).

The most significant revolution came in the 2010s with Deep Learning and AI-Driven Conversational Interfaces. Recurrent Neural Networks (RNNs) and LSTMs enabled better context understanding. The introduction of Transformer architecture (2017) and subsequent Large Language Models (LLMs) like BERT and GPT transformed the field, allowing models to

understand context and generate highly coherent, human-like text from vast datasets. Modern chatbots, including JusLab, often employ hybrid approaches, combining rule-based logic with advanced AI models for flexible interactions. This continuous progression towards more intelligent and adaptable agents underpins JusLab's design.