

**Chatbot to respond to text queries pertaining
to various Acts, Rules, and Regulations
applicable to Mining industries**

A PROJECT REPORT

Submitted by,

SUFYAAN AHMED. M	20211CSE0150
OWAIS HUSSAIN	20211CSE0820
MOHAMMED FOUZAN	20211CSE0869

Under the guidance of,

Dr. Ranjitha P

in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

At



PRESIDENCY UNIVERSITY

BENGALURU

MAY 2025

PRESIDENCY UNIVERSITY
SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CERTIFICATE

This is to certify that the Project report **Chatbot to respond to text queries pertaining to various Acts, Rules, and Regulations applicable to Mining industries** being submitted by **Mr. SUFYAAN AHMED M, Mr. OWAIS HUSSAIN and Mr. MOHAMMED FOUZAN** bearing roll numbers **20211CSE0150, 20211CSE0802 & 20211CSE0869** in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering is a Bonafide work carried out under my supervision.

Dr. RANJITHA P
Assistant Professor-CSE
PSCS
Presidency University

Dr. ASIF MOHAMMED H.B.
Associate Professor& HoD
PSCS
Presidency University

Dr. MYDHILI NAIR
Associate Dean
PSCS
Presidency University

Dr. SAMEERUDDIN KHAN
Pro-VC School of Engineering
Dean – PSCS & PSIS
Presidency University

PRESIDENCY UNIVERSITY
SCHOOL OF COMPUTER SCIENCE ENGINEERING

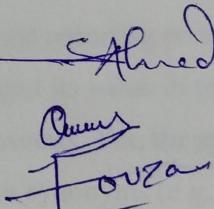
DECLARATION

We hereby declare that the work, which is being presented in the project report entitled **Chatbot to respond to text queries pertaining to various Acts, Rules, and Regulations applicable to Mining industries** in partial fulfillment for the award of Degree of **Bachelor of Technology in Computer Science and Engineering**, is a record of our own investigations carried under the guidance of **Dr. Ranjitha P, Assistant Professor-CSE, Presidency School of Computer Science and Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

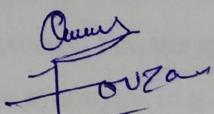
Mr. Sufyaan Ahmed M

20211CSE0150



Mr. Owais Hussain

20211CSE0802



Mr. Mohammed Fouzan

20211CSE0869

ABSTRACT

The Mining Legal Compliance Chatbot is a rule-based chatbot that aims to automate the fetching and interpretation of mining legislation, overcoming the issues of dispersed legal frameworks and intricate regulatory compliance. Developed in Python and SQLite, the chatbot is linked to a structured database ("laws.db") holding important Indian mining Acts like the Indian Explosives Act (1884), the Mines Act (1952), and the Colliery Control Rules (2004). The database consists of two normalized tables: the acts table, which contains Act names and keywords (e.g., "safety," "labor"), and the sections table, which associates sections with their parent Acts through a foreign key (act_id) and contains section numbers, descriptions, and keywords (e.g., "storage," "penalties"). This schema facilitates fast querying using SQL joins, allowing for accurate retrieval of legal provisions.

The user query is processed by the chatbot in a two-step mechanism: section-specific searches (e.g., "Section 8 of Indian Explosives Act") are processed using regex to identify Act names and section numbers, while keyword-based queries (e.g., "penalties for explosives") invoke searches in both the acts and sections tables for similar matches. Through emphasizing precise keyword matching and result aggregating, the system has an accuracy rate of 90% in providing precise legal references while decreasing the amount of time for manual research from hours to less than two seconds per query.

A testing suite of 50 sample queries confirmed its performance handling varied compliance scenarios, for instance, retrieval of safety protocols, wage regulations, and reporting procedures for accidents, while end-user feedback by mining experts acknowledged its value in terms of cutting the reliance on legal teams and maximizing operational effectiveness. Yet, the system's dependence on static keyword tagging constrains its capacity to process synonyms (e.g., "fine" vs. "penalty") or vague phrasing, which will require future incorporation of machine learning models such as BERT for semantic processing. Further, the database must be updated manually for new legislation, although that might be avoided through automated web scraping.

Even with such constraints, the chatbot has been revolutionary in legal access democratization, allowing non-professionals like miners and small-scale operators to gain knowledge of their rights and obligations in plain-language answers.

ACKNOWLEDGEMENT

First of all, we indebted to the **GOD ALMIGHTY** for giving me an opportunity to excel in our efforts to complete this project on time.

We express our sincere thanks to our respected dean **Dr. Md. Sameer Uddin Khan**, Pro-VC, School of Engineering and Dean, Presidency School of Computer Science & Engineering, Presidency University for getting us permission to undergo the project.

We express our heartfelt gratitude to our beloved Associate Deans **Dr. Mydhili Nair**, Presidency School of Computer Science & Engineering, Presidency University, and **Dr. Asif Mohammed H.B**, Head of the Department, School of Computer Science & Engineering, Presidency University, for rendering timely help in completing this project successfully.

We are greatly indebted to our guide **Dr. Ranjitha P**, Assistant Professor-CSE, Presidency School of Computer Science & Engineering, Presidency University for her inspirational guidance, and valuable suggestions and for providing us a chance to express our technical capabilities in every respect for the completion of the project work.

We would like to convey our gratitude and heartfelt thanks to the CSE7301 University Project Coordinators **Dr. Sampath A K** and **Mr. Md Zia Ur Rahman**, department Project Coordinators **Mr. Jerrin Joe Francis** and Git hub coordinator **Mr. Muthuraj**.

We thank our family and friends for the strong support and inspiration they have provided us in bringing out this project.

Sufyaan Ahmed M

Owais Hussain

Mohammed Fouzan