

Chatbot For Student Grievance Redressal Using RASA

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ABSTRACT

In academic institutions, effective grievance redressal mechanisms are essential to ensure student satisfaction, transparency, and institutional accountability. This paper presents the design and development of an intelligent Student Grievance Redressal Chatbot built using the Rasa framework. The proposed system leverages Natural Language Processing (NLP) and conversational AI to provide an automated, user-friendly platform for students to register complaints, track grievance status, and engage with institutional support systems.

The chatbot enables seamless complaint registration through structured and conversational inputs, ensuring ease of use and accessibility. It also provides real-time grievance status tracking, reducing the need for manual follow-ups. Additionally, the system incorporates a faculty feedback module, allowing students to submit standardized evaluations, thereby promoting continuous improvement in teaching quality. A discussion feature is integrated to facilitate communication between students and administrators, enhancing transparency and engagement. The backend system is designed to efficiently manage and store grievance data, ensuring secure and organized handling of student concerns. The Rasa-based chatbot is trained to understand diverse student queries and respond contextually, providing instant assistance and guidance. By automating routine processes and enabling 24/7 support, the system significantly reduces administrative workload and improves response efficiency.

The proposed solution demonstrates how conversational AI can transform traditional grievance handling systems into intelligent, scalable, and student-centric platforms. This

approach not only enhances user experience but also contributes to building a responsive and digitally empowered academic environment.

Key Words: Chatbot, Rasa, NLP, Student Grievance System, Conversational AI, Complaint Tracking, Dialogue Management

1. INTRODUCTION

In modern educational institutions, addressing student concerns efficiently is critical for maintaining transparency, trust, and overall academic quality. Traditional grievance redressal systems often rely on manual processes, such as physical complaint submissions or email-based communication, which can be time-consuming, inefficient, and lack proper tracking mechanisms. These limitations may lead to delays in issue resolution, reduced student satisfaction, and increased administrative burden.

With the growing use of Artificial Intelligence (AI) and Natural Language Processing (NLP), chatbots are increasingly being adopted to support user interaction in various domains, including education. Chatbots can provide quick responses, basic guidance, and continuous availability, making them useful for handling routine student queries. In this work, the chatbot is developed using the Rasa framework, an open-source platform that supports intent-based conversational systems.

The proposed chatbot is designed to understand predefined user inputs and respond accordingly, enabling functionalities such as complaint registration, status checking, and basic support. This demonstrates how a Rasa-based chatbot can be effectively used to automate simple grievance handling tasks and improve accessibility for students.

This Student Grievance Redressal Chatbot developed using the Rasa framework, aimed at streamlining the process of handling student complaints and feedback within an academic institution. The system allows students to register grievances through a conversational interface, check the status of their complaints in real time, and submit structured faculty feedback. Additionally, it incorporates a discussion module that facilitates interaction between students and administrators, improving communication and transparency.

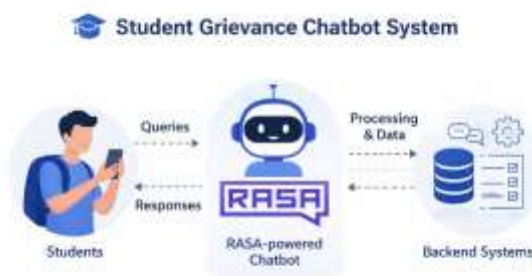


Figure 1. Student Grievance chatbot

The chatbot is designed to understand user intents and provide contextually relevant responses, ensuring a seamless and user-friendly experience. By automating routine grievance handling tasks, the proposed system reduces manual effort, minimizes response time, and enhances operational efficiency. Furthermore, it contributes to building a student-centric digital ecosystem that promotes accountability and continuous improvement within the institution.

The system also contributes to improved transparency and accountability. Through the status tracking feature, students are able to monitor the progress of their complaints, reducing uncertainty and the need for repeated follow-ups. This visibility helps in building trust between students and the administration, as it ensures that grievances are not overlooked or ignored. Additionally, administrators can maintain a structured record of all complaints, enabling better tracking, prioritization, and resolution of issues.

Another significant benefit is the reduction in manual workload for administrative staff. Routine

tasks such as collecting complaint details, responding to common queries, and providing updates are automated through the chatbot. This allows staff members to focus on more critical aspects of grievance resolution, thereby improving overall operational efficiency. The structured data collected by the system further supports better decision-making and reporting.

The inclusion of a faculty feedback module adds additional value to the system by enabling systematic evaluation of teaching quality. Students can provide feedback in a consistent format, which can be analyzed by the institution to identify strengths and areas for improvement. This contributes to maintaining academic standards and promoting a feedback-driven culture.

The system demonstrates the practical applicability of a Rasa-based chatbot in handling real-world institutional tasks. Although the chatbot operates on predefined intents and responses, it ensures reliable and consistent interactions. This simplicity makes the system easy to deploy, maintain, and extend in the future.

The proposed Student Grievance Redressal Chatbot provides an effective and user-friendly solution for managing student concerns in academic institutions. By integrating features such as complaint registration, grievance status tracking, faculty feedback, and basic interaction support, the system creates a centralized platform that simplifies communication between students and administration. The use of the Rasa framework enables the development of a structured and reliable conversational system that can handle multiple user requests efficiently.

By systematically capturing student complaints and feedback, the system creates a structured dataset that can be analyzed to identify recurring issues, common concerns, and areas requiring attention. This enables the institution to move from reactive problem-solving to proactive decision-making. In this way, the chatbot goes beyond basic interaction and contributes to continuous institutional development, making it a meaningful tool for both student support and strategic enhancement of educational quality.

2. LITERATURE SURVEY

Recent advancements in chatbot technology have significantly influenced various domains, including education, customer service, and administration. Early chatbot systems such as ELIZA were primarily based on rule-based pattern matching techniques, which laid the foundation for modern conversational systems. Over time, the integration of Natural Language Processing (NLP) and Machine Learning has enabled chatbots to understand user intent and generate more meaningful responses.

Several studies have explored the application of chatbots in educational environments. A study on an educational chatbot using the Rasa framework demonstrated how conversational systems can assist students by answering queries and reducing the workload of faculty members. The system used predefined intents and responses, highlighting that even simple chatbot architectures can effectively support student interaction. However, such systems are limited in handling complex or unseen queries.

Similarly, a Rasa-based college enquiry chatbot was developed to provide instant responses to student queries related to academic information. The chatbot utilized Rasa NLU for intent recognition and Rasa Core for dialogue management, enabling efficient query handling and reducing manual effort. The study emphasized that chatbot systems can improve response time and accessibility, but their performance depends heavily on the quality of training data and predefined conversational flows.

Another study focused on student service chatbots built using the Rasa framework for handling frequently asked questions in academic institutions. The results showed that such systems could successfully respond to a majority of user queries and significantly reduce the need for physical visits and administrative workload. However, the chatbot struggled with queries outside its knowledge base, indicating limitations in scalability and understanding. Research on chatbot-based systems in institutional environments highlights their role in automating administrative processes such as admissions,

hostel management, and student support services. These systems improve communication efficiency and provide real-time assistance, but often require further enhancements for handling complex interactions and large-scale deployment.

Despite these advancements, most existing systems focus primarily on query handling or information retrieval. Limited work has been done on integrating multiple functionalities such as grievance registration, complaint tracking, and feedback systems into a single conversational platform. Furthermore, many solutions either rely on highly complex AI models or remain restricted to basic query-response mechanisms.

3. PROPOSED SYSTEM

The proposed system is a Student Grievance Redressal Chatbot developed using the Rasa framework to provide an efficient and user friendly platform for handling student concerns within an academic institution. The system is designed to automate key processes such as complaint registration, grievance status tracking, faculty feedback collection, and basic interaction support through a conversational interface.

The architecture of the system follows a client-server model, where the chatbot serves as the interaction layer between users and the backend system. The user interacts with the chatbot through a web-based interface, which sends requests to the Rasa server. The Rasa framework processes these inputs using intent classification and predefined conversational flows, and generates appropriate responses based on trained data.

The chatbot is designed with multiple functional modules. The complaint registration module allows students to submit grievances by providing necessary details such as name, issue type, and description in a structured manner. The status tracking module enables users to check the progress of their submitted complaints using a unique identifier or basic details. The faculty feedback module collects standardized feedback from students, which can be used for performance evaluation and improvement. Additionally, a basic interaction module handles general queries and guides users through available services.

The system ensures structured data handling by storing user inputs and complaint details in a database, enabling efficient retrieval and management of records. This organized storage supports better tracking, monitoring, and reporting of grievances. The chatbot operates on predefined intents and responses, ensuring consistent and reliable interactions while minimizing errors.

The proposed system focuses on simplicity, usability, and practical implementation. It reduces manual effort, improves response time, and provides a centralized platform for student support services. Furthermore, the modular design of the system allows for future enhancements, such as advanced Natural Language Processing capabilities, integration with institutional databases, and expansion of chatbot functionalities.

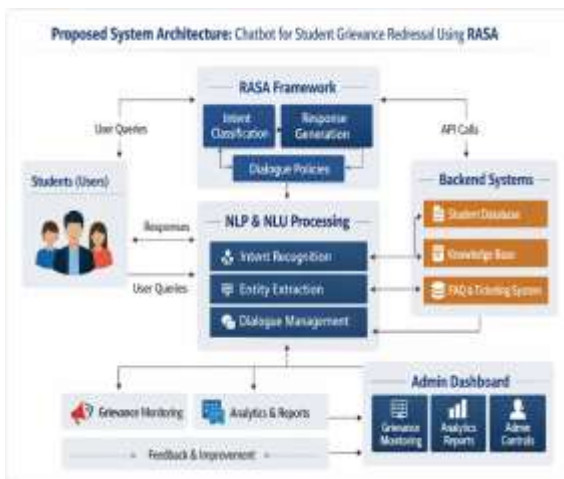


Figure 2. Proposed system architecture of Chatbot for Student Grievance Redressal.

The proposed Student Grievance Redressal Chatbot offers several important features that enhance the overall efficiency and usability of grievance handling in academic institutions. One of the major advantages of the system is its 24/7 accessibility, which allows students to register complaints, check their grievance status, and provide feedback at any time without being limited by office hours. By automating routine tasks such as complaint registration, responding to common queries, and providing status updates, the chatbot significantly reduces the workload on

administrative staff, enabling them to focus on resolving issues more effectively.

The system also promotes transparency by allowing students to track the progress of their complaints, thereby reducing uncertainty and building trust in the grievance redressal process. The proposed system follows a structured workflow where the user initiates interaction through the chatbot interface. The input provided by the user is processed by the Rasa Natural Language Understanding (NLU) component, which identifies the intent and extracts relevant information. Based on the identified intent, the dialogue management component selects the appropriate response or action. In the case of complaint registration, the chatbot collects required details step by step and stores them in the database. For status tracking, the system retrieves relevant information and displays it to the user. This flow ensures smooth and logical interaction between the user and the system.

4. RESULTS DESCRIPTION

The login interface of the proposed ResolveX chatbot system is designed with a clean, user-friendly layout that ensures easy access for both students and administrators. The page is divided into two sections: an informational panel on the left and an authentication panel on the right. The left section highlights the purpose of the system with a welcoming message and key features such as safe and anonymous grievance submission, AI-assisted complaint registration, and real-time tracking using a unique complaint ID. The right section provides the login functionality, allowing users to select their role (Student or Admin) and securely enter their credentials, including Student ID and password.

A clearly visible “Log in” button facilitates quick access, while an option to create a new student account supports first-time users. The interface emphasizes simplicity, accessibility, and clarity, ensuring that users can efficiently interact with the grievance redressal system without confusion, thereby enhancing overall usability and engagement.

The login page is designed to ensure secure and role-based access, allowing users to authenticate themselves as either students or administrators

before interacting with the system. It emphasizes data privacy and system integrity by validating user credentials and preventing unauthorized access.

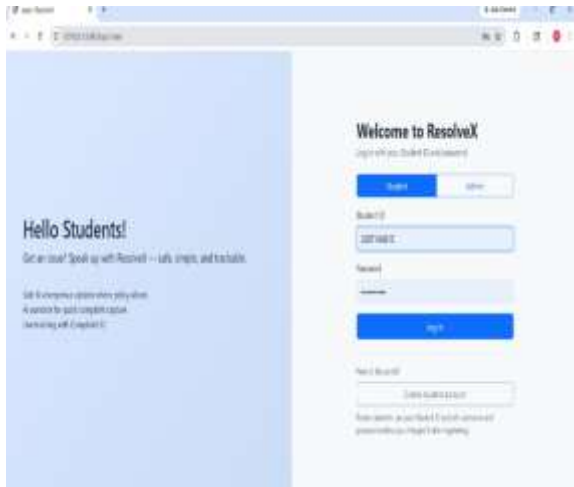


Figure 3. Login page of chatbot

The chatbot interface of the ResolveX system provides an interactive and intelligent platform for students to register and manage grievances efficiently. The page is structured with a sidebar navigation menu that includes options such as Home, Dashboard, Raise Grievances, My Complaints, Discussion, FAQ, and Profile, enabling seamless navigation across different modules. The main section features the Grievance Bot, which operates in an active session and guides users through a conversational flow to collect essential details such as roll number, email, and department for complaint registration. The chatbot supports real-time interaction, allowing users to type messages or select quick action buttons like “Register a complaint,” “Check status,” and “Categories,” thereby enhancing usability and reducing input effort. A visible “Bot online” indicator ensures system availability, while the chat window maintains a structured conversation history for clarity. This interface leverages AI-driven dialogue management to simplify the grievance submission process, improve user engagement, and provide a more accessible and automated alternative to traditional complaint handling systems.

The conversational design follows a structured dialogue flow, minimizing user errors by prompting for specific inputs at each step and

validating responses in real time. Furthermore, the system integrates backend services to store complaint details securely and generate unique complaint IDs for tracking purposes. The inclusion of quick-reply buttons and guided prompts reduces the cognitive load on users, making the interaction intuitive even for first-time users.

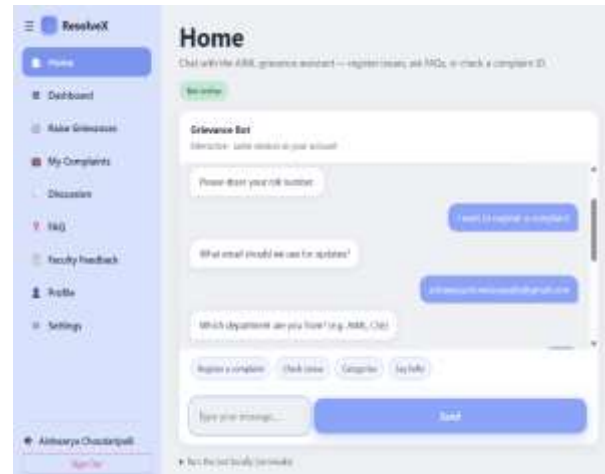


Figure 4. chatbot interface

The Admin Home page of the ResolveX system serves as a centralized dashboard for efficient grievance management and monitoring. It provides a clear overview of complaint statistics through summary cards displaying the total number of complaints, pending cases, resolved issues, and feedback count, enabling administrators to quickly assess system activity. The interface includes a structured complaint management table that lists essential details such as complaint ID, title, student name, category, priority level, and current status. Administrators are equipped with filtering options (All, Pending, Resolved) to streamline navigation and focus on specific cases. A key functionality of this page is the ability to update the status of each complaint directly through an action dropdown, followed by a save operation, ensuring real-time tracking and resolution updates. The design emphasizes clarity, responsiveness, and ease of use, allowing administrators to handle grievances systematically, improve response time, and maintain transparency in the redressal process.



Figure 5 : Admin Home page

The Complaint Updates interface of the Chatbot system is designed to provide students with a transparent and user-friendly platform to track the progress of their submitted grievances. This page displays a personalized view titled “My Complaints,” where students can access a list of all their registered complaints along with key details such as complaint ID, title, submission date, and current status (e.g., Pending or Resolved). The interface ensures real-time visibility of updates made by administrators, allowing students to stay informed without the need for manual follow-ups. Its clean layout and intuitive navigation enhance usability, enabling students to quickly identify the status of each complaint. By offering continuous tracking and clear status indicators, this module strengthens accountability, improves communication between students and administration, and increases trust in the grievance redressal process.

The structured presentation of information reduces ambiguity and allows students to track the lifecycle of their grievance from submission to resolution. By minimizing the need for direct communication and manual follow-ups, this interface significantly improves system efficiency, accountability, and user satisfaction within the grievance redressal process.

The Admin Dashboard serves as the central control unit of the student grievance redressal system. It enables administrators to efficiently monitor, manage, and resolve student complaints in real time. The dashboard provides a structured view of all submitted grievances, including their status, category, priority, and timestamps.

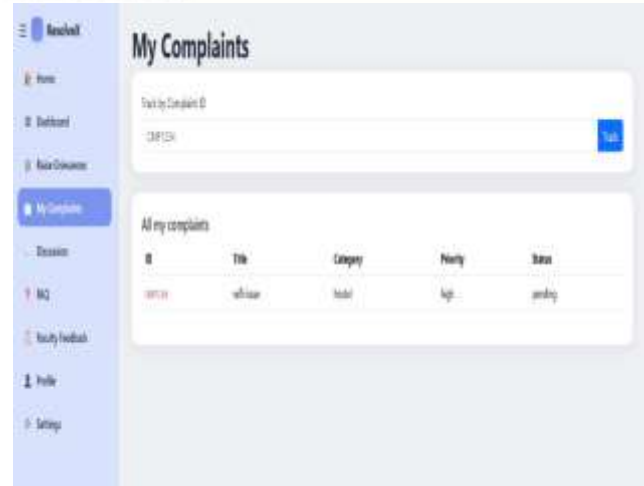


Figure 6. Complaint Updates interface

The Faculty Feedback Results interface in the Chatbot system provides administrators with a structured view of feedback submitted by students regarding faculty performance. The page is organized into distinct sections, including complaint feedback and faculty feedback, ensuring clear separation of different feedback types. The faculty feedback section presents data in a tabular format, displaying key attributes such as Student ID, Student Name, Faculty Name, Department, and Rating. This organized layout enables administrators to efficiently analyze feedback trends and assess faculty performance across departments. The inclusion of ratings allows for quantitative evaluation, supporting data-driven decision-making for academic improvements. Additionally, the interface handles cases where feedback is unavailable by clearly indicating the absence of complaint feedback, thereby maintaining transparency. Overall, this module enhances institutional quality assurance by providing a centralized, accessible, and easy-to-interpret feedback management system.



Figure 7. Faculty Feedback form

5. CONCLUSION

The proposed Student Grievance Redressal Chatbot presents an effective and practical solution for improving the management of student concerns in academic institutions. By leveraging the Rasa framework, the system provides a conversational interface that simplifies processes such as complaint registration, grievance status tracking, and faculty feedback collection. The integration of these functionalities into a single platform enhances accessibility, reduces response time, and ensures better organization of grievance-related data.

The system successfully demonstrates how chatbot technology can be utilized to automate routine interactions, thereby reducing the workload on administrative staff and improving overall operational efficiency. The structured approach to data collection and management further supports transparency and accountability in handling student grievances. Additionally, the user-friendly design of the chatbot ensures that it can be easily adopted by students without requiring technical expertise.

Although the chatbot operates on predefined intents and responses, it effectively fulfills its intended purpose and serves as a reliable support system for student services. The project highlights the potential of simple, intent-based conversational systems in addressing real-world problems within educational environments.

In conclusion, the proposed system contributes to the development of a more responsive, transparent, and student-centric grievance redressal process. It also provides a strong foundation for future enhancements, such as advanced natural language understanding, integration with institutional databases, and expanded functionalities, making it a scalable solution for modern academic institutions.

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