Scheme Connect Portal : One Stop for All Government Schemes

A synopsis submitted

in Partial Fulfillment of the Requirements

for the Degree of

BACHELOR OF TECHNOLOGY

in

Department of Artificial Intelligence and Machine Learning

by

Ritwik Banerjee

Rohan Sonune

Varad Kodgirwar

Guided by

Dr. Trupti Mohota

G H Raisoni College of Engineering and Management, Wagholi, Pune

(An Empowered Autonomous Institute (Accredited by NAAC A+ Grade), Affiliated to SPPU, Pune

June 2025

Synopsis

1 Introduction

The Scheme Connect Portal is a unified digital platform designed to simplify access to various government and private schemes tailored for Farmers, Students, Hospitals, and Patients. The project addresses the challenge of fragmented and often inaccessible welfare systems by creating a centralized solution where users can discover, apply for, and track the status of schemes based on their profile, location, and eligibility. This initiative ensures that the benefits of numerous welfare programs reach the intended audience through an easy-to-navigate and efficient platform [1].

To enhance user experience and streamline processes, the portal includes a role-based interface and incorporates AI-driven functionalities, such as personalized scheme recommendations and an intelligent Chatbot system. The Chatbot handles user queries, guides them through the application process, and escalates grievances to human support when needed. Admin users are equipped with tools to manage schemes, monitor engagement, broadcast updates, and ensure data integrity across the system [2].

This platform aims to bridge the gap between citizens and available welfare resources by leveraging modern web technologies and smart automation. Its multi-user architecture, grievance redressal system, and seamless interface make it a scalable, accessible, and inclusive solution for digital governance [3].

2 Objectives

1. To Centralize Access to Government and Private Schemes : Create a unified digital platform that allows Farmers, Students, Hospitals, and Patients to discover, apply for, and track multiple schemes from a single portal.

2. To Deliver Personalized Scheme Recommendations : Use rule-based filtering to recommend schemes tailored to each user's profile, such as location, occupation, education, or healthcare needs.

3. Streamline application and grievance processes : Simplify the application process and enable users to file and track grievances with the help of an integrated AI-powered chatbot and human support team.

3 Literature Review

Modern e-governance platforms are increasingly leveraging digital technologies to bridge the gap between government schemes and the public. The development of such platforms can be broadly understood through two categories: traditional web systems and AI-integrated intelligent systems.

3.1 Conventional Web-Based Systems

Earlier efforts in digital governance primarily relied on conventional web-based technologies. These systems provided basic functionalities such as scheme listing, user registration, and manual application tracking. Studies show that while these platforms improved accessibility to some extent, they lacked personalized recommendations, scalability, and efficient grievance handling mechanisms [4, 5].

In such systems, application processing was either manual or semi-automated, which led to delays, user dissatisfaction, and poor scheme utilization. Moreover, the lack of role-based access control and real-time communication made them less effective for dynamic user needs

3.2 AI-Powered and Intelligent Systems

Recent advancements in AI, rule-based systems, and NLP-powered chatbots have transformed digital scheme portals into intelligent, user-centric platforms. These newer systems can personalize user experiences by recommending schemes based on user attributes like region, occupation, or academic/medical background [6, 7].

Integration of chatbots and decision-tree-based grievance escalation mechanisms has enabled real-time support, significantly reducing response times and improving user engagement. Platforms employing Finite State Machine (FSM) models for tracking application states have shown improved transparency and accountability in scheme delivery [8].

Furthermore, studies indicate that AI-backed systems, when combined with well-structured backend analytics, contribute to better administrative decision-making and resource allocation [9].

4 Methodology

The development of the integrated scheme management platform will follow a structured methodology involving several key phases:

- Requirement Analysis : Conduct detailed stakeholder interviews and surveys to understand the specific needs of different user groups : Farmers, Students, Hospitals, Patients, Admin, and Customer Support teams. Identify core functionalities such as scheme discovery, application management, grievance handling, and notification services. Define system requirements including security, scalability, and usability [1, 4].

- System Design : Architect a modular system with clear separation of roles and responsibilities: User interfaces, Admin panel, Customer Support (Chatbot and Human Support), and Backend services. Design database schema to organize various scheme categories (Hospital, Patient, Farmer, and Student), applications, and user data. Develop interaction flow diagrams and system architecture to illustrate data flow and component interactions. Design Chatbot workflows for FAQs, grievance filing, and escalation procedures [3, 5, 7].

- Development : Implement user authentication and authorization modules for secure login and role management. Develop frontend interfaces tailored to each user group's needs, ensuring intuitive navigation and personalized scheme recommendations [6, 7]. Build backend services to handle scheme CRUD operations, application processing, analytics, and notification management. Integrate AI-powered Chatbot to support user queries and automate grievance filing, with escalation to human support for complex issues. Develop the grievance handling process outside the core database, managed by the Customer Support system [2].

- Testing : Unit Testing: Perform unit tests on individual modules and components (e.g., user authentication, scheme management, application submission) to verify that each function behaves as expected in isolation [8]. Integration Testing: Conduct integration tests to ensure seamless interaction between the frontend interface, backend services, database operations, and customer support systems. This includes validating data flow and correct API responses [5]. API Testing with Postman: Use Postman to rigorously test all backend RESTful APIs for scheme retrieval, application processing, user authentication, and notifications. Validate endpoints for correct request handling, response codes, data integrity, error handling, and security (such as authorization tokens).

5 Project Plan and Timeline

Table 1: Timeline for Development and Implementation of SchemeConnect

Activity/ Months	**Jul.'25**	**Aug.'25**	**Sep.'25**	**Oct.'25**
Problem Statement Identification	✓			
Literature Review	✓			
Requirement Analysis	✓			
Designing		✓		
Experimental Analysis		✓		
Module-wise Implementation		✓	✓	
Testing and Debugging			✓	
Project Report Preparation				✓

6 Expected Outcomes

1. Unified Scheme Access Platform : A centralized digital portal that allows Farmers, Students, Hospitals, and Patients to discover, apply for, and track government and private schemes efficiently, eliminating the need to visit multiple departments or websites.

2. Personalized Scheme Recommendations : An intelligent, rule-based recommendation system that suggests relevant schemes tailored to each user's profile such as location, age, educational background, health status, or type of organization ensuring higher eligibility and better access.

3. AI-Powered Grievance and Support System : Integration of a Chatbot with escalation logic that provides 24/7 support for FAQs, guides users through applications, and escalates complex grievances to human support, ensuring faster issue resolution and enhanced user satisfaction.

4. Transparent Application and Status Tracking : A robust system that allows users to track their scheme applications in real-time through clear status transitions (e.g., Submitted $\rightarrow$ Under Review $\rightarrow$ Approved/Rejected), promoting trust, transparency, and accountability.

References

[1] S. Agrawal, P. Raj, and M. Sharma, "e-governance platform for citizen services: A review of government scheme portals," in *IEEE Conf. on e-Governance*, vol. 5, no. 2, 2020, pp. 45–50.

[2] R. Deshmukh and A. Kulkarni, "Ai-based chatbot system for government services," in *IEEE International Conference on Smart Technologies*, 2021, pp. 112–117.

[3] A. Sinha, "Modular e-governance framework for public service delivery," *IEEE Transactions on Smart Government*, vol. 9, no. 3, pp. 33–39, 2022.

[4] V. Sharma and T. Reddy, "E-governance framework for public scheme delivery in india," *International Journal of Digital Governance*, vol. 10, no. 2, pp. 45–52, 2018.

[5] R. Singh and P. Malhotra, "Web-based scheme tracking systems: Benefits and limitations," *Journal of E-Government Studies*, vol. 7, no. 1, pp. 21–30, 2019.

[6] A. Patel and R. Desai, "Ai in e-governance: A case study on chatbot integration," *IEEE Access*, vol. 9, pp. 114 785–114 793, 2021.

[7] K. Mehta, "Rule-based personalization in government portals," *International Journal of Web Applications*, vol. 12, no. 4, pp. 310–318, 2020.

[8] N. Kumar, "Fsm implementation for application tracking in public sector platforms," *Journal of Computer Systems*, vol. 15, no. 3, pp. 150–158, 2021.

[9] A. Ramesh and S. Iyer, "Data-driven public administration using smart portals," *Government Technology Review*, vol. 8, no. 1, pp. 9–16, 2022.

Dr. T. N. Mohota	**Dr. V. Y. Baviskar** **Dr. T. N. Mohota**	**Dr. R. Y. Sable**
Project Guide	*Project Coordinator*	*HoD, AI and AIML*