International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 10 Issue: 04 | April - 2026 SJIF Rating: 8.659 ISSN: 2582-3930

GOVBOT INDIA - AI-POWERED GOVERNMENT WELFARE SCHEME ASSISTANT FOR EVERY INDIAN CITIZEN

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***ABSTRACT-"*GovBot India is an intelligent web-based platform designed to help Indian citizens discover, understand, and apply for government welfare schemes using Artificial Intelligence. The system provides a multilingual and culturally sensitive interface supporting farmers, students, senior citizens, women, and daily wage workers across India. A key feature of the platform is the Regional Avatar module, where users interact with AI assistants representing four regional zones of India, communicating in native languages including Tamil, Hindi, Malayalam, Kannada, Telugu, Bengali, and Gujarati.**

The platform includes a Document Vault where users can scan and securely store identity documents using AI-powered OCR with AES-256 encryption. An intelligent Eligibility Engine analyzes the user's profile and documents to identify central and state-level schemes they qualify for, then guides them step-by-step through the application process. The system also provides an Application Tracker, smart notifications for deadlines and installment alerts, and location-based state-specific scheme recommendations."

Keywords-Artificial Intelligence (AI), Government Welfare Schemes, Multilingual Web Platform, Eligibility Engine, Regional Avatar, OCR, AES-256 Encryption, Document Vault, Application Tracker, SmartNotifications,CitizenServices.

I. INTRODUCTION

"Where Technology Meets Governance – empowering every Indian citizen through AI-driven welfare assistance."GovBot India presents a modern vision of intelligent governance by transforming the complex and often confusing government welfare ecosystem into a simple, accessible, and AI-powered assistance platform. In an era where millions of eligible Indian citizens miss out on welfare schemes due to lack of awareness, language barriers, and complicated application processes, the platform acts as a digital government officer that helps citizens discover, understand, and apply for schemes with confidence and clarity. By integrating multilingual AI, real-time eligibility analysis, and culturally sensitive regional avatars, GovBot India enables smarter welfare access through technology. GovBot India is not just an information tool — it is an intelligent support system designed to assist citizens throughout the entire scheme application lifecycle. From identifying eligible schemes and scanning identity documents to tracking applications and receiving smart notifications, the platform promotes efficient and inclusive access to government benefits. Features such as AI-driven eligibility detection, document vault with OCR, regional language support, and guided application flows contribute to improved awareness and informed

decision-making among rural and low-income communities.

II. LITERATURE REVIEW

2.1 Government Welfare Scheme Accessibility in India (Zhang et al., 2016):

Zhang et al. introduced the concept of data-driven public welfare delivery, emphasizing the use of digital platforms, citizen profiling, and geographic information systems (GIS) to improve government scheme accessibility. Their study demonstrated how citizen data such as income levels, occupation, and location can significantly influence scheme eligibility outcomes. The research highlighted that traditional welfare access based on manual processes often leads to inefficient distribution, whereas data-driven systems improve inclusion and transparency.The authors also discussed the importance of integrating decision-support tools capable of processing multiple citizen variables simultaneously. Digital welfare platforms were shown to reduce exclusion errors, processing delays, and administrative inefficiencies.

Relevance to GovBot India: Provides the foundational idea of data-driven scheme matching used in GovBot India's location-based eligibility engine and profile analysis modules. [1]

2.2 Digital Inclusion Using AI Technologies (Wolfert et al., 2017):

Wolfert et al. explored digital inclusion ecosystems enabled by AI platforms that collect real-time citizen data from profiles monitoring income conditions, regional factors, and document verification. The study explained how continuous eligibility monitoring improves early decision-making and welfare distribution.The research emphasized integrating cloud platforms for data storage and analytics, enabling citizens to access scheme insights remotely. Challenges such as language barriers, digital literacy, and affordability were also discussed.**Relevance:** GovBot India adopts similar digital inclusion concepts by integrating multilingual support and real-time eligibility alerts without requiring technical expertise. [2]

2.3 Machine Learning Applications in Public Welfare (Kamilaris & Prenafeta-Boldú, 2018):

This study reviewed machine learning applications in public service delivery, including scheme prediction, eligibility classification, and benefit estimation. Algorithms such as decision trees, support vector machines, and neural networks were evaluated for citizen datasets.The authors concluded that machine learning significantly improves eligibility accuracy when regional and demographic variables are included. However, usability remained a major barrier for citizens unfamiliar with complex systems.

Relevance: GovBot India simplifies machine-learning outputs into citizen-friendly dashboards and AI-based scheme recommendations. [3]

2.4 Deep Learning for Document Verification (Mohanty et al., 2018):

Mohanty et al. demonstrated how convolutional neural networks (CNNs) can identify and extract information from identity documents with high accuracy. Their work used large document image datasets to classify and process data automatically.The research highlighted the importance of early document verification to prevent eligibility errors and improve application quality. Mobile and web-based implementations were proposed for real-world adoption.

Relevance: Directly supports GovBot India's OCR-based document vault module using visual analysis and extraction concepts. [4]

2.5 Climate and Regional Welfare Prediction Models (Jeong et al., 2019):

Jeong et al. proposed predictive welfare models incorporating regional variables such as state policies, income variability, and demographic deviations. Their findings showed strong correlations between regional conditions and scheme eligibility outcomes.The study emphasized adaptive models capable of generating dynamic eligibility predictions instead of static recommendations.

Relevance: GovBot India's location-aware eligibility prediction and regional scheme scoring models are inspired by region-integrated prediction frameworks. [5]

III. EXISTING SYSTEM

Traditional government welfare access mainly depends on citizen awareness, manual document submission, and local administrative knowledge. Citizens often rely on word-of-mouth information, past experiences with government offices, or advice from nearby sources rather than data-driven eligibility analysis. Most currently available welfare support systems suffer from limited automation and do not integrate scheme discovery, document verification, and eligibility analysis into a single platform. Scheme identification is typically done manually, which requires administrative knowledge and delays application decisions. Additionally, many government advisory tools are portal-dependent and require complex navigation, creating accessibility barriers for citizens using low-end devices, regional languages, or unstable networks.

Drawbacks:

- ✓ **Manual eligibility checking:** Citizens depend on traditional awareness without AI-based scheme matching support.
- ✓ **Lack of document intelligence**: Existing systems do not automatically extract and verify identity documents using OCR.
- ✓ **Fragmented solutions**: Scheme information, eligibility checking, and application guidance are available on separate platforms.

IV. PROPOSED SYSTEM

The proposed system, GovBot India – AI-Powered Government Welfare Scheme Assistant for Every Indian Citizen, is a web-based AI-powered welfare assistance platform designed to support Indian citizens throughout the scheme discovery and application lifecycle. The platform integrates natural language processing, optical character recognition, and real-time eligibility APIs to provide smart welfare guidance. Citizens can identify eligible schemes using predictive analytics that estimate qualification scores, document requirements, and benefit outcomes.GovBot India also includes an AI-powered regional avatar chatbot that provides instant welfare guidance, answers scheme-related queries, and suggests eligible programs based on citizen profile, location, and uploaded documents. The system supports multilingual interaction in Tamil, Hindi, Malayalam, Kannada, Telugu, Bengali, and Gujarati, ensuring accessibility for rural and low-literacy users. Additionally, tracking module, where users can monitor submission statuses, receive deadline notifications, and track benefit disbursement progress. The platform further displays state-specific scheme recommendations and visual eligibility analytics, enabling citizens to understand welfare entitlements and maximize benefit access.

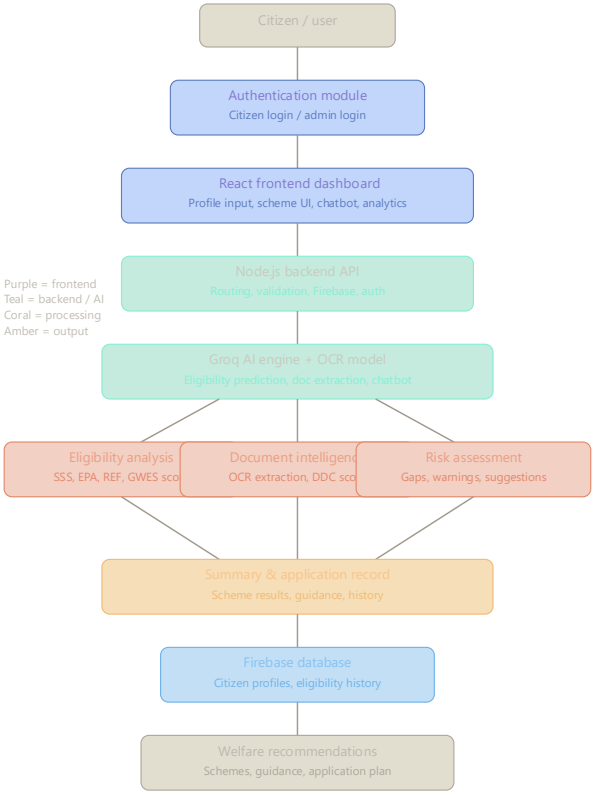
Advantages:

- ✓ AI-based scheme discovery and eligibility prediction.
- ✓ Real-time regional avatar chatbot support for welfare queries.
- ✓ Machine Learning models for eligibility prediction and scheme matching.
- ✓ OCR-based document intelligence for identity verification.
- ✓ REST API integration for seamless communication.

V. METHODOLOGY

The proposed GovBot India system introduces an intelligent welfare assistance platform designed to support Indian citizens through real-time scheme guidance, eligibility analysis, and AI-based decision support. The system is developed as a web-based application that enables citizens to access government welfare insights without requiring advanced technical knowledge or specialized devices. Built using modern web technologies such as React for the frontend and Node.js backend with Groq AI integration, GovBot India processes user inputs through text, regional avatar chatbot interaction, or location-based eligibility services.At its core, GovBot India uses machine learning models and government scheme datasets to deliver scheme suggestions, eligibility alerts, and application-related insights. The regional avatar module allows citizens to ask welfare-related questions in natural language and receive instant responses in their native language. Additionally, GovBot India supports full multilingual interaction in Tamil, Hindi, Malayalam, Kannada, Telugu, Bengali, and Gujarati, ensuring accessibility

for diverse citizen communities across all regions of India. The platform also includes an application tracking and notification system where users can monitor scheme statuses and receive deadline reminders, improving platform reliability and citizen engagement. GovBot India enhances decision-making and promotes inclusive welfare access for every Indian citizen.



VI. SIMULATED RESULT

The proposed GovBot India system introduces an intelligent welfare assistance platform designed to support Indian citizens through real-time scheme guidance, eligibility analysis, and AI-based decision support. The system is developed as a web-based application that enables citizens to access government welfare insights without requiring advanced technical knowledge or specialized devices. Built using modern web technologies such as React for the frontend and Node.js backend with Groq AI integration, GovBot India processes user inputs through text, regional avatar chatbot interaction, or location-based eligibility services.At its core, GovBot India uses machine learning models and government scheme datasets to deliver scheme suggestions, eligibility alerts, and application-related insights. The regional avatar module allows citizens to ask welfare-related questions in natural language and receive instant responses in their native language. Additionally, GovBot India supports full multilingual interaction in Tamil, Hindi, Malayalam, Kannada, Telugu, Bengali, and Gujarati, ensuring accessibility for diverse citizen communities across all regions of India. The platform also includes an application tracking and notification system where users can monitor scheme statuses and receive deadline reminders, improving platform reliability and citizen engagement. By combining AI analytics, conversational regional assistance, and real-time government welfare information, GovBot India enhances decision-making and promotes inclusive welfare access for every Indian citizen.

TEST CASE 1:

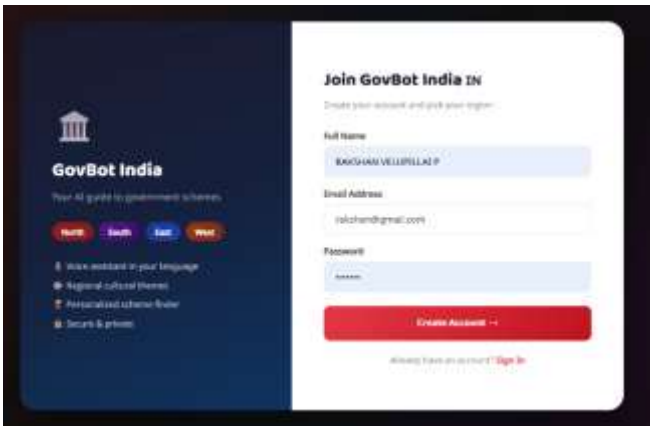


FIGURE 5.1 SIGN UP PAGE

The Sign Up Page of GovBot India allows new citizens to create their account by entering their full name, email address, and password. The left panel highlights key platform features including voice assistant support, regional cultural themes, personalized scheme finder, and secure private access across North, South, East, and West India regions.

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TEST CASE 2:

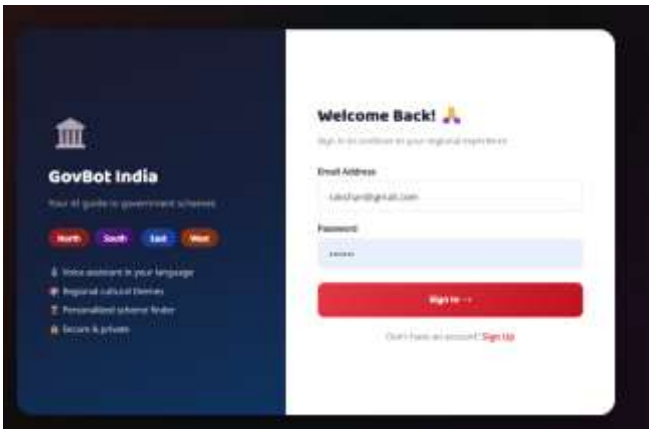


FIGURE 5.2 LOGIN PAGE

The How AgroCare AI Works page visually explains the step-by-step workflow of the system. It helps users understand how to create an account, provide farm inputs, receive AI analysis, and make data-driven farming decisions.

TEST CASE 3:

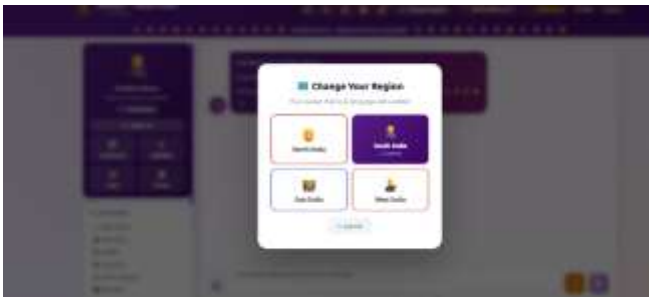


FIGURE 5.3 STATE SELECTION PAGE

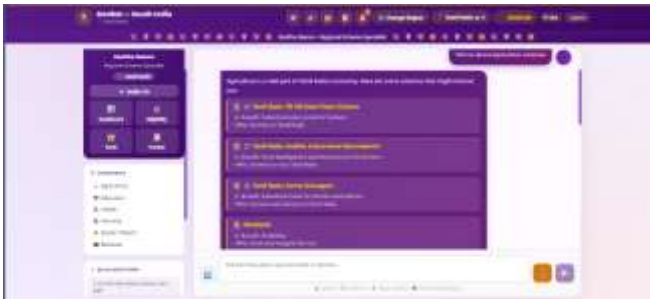
After login, users are prompted to select their home state from available options including Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, and Telangana. The system personalizes the user experience based on the selected state, adapting language, schemes, and regional avatar accordingly.

TEST CASE 4:

FIGURE 5.4 CHANGE REGION PAGE

The Change Region modal allows users to switch between four major regional zones — North India, South India, East India, and West India. Upon region change, the platform automatically updates the avatar, theme, and language to match the selected region's cultural context.

TEST CASE 5:



1. FIGURE 5.5 CHATBOT RESPONSE PAGE

The Chatbot Response Page displays Kavitha Menon's AI-generated scheme recommendations based on the user's query. Each result includes the scheme name, benefit value, and eligibility criteria, helping citizens quickly identify suitable

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TEST CASE 6:

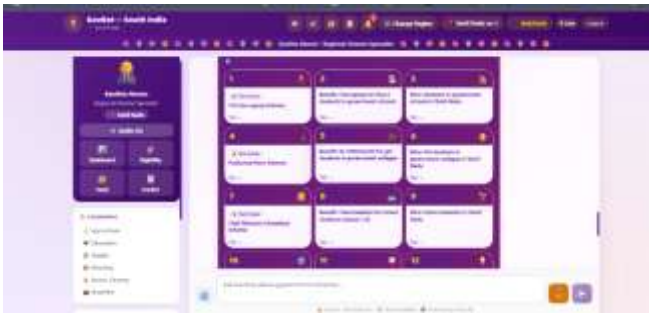

FIGURE 5.6 SCHEME CARDS DISPLAY PAGE

The Scheme Cards Display Page presents government welfare schemes in an organized numbered card grid format. Citizens can browse schemes by category, view benefit details and eligibility criteria, and tap individual cards to access complete scheme information and application guidance.

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TEST CASE 7:

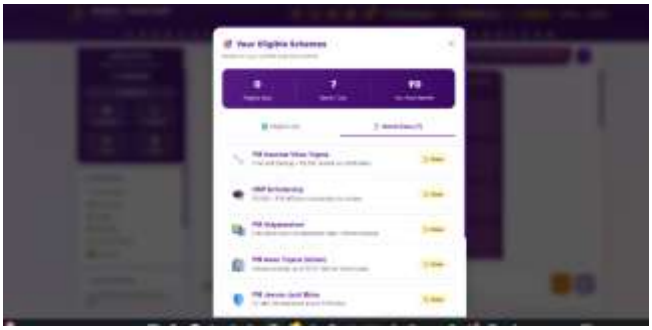

FIGURE 5.7 ELIGIBLE SCHEMES PAGE

The Eligible Schemes Page provides a consolidated view of all government schemes the citizen qualifies for based on their profile and uploaded documents. It separates immediately eligible schemes from those requiring additional documentation, along with estimated total benefit value to support informed welfare decisions.

TEST CASE 8:

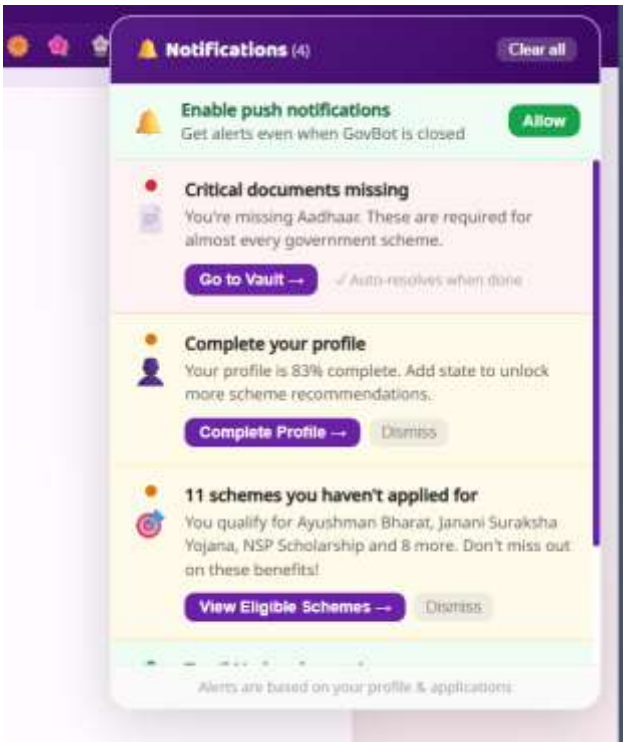

FIGURE 5.8 NOTIFICATIONS PANEL

The Notifications Panel provides real-time actionable alerts to citizens regarding missing documents, incomplete profile details, and unapplied eligible schemes. It ensures citizens never miss welfare entitlements by delivering timely warnings and direct navigation to relevant platform modules.

TEST CASE 9:

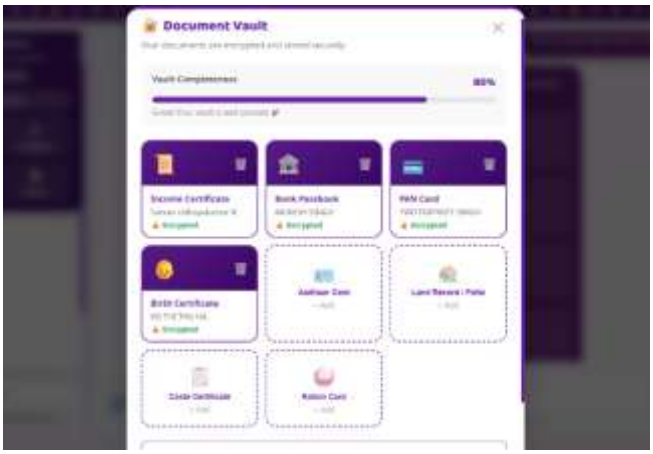

FIGURE 5.9 DOCUMENT VAULT PAGE

The Document Vault Page offers citizens a secure,

encrypted space to store and manage their identity documents required for government scheme applications. The vault completeness indicator guides users to upload missing documents, improving eligibility accuracy and application readiness.

TEST CASE 10:

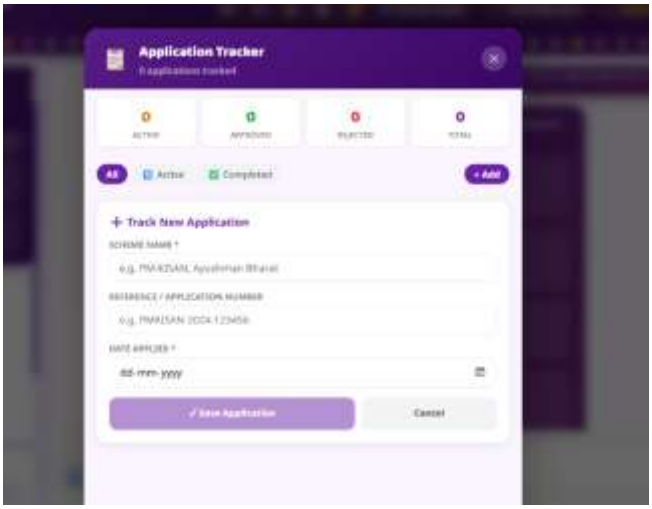

FIGURE 5.10 APPLICATION TRACKER PAGE

The Application Tracker Page allows citizens to record and monitor all their government scheme applications in one place. It provides a structured tracking interface with status categories and a simple form to add new application records for efficient welfare management.

TEST CASE 11:

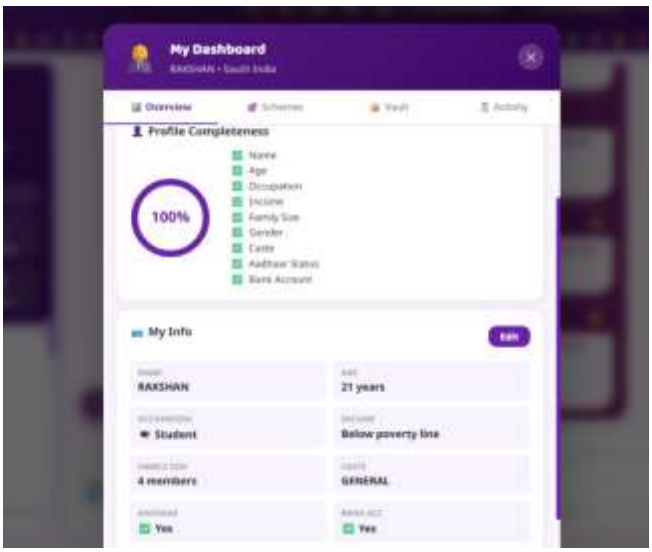

FIGURE 5.11 MY DASHBOARD -OVERVIEW PAGE

The My Dashboard Overview Page acts as the central profile management interface of GovBot India. It displays the citizen's profile completeness status, verified personal details, and quick access to scheme recommendations, document vault, and activity history through an organized tab-based layout.

TEST CASE 12:

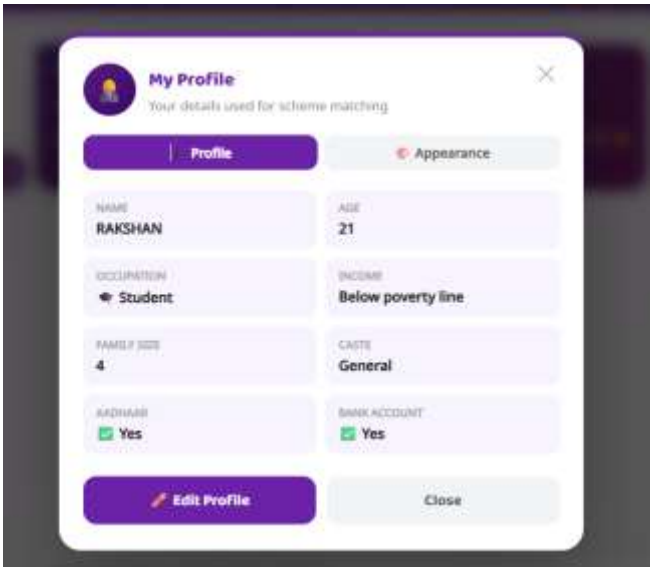

FIGURE 5.12 MY PROFILE PAGE

The My Profile Page displays all citizen details used for government scheme matching in a clean two-column card layout. Users can review their registered information, switch to the Appearance tab for theme customization, and edit their profile to ensure accurate eligibility recommendations.

TEST CASE 13:

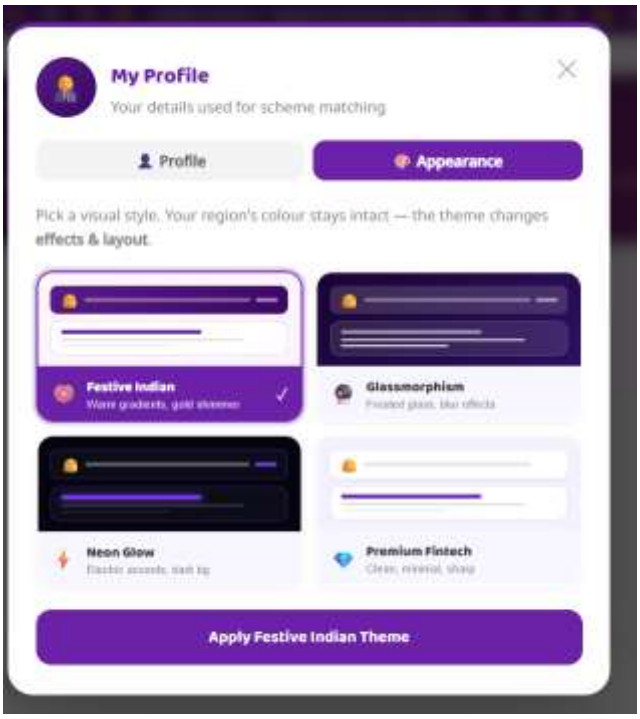

FIGURE 5.13 PROFILE APPEARANCE SETTINGS PAGE

The Profile Appearance Settings Page enables citizens to personalize the GovBot India interface by selecting from four distinct visual themes. The regional color scheme stays consistent across all themes, ensuring cultural identity is preserved while the layout and visual effects adapt to the user's preference.

TEST CASE 14:

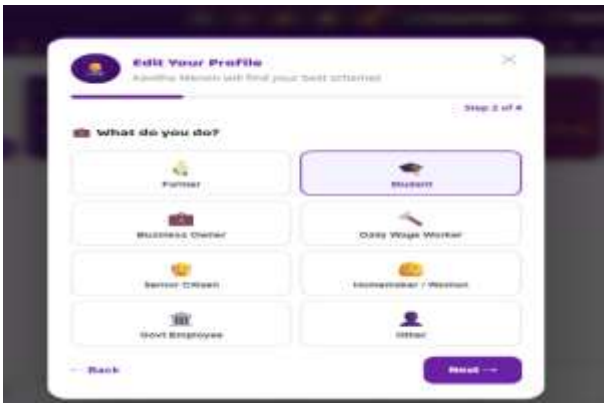

FIGURE 5.14 OCCUPATION SELECTION PAGE

The Occupation Selection step of the Edit Profile wizard allows citizens to identify their primary occupation from eight category options. The selected occupation is used by the AI engine to filter and match the most relevant government welfare schemes for the citizen's profile.

VII. CONCLUSION

The GovBot India platform successfully presents an intelligent government welfare assistance system that combines artificial intelligence, machine learning, OCR technology, and modern web technologies to support citizens in discovering and accessing welfare schemes. By integrating scheme eligibility prediction, document intelligence, risk assessment, real-time scheme data collection, and application planning, the system provides a comprehensive digital welfare guidance solution.The inclusion of the regional avatar chatbot enables multilingual citizen interaction, while AI-driven analytics help citizens understand their eligibility and entitlements. The review system and summary record module further enhance usability by providing real-time assistance, eligibility history tracking, and user-driven platform improvements.Overall, GovBot India demonstrates how technology can simplify complex government welfare processes, reduce eligibility gaps, and promote smarter and more inclusive access to government schemes for citizens across India.

VIII. FUTURE WORK

Future enhancements of GovBot India aim to expand functionality and provide multi-level welfare support region-specific eligibility recommendations based on state government policies and local welfare programs across all Indian states and union territories,seamless connection with Google Calendar and Microsoft Outlook for scheme application deadline reminders and submission event management,IoT and connecting with DigiLocker and government digital identity systems for automatic document retrieval and real-time verification,more visual insights for eligibility trend tracking, benefit forecasting, and scheme application success rate monitoring,currently, GovBot India supports regional Indian languages including Tamil and English, enabling citizens to interact with the system in their preferred language.

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