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Scholaraid: Government Scholarship & Scheme Recommender

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Abstract- Government schemes and scholarships are often difficult for citizens to find because information is scattered across many official websites. SCHOLARAID is a Flask-based web application that solves this problem by bringing all scheme and scholarship details into one centralized platform. The system collects verified data through manual web scraping and stores it in a structured database for easy access. Users can search and filter schemes based on category, eligibility, state, or income level. The platform also includes an AI- powered chatbot that helps users find suitable schemes through simple, natural conversation. By making information easy to understand and access, SCHOLARAID supports Digital India and helps citizens quickly discover the benefits they are eligible for.

Keywords- Government Schemes, Web Scraping, Flask, Chatbot, Information System, Data Mining, E-Governance.

I. INTRODUCTION

In today's digital era, the government of India and many state governments launch numerous schemes, scholarships, and welfare programs to support citizens in areas such as education, employment, healthcare, agriculture, women empowerment, and financial assistance. These schemes are designed to improve the quality of life and promote social and economic development.

However, the major problem is that information about these schemes is scattered across multiple official websites, often written in complex language, and updated irregularly. As a result, many people, especially those in rural or less-connected areas, are unaware of the benefits and eligibility criteria of such programs. Even educated citizens often face difficulties in finding correct and up-to-date details about government initiatives.

To overcome these challenges, this project proposes a centralized web-based information system developed using the Flask framework in Python. The system collects data about government schemes, scholarships, and services by scraping information manually from authentic government websites. This ensures that only accurate and verified data is stored in the system's database. Users can then explore all available schemes easily using filters such as category, gender, income level, or sector.

The platform also integrates an AI-based chatbot that interacts with users in a simple conversational manner. The chatbot helps users quickly find information by answering questions like "Which scholarships are available for students?" or "Tell me government schemes for farmers." This makes the system more engaging, accessible, and timesaving compared to searching through multiple portals.

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The main aim of this project is to make government information easily accessible to every citizen and promote transparency, digital governance, and public awareness. By combining web scraping, a structured database, and an interactive chatbot, the system acts as a bridge between the government and the public, helping people find the right benefits without confusion or effort.

This project contributes to the Digital India initiative, which focuses on transforming governance through technology. The developed platform can also serve as a foundation for future improvements, such as automated data updates, personal recommendations, and multi-language support, to make the service more inclusive for all sections of society.

Background

The Government of India, along with various state governments, launches numerous welfare schemes and scholarship programs every year to support citizens belonging to different communities and economic backgrounds. These schemes cover a wide range of areas such as education, agriculture, employment, women empowerment, social security, entrepreneurship, and healthcare.

Although these initiatives are beneficial, the main challenge lies in accessibility and awareness. Most of the scheme-related information is available on separate government websites, departmental portals, or PDF notifications. Citizens often have to browse multiple pages, read lengthy documents, and manually check eligibility conditions, which makes the process time-consuming and confusing.

With the rise of Digital India and e-Governance initiatives, there is an increasing demand for systems that make government data easily accessible and understandable to the public. Many people, especially from rural and economically weaker sections, are unable to utilize these benefits because they do not know where or how to apply for the schemes.

To solve this problem, there is a need for a centralized digital platform that collects, organizes, and presents government scheme information in a simple and user-friendly way. This project addresses that need by developing a Flask-based web application that stores manually scraped data from official sources in a single database. The system allows users to filter, search, and view government schemes and scholarships relevant to them.

Additionally, an interactive chatbot is integrated to guide users conversationally, helping them find schemes based on their queries. This makes the system not only informative but also interactive and intelligent.

The background idea of this project is inspired by the goal of improving public access to government services, reducing information gaps, and enhancing citizen participation in e- Governance. By combining web scraping, data organization, and AI-based chatbot technology, the project contributes toward a more inclusive and digital approach to government service delivery.

II. LITERATURE SURVEY

Government schemes and welfare programs are a vital part of social and economic development. However, citizens often find it difficult to access and understand information related to these schemes. Researchers, developers, and government bodies have therefore worked on digital solutions that can make this information more accessible In recent years, several research studies and digital initiatives have focused on improving citizen access to government schemes and welfare programs through information technology. The main goal of these systems is to simplify the process of discovering, understanding, and applying for government benefits.

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Various government portals such as India.gov.in, MyGov, and the National Scholarship Portal (NSP) serve as official platforms for citizens to explore schemes, scholarships, and other services. These websites provide detailed information, but many of them are complex, static, and difficult to navigate. Users often need prior knowledge to find the correct category or eligibility criteria, which limits accessibility for ordinary citizens.

The following literature review presents the studies, technologies, and systems that form the foundation of this project.

Government E-Governance Portals

Several government platforms provide information about schemes and scholarships:

- India.gov.in: The National Portal of India that provides links to various government services and departments.
- MyGov: A citizen engagement platform that shares updates and collects feedback about government initiatives.
- National Scholarship Portal (NSP): A centralized system for applying for scholarships from different ministries and state governments.
- Direct Benefit Transfer (DBT) Portal: Offers details about schemes where benefits are transferred directly to the beneficiary's bank account.
- Limitations:
- Information is spread across multiple portals.
- Lack of personalized search or intelligent assistance.
- Users often find it difficult to locate the right scheme due to complex navigation.

Previous Research and Related Works

Many studies have focused on improving citizen interaction with government data and developing information systems using web technologies.

- Centralized Scheme Information Systems: Some research proposed systems that collect and organize government scheme data from different sources into a single database. These systems help users to easily browse and filter available schemes.
- Data Mining and Web Scraping Approaches: Web scraping has been used by researchers to automatically extract data from government websites. For example, studies have used Beautiful Soup, Selenium, and Scrapy tools to gather structured data such as scheme names, descriptions, and eligibility conditions.
- AI and Chatbot Integration: Recent studies show that Artificial Intelligence (AI) and Natural Language Processing (NLP) technologies can help users interact with systems using simple language. Chatbots have been used in government portals to:
- Answer frequently asked questions.
- Help users navigate websites.
- Provide quick access to relevant information. For example, chatbots have been implemented in municipal services and public grievance systems to improve response time and user experience.

Key Technologies Discussed in Literature

- Technology Purpose Example Use Web Scraping To collect scheme data from government portals. Extracting scheme details like eligibility, benefits, and deadlines.
- Flask Framework Lightweight web framework for Python to build web apps. Used for creating back- end logic and connecting to the database.
- Chatbot (NLP) To allow users to ask queries naturally. Suggesting schemes or answering user questions.
- Database Systems To store and manage large volumes of government data. MySQL,

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- SQLite, or MongoDB used for structured data storage.

Gaps Identified in Existing Systems

After studying the available systems and literature, several gaps were identified:

- Lack of centralized platform that combines all types of schemes (education, health, agriculture, etc.).
- Most systems are static and do not allow interactive communication.
- Government portals are not user-friendly for rural or less tech-savvy citizens.
- No proper integration of AI-based chatbot to simplify the search process.
- Many systems depend on manual browsing, which wastes time and effort.

Research Motivation

Based on the above gaps, this project was designed with the following goals:

- To create a single web-based platform for accessing all government schemes and scholarships.
- To manually scrape authentic data from official government sources to ensure accuracy.
- To integrate a Flask web application with user- friendly filters and search options.
- To build an AI-powered chatbot that provides instant answers about schemes.
- To enhance transparency, awareness, and accessibility in government communication.

Summary of Literature Findings

From the survey, it is evident that:

- Government information systems exist, but they lack intelligence and interactivity.
- Chatbots and data scraping can greatly improve usability and accessibility.
- Combining these technologies can lead to a smarter and more citizen-friendly e-governance solution.

This project builds upon these findings by combining data scraping, Flask-based web development, and chatbot technology to create a complete and efficient system for accessing government schemes and scholarships.

III. EXISTING SYSTEM

The proposed system is designed to collect, organize, and present data about various government schemes, scholarships, and services in one centralized platform. It combines manual web scraping, a Flask- based web interface, and an AI-powered chatbot to make information easily accessible for all users. In the existing scenario, information about government schemes, scholarships, and welfare programs is made available through different official government websites and portals. These platforms aim to provide details about eligibility, benefits, and the process of applying for various schemes. However, these existing systems have several limitations that make it difficult for ordinary citizens to access and understand the information easily.

The architecture of the system consists of multiple interconnected modules that work together to ensure smooth operation, accuracy, and user interactivity.

Overview of System Architecture

The system architecture follows a modular and layered design that includes the following major components:

Data Collection Layer (Web Scraping)

- Data Storage Layer (Database Management)

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- Application Layer (Flask Framework)
- User Interface Layer (Frontend Web Interface)
- Chatbot Module (AI/NLP Interaction)
- Admin Panel (Data Update and Maintenance)

These components interact with each other to deliver real-time, accurate, and filtered information to the user.

Architectural Flow
Below is the step-by-step flow of how the system works:

Data Collection
- Relevant information about government schemes and scholarships is collected by manually scraping official government websites.
- The scraped data includes fields such as scheme name, description, eligibility criteria, benefits, and official links.

Data Storage
- All collected data is stored in a centralized database (e.g., MySQL or SQLite).
- The database maintains structured tables for schemes, categories, and filters.
- Data is validated and updated periodically to ensure accuracy.

Backend (Flask Framework)
- The Flask web framework acts as the backend of the system.
- It connects the frontend with the database and handles all user requests and responses.
- It supports RESTful routes for displaying filtered results and chatbot communication.

Frontend (User Interface)
- Users access the system through a web-based graphical interface.
- The interface includes search bars, filters (by category, sector, eligibility, etc.), and scheme listings.
- It is designed to be simple, responsive, and user- friendly, ensuring accessibility for all age groups.

Chatbot Integration
- The system includes an AI-powered chatbot that interacts with users in a natural, conversational manner.
- The chatbot uses Natural Language Processing (NLP) to understand user queries such as:
- “Show me scholarships for college students.” “What are the latest schemes for farmers?”
- Based on the query, the chatbot retrieves and displays relevant information from the database.

Admin Module
The admin module allows authorized users to add, edit, or delete scheme information.
Ensures that the database remains accurate and up to date with current schemes.

System Architecture Diagram
Although the diagram is not shown here, the architecture can be visualized as:

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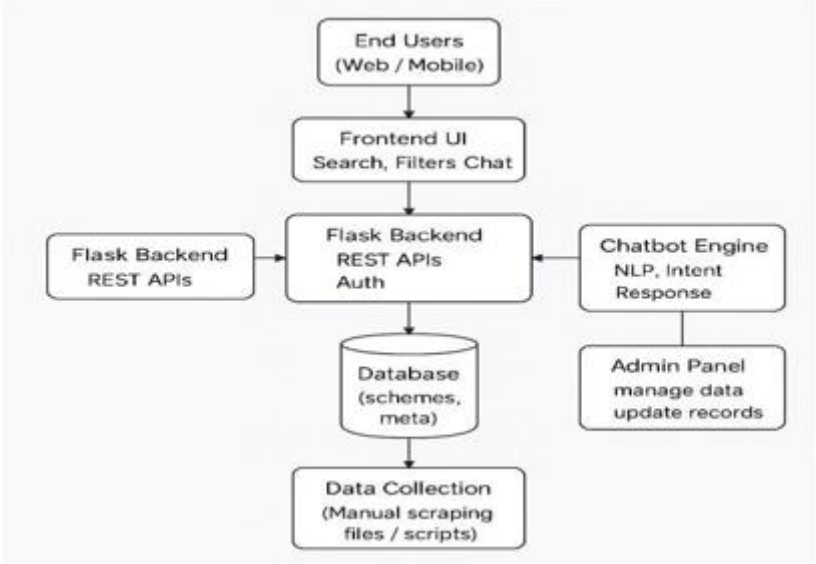

Fig-1. System Architecture Diagram

Key Modules and Their Functions

Module Name	Functionality
Data Scraping Module	Collects scheme data manually from authentic government sources.
Database Module	Stores structured information about schemes and scholarships.
Flask Application Module	Handles backend logic, routes, and database connections.
User Interface Module	Displays data to users and supports filters and search.
Chatbot Module	Interacts with users using NLP and provides relevant answers.
Admin Module	Enables data management, updates, and maintenance.

Advantages of Architecture

- Centralized Data: All information is stored in one database, ensuring easy access.
- Scalable Design: New features or data sources can be added easily.
- User-Friendly Interface: Simple design for users with limited technical knowledge.
- Interactive Chatbot: Makes the system more engaging and faster to use.
- Reliable Information: Data is collected only from official and verified sources.

IV. PROPOSED SYSTEM

The proposed system aims to provide a centralized and intelligent web platform where users can easily find information about government schemes, scholarships, and welfare programs. The main goal is to make this information accessible, well-organized, and user-friendly for all citizens — especially those who struggle to navigate multiple government websites.

The system is developed using the Flask framework (Python) as the backend, and it includes a chatbot that uses Artificial Intelligence (AI) to answer user queries about schemes in a conversational way.

Objectives of the Proposed System

The key objectives of the proposed system are:

- To create a centralized database of all government schemes and scholarships.
- To allow users to search and filter schemes easily based on category, eligibility, or benefits.
- To provide accurate and verified information collected manually from government sources.

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- To integrate an AI-powered chatbot for quick and easy user interaction.
- To promote transparency, awareness, and citizen empowerment through digital access.
- To support the Digital India and e-Governance initiatives by simplifying government communication.

Working of the Proposed System

The proposed system follows a step-by-step workflow:

Data Collection

- Information about schemes, scholarships, and government services is manually scraped from authentic government websites.
- Data includes scheme title, category, description, eligibility, benefits, and official links.

Data Storage

- The collected data is stored in a structured database (e.g., MySQL/SQLite).
- Data is categorized for better searching and filtering (e.g., Education, Women, Farmers, Employment, etc.).

Flask Application (Backend)

- The Flask framework manages all backend operations.
- It connects to the database, processes user requests, and displays results on the web interface.
- APIs are created for chatbot communication and data retrieval.

User Interface (Frontend)

- A clean and responsive web interface allows users to browse all available schemes.
- Users can search, filter, and view detailed information about each scheme.
- The interface is designed to be simple, lightweight, and mobile-friendly.

Chatbot Integration

- The system includes an AI chatbot that interacts with users in natural language.
- Users can ask questions like:
  - "What are the latest scholarships for students?"
  - "Show me schemes for women entrepreneurs."
- The chatbot processes the query, fetches the relevant data from the database, and displays it instantly.

Admin Panel

- The admin can add, update, or delete scheme data as needed.
- This ensures that the platform remains up-to-date and accurate at all times.

Features of the Proposed System

The proposed system offers the following key features:

Comparison Between Existing and Proposed System

Feature	Description
Centralized Access	All schemes and scholarships are available in one platform.
Filtering & searching	Users can filter schemes by category, eligibility, state, or department.
Chatbot Support	AI chatbot answers user queries in a friendly, conversational way.

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Responsive Interface	The web interface is easy to use on desktop and mobile devices.
Manual Verified Data	Data collected manually from official sources to ensure accuracy.
Admin Dashboard	Admin can manage, update, and delete outdated or incorrect data.
User Awareness	Helps citizens easily discover benefits they are eligible for.

V. CONCLUSION

In this project, a Flask-based web application has been successfully developed to provide a centralized digital platform for accessing various government schemes, scholarships, and welfare services. The system was designed to address the common problem faced by citizens — the difficulty of finding and understanding scattered information available across multiple government portals.

By collecting and organizing data manually from official government websites, the proposed system ensures that users receive accurate, verified, and up- to-date information. Using the Flask framework, a smooth backend connection between the database and the web interface has been achieved, allowing users to easily search, filter, and view scheme details.

One of the major highlights of this project is the integration of an AI-powered chatbot, which enables users to interact with the system naturally and find information through simple conversational queries. This feature improves accessibility, especially for users who are not familiar with complex website navigation.

The system not only helps in saving time and effort but also contributes to increasing public awareness and transparency about government initiatives. It aligns with the vision of Digital India and e- Governance by promoting citizen participation and providing an inclusive digital solution for all.

Overall, the proposed system is an efficient, user- friendly, and intelligent platform that simplifies access to government welfare information. It demonstrates how technology can be used effectively to bridge the gap between the government and citizens.

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