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Yojna AI : AI Government Scheme Recommendation System for Citizen Eligibility and Assistance

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Abstract: *Artificial Intelligence (AI) can simplify access to government welfare schemes by helping citizens identify schemes relevant to their needs and eligibility. This paper presents YojanaAI, an AI-based Government Scheme Recommendation System designed to support scheme discovery and eligibility assessment using user-specific information. The system aims to simplify the process of identifying suitable schemes based on relevant attributes such as age, income, occupation, and education. It provides a structured approach to accessing scheme details, eligibility requirements, and application information. The proposed system focuses on improving information accessibility and reducing the effort required to search multiple sources. Its effectiveness can be assessed through eligibility-matching accuracy, recommendation relevance, and usability testing. The paper outlines the proposed approach, potential applications, limitations, and future enhancements for developing accessible and citizen-centric digital public services.*

Keywords: Artificial Intelligence, Government Schemes, Scheme Recommendation, Eligibility Assessment

I. INTRODUCTION

Government welfare schemes play an important role in supporting citizens through financial assistance, education, healthcare, and employment opportunities. However, many citizens face difficulties identifying suitable schemes due to limited awareness, complex eligibility criteria, and information distributed across multiple sources.

An AI-based government scheme recommendation system aims to simplify this process by providing a common platform for scheme discovery and eligibility assessment. By analyzing relevant user information, such as age, income, and occupation, the system can help users identify potentially suitable schemes and understand their requirements. However, recommendation quality depends on accurate scheme information, reliable eligibility matching, and regular updates. These aspects must be considered to ensure that the system provides useful and trustworthy assistance that matches This paper presents YojanaAI, a system designed to simplify government scheme discovery and eligibility assessment. The study focuses on the system's approach to matching user information with relevant scheme requirements and presenting useful scheme details.

The work describes the proposed system, its key functionalities, and its potential to improve access to government welfare information. The evaluation should consider eligibility-matching accuracy, recommendation relevance, and system usability. The study is limited to the implemented features and available test results; further validation is required before making broader claims about accuracy, reliability, or real-world effectiveness. The proposed system aims to reduce the time and effort required to find suitable government schemes by providing user-specific

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recommendations. Future improvements may include multilingual support, chatbot integration, and regular updates from official government sources. he system also aims to improve awareness of government welfare programs by presenting scheme benefits, eligibility criteria, and application procedures in an organized manner.

II. BACKGROUND AND RELATED WORK

A. Artificial Intelligence for Government Scheme Recommendation

Artificial Intelligence (AI) is increasingly used to develop intelligent systems that provide personalized information and support decision-making. Recommendation systems analyze user preferences and relevant attributes to suggest suitable options based on specific requirements.

In the context of government welfare schemes, AI-based approaches can help citizens identify potentially eligible schemes using information such as age, income, occupation, and education. This provides the foundation for developing Yojana AI as a system for government scheme discovery and eligibility assessment.

AI-based recommendation systems help users identify relevant government schemes based on their personal details and eligibility criteria. Existing digital platforms provide scheme information, while Yojana AI aims to simplify scheme discovery through personalized recommendations and eligibility assessment.

B. Evaluation of Government Scheme Recommendation Systems

A Government scheme recommendation systems should be evaluated based on eligibility accuracy, recommendation relevance, and the reliability of scheme information. A systematic evaluation helps identify limitations and improve the usefulness of AI-based assistance for citizens.

The system should also be assessed for the accuracy of user-profile matching and the clarity of eligibility information provided. Regular updates from official sources are essential to ensure that scheme details and application requirements remain reliable.

The evaluation should also consider ease of use, response time, and accessibility for users with different educational backgrounds. These factors can help determine whether the system effectively supports citizens in discovering relevant government welfare schemes.

III. YOJNA SYSTEM ARCHITECTURE

A. Workspace Overview

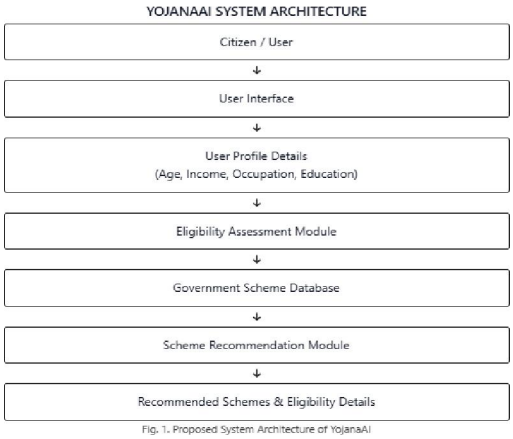


Fig. 1. Proposed System Architecture of YojanaAI

Yojana AI consists of a user interface, user profile module, eligibility assessment module, government scheme database, and recommendation module. The system collects relevant user details, compares them with scheme eligibility criteria, and displays potentially suitable schemes along with their benefits and application information.

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The architecture aims to provide a simple and organized process for government scheme discovery. The accuracy of recommendations depends on the quality of user inputs, eligibility rules, and the availability of updated scheme information.

The proposed Yojana AI system consists of five main modules: User Interface, User Profile Module, Eligibility Assessment Module, Government Scheme Database, and Scheme Recommendation Module.

First, the user enters personal details such as age, income, occupation, and education through the user interface. The Eligibility Assessment Module compares these details with the eligibility criteria of available government schemes. The Government Scheme Database stores scheme information, benefits, eligibility requirements, and application details.

Based on this assessment, the Scheme Recommendation Module identifies potentially suitable schemes and displays their details to the user

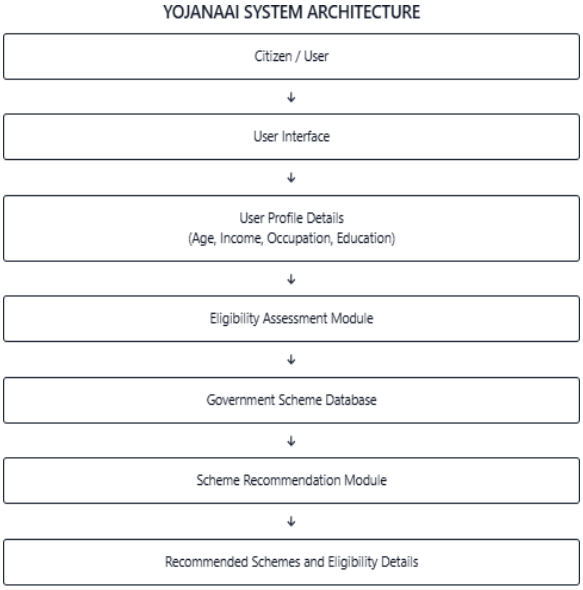


Fig. 1. YojanaAI System Architecture Diagram Designed by the Project Author.

Fig. 1. Fabric architecture diagram supplied by the project author.

The system architecture of Yojana AI consists of different modules that work together to recommend suitable government schemes to users. The system includes a User Interface, User Profile Module, Eligibility Assessment Module, Government Scheme Database, and Scheme Recommendation Module.

correctness of these boundaries and their configuration.

B. Model-Provider Integration

The project includes a system architecture designed to simplify government scheme discovery and eligibility assessment. The system consists of a user interface, user profile module, eligibility assessment module, government scheme database, and scheme recommendation module. The system accepts user details such as age, income, occupation, and education, compares them with scheme eligibility criteria, and displays potentially suitable government schemes. This description explains the proposed system design; it does not establish the accuracy of recommendations or confirm performance through systematic testing.

C. Data-Analysis and Visualization Path

The project includes user-data processing and government scheme recommendation functionality. The intended process involves collecting user details, checking eligibility criteria, matching the information with available government schemes, and presenting suitable results. The system aims to display scheme benefits, eligibility requirements, and

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application details in an organized format. The proposed approach focuses on simplifying scheme discovery and improving access to government welfare information. However, this description does not establish that all eligibility conditions are handled correctly.

D. Tool Execution and File Handling

Targeted evaluation cases include missing user information, invalid eligibility inputs, and scheme-matching behavior. These cases can be tested to verify whether the system handles user details and eligibility criteria appropriately.

These results provide evidence only for the specific test cases performed; they do not establish complete accuracy of eligibility assessment or reliable recommendations for all government schemes.

E. Supporting Infrastructure

The project may include supporting components such as a government scheme database, user-data storage, and search functionality. These components help store scheme details, manage user information, and retrieve relevant schemes based on eligibility criteria. The presence of database or search-related components alone does not confirm complete system integration. End-to-end operation depends on correct configuration, data availability, and compatibility between modules. Each component should be tested to verify its functionality and ensure that scheme information is retrieved and displayed correctly.

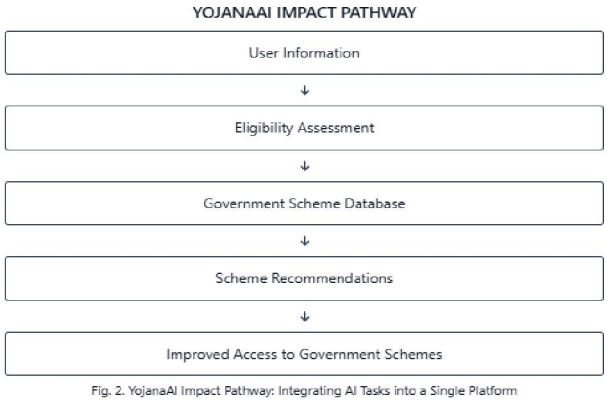


Fig. 2. Yojana AI Impact Pathway

IV. EXPERIMENTAL METHODOLOGY

A. Environment and Scope

The evaluation focuses on testing the proposed Yojana AI system using selected user inputs and government scheme data. The assessment aims to verify whether the system processes user information, checks eligibility criteria, and displays relevant scheme recommendations. No representative user study or systematic recommendation-accuracy evaluation is reported. Therefore, the results should be limited to the specific tests performed.

B. Syntax Validation and Targeted Tests

The Yojana AI system should be checked for syntax errors and basic functional issues in its main modules. Targeted tests can verify user input handling, eligibility assessment, scheme matching, and the display of recommendation results. Each test should use predefined inputs and expected outputs to check whether the system behaves correctly. The reported count refers only to this focused suite.

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C. Synthetic Benchmark

The Yojana AI system can be evaluated using a synthetic dataset containing sample user profiles and government scheme eligibility criteria. The benchmark checks whether the system matches user details with predefined eligibility rules and identifies potentially suitable schemes. Expected results can be compared with actual outputs to assess the correctness of the matching process. However, synthetic benchmark results represent only the selected test cases and do not guarantee accurate recommendations for all real-world users.

D. Broader Automated Tests

The Automated testing can be used to evaluate different modules of the Yojana AI system, including user input validation, eligibility assessment, scheme matching, and recommendation display. Multiple test cases can help identify errors and verify whether the system produces expected results for different user profiles. The tests should include valid inputs, missing information, and boundary conditions. However, the reliability of the system can only be assessed within the scope of the tests performed, and further testing is required before real-world deployment.

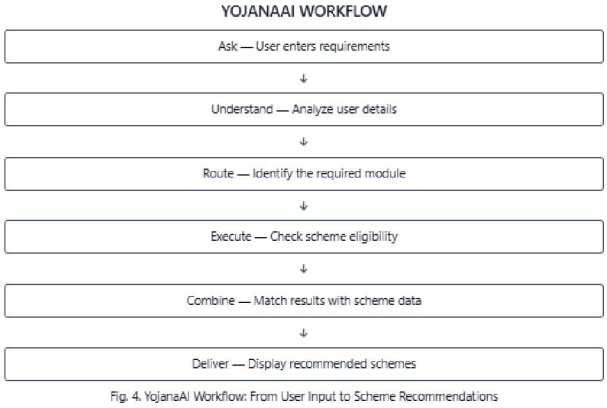


Fig. 3: Yojana AI Workflow: Collect User Details, Assess Eligibility, Match Schemes, Generate Recommendations, and Display Results.

V. PRELIMINARY RESULTS

A. Syntax and Targeted Functional Tests

The Yojana AI system can be checked for syntax errors and basic functional issues. Targeted tests focus on user input validation, eligibility assessment, scheme matching, and recommendation display. These tests help verify whether the selected modules produce the expected outputs for predefined inputs. However, the results apply only to the specific tests performed and do not guarantee the overall accuracy or reliability of the system. Synthetic Data-Processing Benchmark

These tests help identify errors and improve system functionality. However, the results are limited to the specific tests conducted and do not establish complete system accuracy or reliability. live-model quality.

B. Unresolved Broader-Suite Failures

The Yojana AI system may require further testing to identify issues that are not covered by the initial functional tests. Potential challenges include incomplete scheme information, incorrect eligibility matching, missing user details, and outdated application requirements. These issues may affect the relevance and reliability of recommendations. Additional testing across different user profiles and government schemes is necessary to identify unresolved problems. The system's overall performance should be evaluated only after these limitations have been examined.

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Further testing is needed to evaluate these situations, improve error handling, and ensure that recommendations are consistent with the available eligibility criteria. Real-world validation is required before confirming the system's effectiveness.

These failures matter to the intended use case. File ingestion is often the first step in a data-analysis workflow, so spreadsheet errors can prevent later analysis even when the calculation layer works. Filesystem permissions are also relevant to the protection of private application data. Both issues should be resolved or explicitly scoped before the project is presented as a reliable integrated workspace.

C. Summary of Evidence

The proposed Yojana AI system aims to simplify government scheme discovery through user-profile analysis and eligibility assessment. Its main workflow includes collecting user details, checking eligibility criteria, matching relevant schemes, and displaying recommendation results.

TABLE I. REPORTED EVALUATION ENVIRONMENT

Parameter	Description
Project Name	AI-Based Government Scheme Recommendation System
Input Data	User Profile Details
User Attributes	Age, Income, Occupation, Education
Processing Module	Eligibility Assessment
Data Source	Government Scheme Database
Recommendation Method	Eligibility-Based Scheme Matching
Output	Suitable Schemes and Eligibility Details
Testing Method	Targeted Functional Testing

TABLE II. SYNTHETIC BENCHMARK RESULTS

Metric	Reported result
Dataset Type	Synthetic User Data
Input Records	Based on the generated dataset
Eligibility Matching	Not systematically evaluated
Recommendation Accuracy	Not reported
Expected vs. Actual Output	Requires validation
Execution Status	Requires testings
Overall Performance	Insufficient evidence for conclusion

TABLE III. SUMMARY OF TEST OUTCOMES

Evaluation item	Reported outcome
Syntax validation	Requires verification
Functional Testing	Selected test cases require validation
User Input Handling	Requires testing
Scheme Recommendation	Requires testing
Database Integration	Depends on implementation
Overall System Performance	Further evaluation required

VI. DISCUSSION

The proposed Yojana AI system aims to simplify access to government welfare schemes by matching user information with scheme eligibility criteria. The system uses details such as age, income, occupation, and education to identify potentially relevant schemes and present their benefits and application requirements.

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The usefulness of the system depends on the accuracy of eligibility rules, the completeness of scheme information, and the quality of user inputs. Incomplete or outdated data may affect the relevance of recommendations. Therefore, regular updates and appropriate input validation are important for reliable operation.

Further evaluation is required to assess recommendation accuracy, system usability, and performance across different user profiles. Future improvements may include multilingual support, chatbot integration, and connections to official government data sources. These enhancements could help make YojanaAI more accessible and useful to citizens.

The Yojana AI system provides a structured approach to government scheme discovery by combining user profile information with scheme eligibility requirements.

Instead of searching through multiple sources manually, users can access potentially relevant scheme information through a single platform. This approach aims to reduce the effort required to understand available welfare programs.

An important consideration is the reliability of eligibility assessment. Government schemes may include specific conditions related to income, age, occupation, education, location, and other factors. The system must consider the relevant conditions before recommending a scheme. Incorrect or incomplete information may result in unsuitable recommendations; therefore, eligibility rules should be verified against official sources.

VII. LIMITATIONS AND FUTURE WORK

The proposed Yojana AI system aims to simplify government scheme discovery and eligibility assessment. However, several limitations must be considered. The quality of recommendations depends on the accuracy and completeness of user information and the availability of updated government scheme data. Incorrect inputs or outdated eligibility criteria may lead to unsuitable recommendations. Secure isolation for arbitrary code execution has not been independently verified.

Another limitation is the need for comprehensive system testing. Recommendation accuracy, usability, response time, and performance across different user profiles require further evaluation. The system should also handle missing information and complex eligibility conditions appropriately. Until systematic testing is completed, its real-world effectiveness cannot be confirmed.

Future work will focus on improving the accuracy of eligibility assessment and maintaining updated scheme information from official government sources. Multilingual support can help users access scheme details in their preferred languages. Chatbot integration may provide interactive assistance and help users understand eligibility requirements and application procedures.

A. Evaluation Boundaries

The evaluation of Yojana AI focuses on its proposed workflow for user information processing, eligibility assessment, and government scheme recommendation. The assessment is limited to the features and test cases available in the current implementation. Comprehensive testing across all government schemes and diverse user profiles has not been established.

The evaluation does not confirm complete recommendation accuracy, large-scale performance, or real-world usability.

B. End-to-End Task Protocol

The Yojana AI end-to-end task protocol describes the complete process from collecting user information to displaying recommended government schemes. First, the user enters details such as age, income, occupation, and education. The system validates the entered information and compares it with the eligibility criteria stored in the government scheme database. The recommendation module then identifies potentially suitable schemes and presents their benefits, eligibility requirements, and application details.

The evaluation should verify each stage using predefined test cases and expected outputs. The results should be recorded to identify errors in input processing, eligibility assessment, and scheme recommendation.

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C. Separating Deterministic and Model-Dependent Behavior

The Yojana AI system can separate rule-based eligibility assessment from AI-based assistance. Deterministic operations use predefined eligibility criteria, such as age, income, occupation, and education, to check whether a user meets specific scheme requirements. Model-dependent behavior may support natural-language queries, explain scheme details, and help users understand application procedures.

Separating these functions helps make eligibility decisions easier to verify and test. AI-generated explanations should be checked against official scheme information to reduce incorrect or misleading responses.

D. Operational Reliability

The operational reliability of Yojana AI depends on the proper functioning of its user interface, eligibility assessment module, scheme database, and recommendation module. The system should process user information correctly and display relevant scheme details without errors. Input validation and appropriate error handling can help manage missing or invalid information.

Regular updates to the government scheme database are important to maintain the relevance of eligibility criteria and application details. The system should also protect users' personal information and handle failures appropriately.

E. Expanded Dataset Coverage

Future development of Yojana AI should focus on expanding the government scheme database to include a wider range of central and state government schemes. The dataset should cover different categories, including education, healthcare, employment, agriculture, housing, and financial assistance. Each scheme should include verified eligibility criteria, benefits, required documents, and application procedures.

Expanding the dataset can help the system identify relevant schemes for users with different backgrounds and needs. Information should be collected from official government sources and updated regularly to reflect policy changes.

F. Security Validation Plan

The security validation plan for YojanaAI focuses on protecting user information and ensuring the safe operation of the system. Since users may provide personal details such as age, income, and occupation, appropriate measures should be taken to prevent unauthorized access and misuse of data.

G. Threats to Validity

The evaluation of Yojana AI may be affected by several factors. The accuracy of recommendations depends on the completeness of the government scheme database and the correctness of eligibility criteria. Outdated information or incorrect user inputs may influence the results and lead to unsuitable recommendations.

Another threat to validity is the limited scope of testing. If the system is evaluated using only a small number of test cases, the results may not represent its performance across different user profiles and scheme categories. The absence of comprehensive real-world user testing also limits conclusions about usability and practical effectiveness

H. Reproducibility Requirements

The reproducibility of Yojana AI depends on clear documentation of the system configuration, dataset, eligibility rules, and testing procedures. The project should specify the software tools, database structure, input parameters, and steps required to execute the system. Sample user profiles and expected outputs can help verify whether the system produces consistent results under the same conditions.

VIII. CONCLUSION

Yojana AI is a proposed AI-based Government Scheme Recommendation System designed to simplify the process of identifying suitable government welfare schemes. The system uses user information, such as age, income, occupation,

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and education, to assess eligibility and present potentially relevant schemes along with their benefits and application details.

The proposed approach aims to improve access to government scheme information through a centralized and user-friendly platform. However, its effectiveness depends on accurate eligibility rules, updated scheme data, proper input validation, and reliable recommendation methods. Comprehensive testing is necessary before making claims about recommendation accuracy or real-world performance.

Future work will focus on expanding the scheme database, introducing multilingual support, integrating chatbot assistance, and improving security and data validation. Overall, Yojana AI has the potential to support citizens in discovering government welfare schemes more easily, provided that its recommendations are validated and its information is maintained using reliable official sources.

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