

ReadiFy – Online Book Management with AI

Prof. Jyotsna Nanajkar*, Pruthviraj D. Ghadage**, Vasant S. Karode**, Abhay G. Gond**, Atharva S. Kotwal**

**(Assistant Professor, Department of Information Technology, Zeal College of Engineering and Research, Pune, India)*

***(BE Students, Department of Information Technology, Zeal College of Engineering and Research, Pune, India)*

ABSTRACT

Reading books is an important activity for gaining knowledge and improving learning skills. Traditional library systems often face challenges such as limited accessibility, manual book management, and difficulty in finding relevant books. To address these issues, we developed ReadiFy, an AI-powered Online Book Management System that provides a digital platform for managing and accessing books efficiently. The system is developed using JavaFX for the frontend interface and Firebase for backend services including authentication, cloud storage, and database management. ReadiFy allows users to browse books by category, read PDF books, maintain a personal library, search books efficiently, and access AI-based features such as chatbot assistance and text-to-speech functionality.

Keywords: Online Library, JavaFX, Firebase, Artificial Intelligence, Text-to-Speech, Digital Reading, Book Management System.

I. INTRODUCTION

The rapid growth of digital technology has transformed the way information is stored, managed, and accessed. Traditional libraries require physical visits, manual searching, and extensive record management. These limitations make it difficult for users to access books anytime and anywhere.

Digital libraries have emerged as a solution by providing online access to books and learning resources. However, many existing systems lack intelligent features that improve user interaction and reading experience.

To address these challenges, this paper presents ReadiFy, an AI-powered Online Book Management System. The system provides category-based book browsing, PDF reading, personal library management, AI chatbot support, and text-to-speech functionality. Firebase services ensure secure authentication and efficient cloud data management.

The main objective of ReadiFy is to create an intelligent and user-friendly digital reading platform that improves accessibility, book management, and learning experiences.

II. RELETED WORK

• Traditional Library Management Systems

Conventional library management systems mainly focus on book issue, return, and inventory management. These systems require manual intervention and physical presence of users.

• Digital Library Systems

Digital library platforms provide online access to books and documents. Users can search and read books remotely. However, many systems lack intelligent assistance and personalized user experiences.

• Cloud-Based Library Systems

Cloud technology enables centralized storage and accessibility of digital resources. Cloud-based systems improve scalability and data availability but often focus only on storage and retrieval.

• AI-Based Recommendation Systems

Modern recommendation systems use machine learning techniques to suggest content based on user preferences. Such systems improve user engagement and content discovery.

• AI Chatbots in Educational Systems

AI chatbots assist users by answering questions, providing guidance, and improving interaction within educational platforms.

Although significant progress has been made in digital library systems, there remains a need for an integrated platform that combines digital book management, cloud services, AI assistance, and accessibility features

III. PROPOSED METHOD

The Readify system follows a structured architecture that integrates JavaFX, Firebase, and Artificial Intelligence technologies.

1. User Authentication Module

Users can register and login using Firebase Authentication.

Features:

- User Registration
- User Login
- Secure Authentication
- Session Management

2. Book Management Module

Administrators can upload and manage books.

Functions:

- Add New Books
- Update Book Information
- Delete Books
- Organize Books by Categories

3. Category-Based Book Browsing

Books are organized into multiple categories:

- Business
- Science
- Motivational
- History
- Religious
- Sports
- Newspaper

Users can easily navigate and explore books based on their interests.

4. PDF Reading Module

Users can read books directly within the application.

Features:

- PDF Viewer
- Page Navigation
- Zoom Functionality
- Smooth Reading Experience

5. My Library Module

Users can save favorite books in their personal library.

Functions:

- Add Books to Library
- Remove Books
- Manage Reading Collection

6. Search Module

The search system helps users find books quickly using keywords.

Features:

- Book Title Search
- Category Search
- Fast Retrieval

7. AI Chatbot Module

The AI chatbot assists users by:

- Answering Queries
- Recommending Books
- Providing Reading Assistance

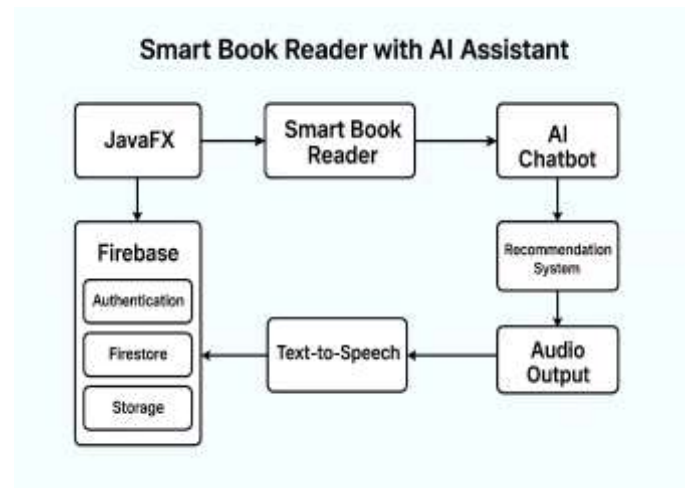
8. Text-to-Speech Module

The Text-to-Speech system converts book text into speech.

Benefits:

- Improved Accessibility
- Better Learning Experience
- Support for Visually Impaired Users

IV. SYSTEM ARCHITECTURE



The system consists of four major layers:

Presentation Layer

Developed using JavaFX.

Provides:

- Login Interface
- Dashboard
- Category Pages
- Book Viewer
- AI Chat Interface

Application Layer

Handles:

- Business Logic
- Search Operations
- Book Management

- User Interactions

Users communicate with the AI assistant.

AI Layer

Provides:

- Chatbot Services
- Book Recommendation
- Text-to-Speech Processing

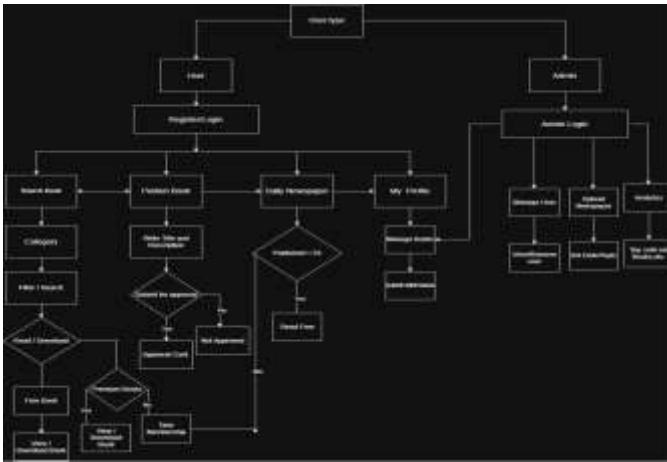
Cloud Layer

Implemented using Firebase.

Provides:

- Authentication
- Database Storage
- Book Storage
- User Data Management

V. IMPLEMENTATION



A. Login Module

Users authenticate through Firebase Authentication.

B. Dashboard Module

The dashboard displays:

- Categories
- Search Bar
- Recommended Books
- Recently Added Books

C. Category Module

Users browse books according to categories.

D. Book Viewer Module

PDF books are displayed within the application.

E. My Library Module

Users manage their saved books.

F. AI Chatbot Module

G. Text-to-Speech Module

The system reads book content aloud.

VI. EXPERIMENTAL SETTINGS

Software Requirements

- Java JDK 17+
- JavaFX SDK
- Firebase
- Scene Builder
- IntelliJ IDEA / NetBeans

Hardware Requirements

- Intel i5 Processor or Higher
- 8 GB RAM
- 256 GB Storage
-

Evaluation Metrics

The system was evaluated using:

- Response Time
- User Satisfaction
- Search Accuracy
- Accessibility Performance

VII. OUTPUT AND RESULT

After processing the user request, the Readify system generates the final output based on the selected functionality. Users can successfully browse books, search books, read PDF documents, and manage their personal library. The AI chatbot provides intelligent assistance and recommendations, while the Text-to-Speech module converts book content into speech for better accessibility. The system stores user information and book data securely using Firebase services. The final result is displayed through a user-friendly interface, ensuring efficient book management, improved reading experience, and enhanced accessibility for users.

Output Features:

- Successful User Authentication
- Book Search Results
- PDF Book Reading
- Personal Library Management
- AI Chatbot Responses
- Text-to-Speech Output
- Secure Cloud Data Storage
- Improved User Experience

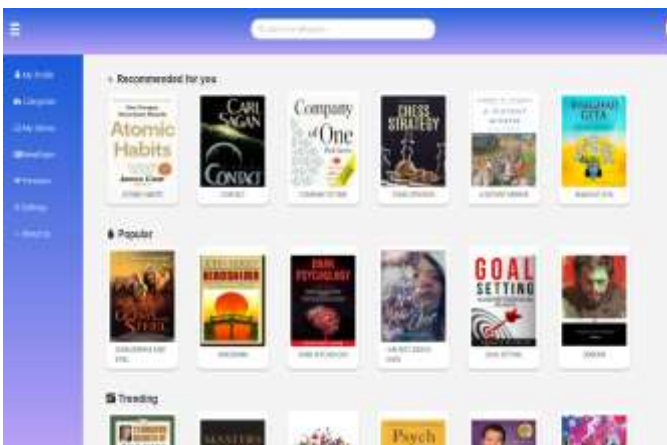


The Login and Authentication Module is the entry point of the Readify system. It provides secure access to users through Firebase Authentication services. New users can create an account by registering with their email address and password, while existing users can log in using their registered credentials. The system verifies user information and ensures secure authentication before granting access to the application. This module helps protect user data and maintains the privacy of personal information. After successful login, users are redirected to the main dashboard, where they can browse books, access their library, use AI features, and manage their reading activities efficiently. The authentication process is designed to be simple, secure, and user-friendly.

The Home Dashboard is the main interface of the Readify system that appears after successful user login. It provides quick access to all major features of the application in a user-friendly manner. The dashboard displays different book categories such as Business, Science, Motivational, History, Religious, Sports, and Newspaper, allowing users to easily browse books based on their interests. A search bar is provided to help users find books quickly using keywords or titles. The dashboard also includes sections such as Recommended Books, Popular Books, and Recently Added Books to improve book discovery. From the home page, users can navigate to their personal library, access PDF books, interact with the AI chatbot, and use text-to-speech features. The dashboard is designed to provide a smooth and efficient reading experience while ensuring easy navigation throughout the system.



The Admin Panel is responsible for managing and monitoring all activities within the Readify system. It provides administrators with complete control over book management, user records, and system operations. Through this panel, administrators can add new books, update book information, delete outdated content, and organize books into different categories. The admin can also monitor registered users, manage book collections, and ensure that the database remains accurate and up to date. Firebase services are used to securely store and manage all system data. The Admin Panel helps maintain the efficiency, security, and reliability of the platform by providing centralized control over the entire digital library system. Its user-friendly interface enables administrators to perform management tasks quickly and effectively.



VIII. RESULTS AND DISCUSSION

The Readify system successfully manages digital books and provides intelligent reading assistance.

Benefits:

- Faster Book Access

- Improved User Experience
- Better Accessibility
- Reduced Manual Management
- Cloud-Based Availability

The AI-powered features significantly improved user interaction and learning support.

IX. CONCLUSION

This paper presented Readify, an AI-powered Online Book Management System developed using JavaFX and Firebase. The system integrates digital book management, cloud services, AI chatbot assistance, and text-to-speech functionality into a single platform.

The proposed system improves accessibility, simplifies library management, and enhances user engagement through intelligent features. Future work may include advanced recommendation systems, multilingual support, and machine learning-based personalized reading suggestions.

REFERENCES

- [1] Vedant Pawar et al., "Lib-Bot: A Smart Librarian Chatbot Assistant," IJCDS, 2024.
- [2] Kurmashov et al., "Online Book Recommendation System," Suleyman Demirel Univ., 2015.
- [3] Konstantin Latuta "Architecture and Research of Smart Book Management System Based on AI,"
- [4] Vedant Pawar et al., "Book Recommendation System with Integrated Chatbot," IJSREM, vol. 08, Issue 05, 2024
- [5] K. Acharya, "Cloud-based Library Management and Book Tracking through IoT," Intl. J. of Computer Applications, 2020.
- [6] S. Deshmukh, "AI in Open Access: Revolutionizing Digital Repositories for Knowledge Sharing," Elsevier Digital Systems Journal, 2024.
- [7] X. Zhang et al., "Is AI Chatbot Recommendation Convincing Customer?," Acta Psychologica, vol. 250, 2024.
- [8] C. Collins et al., "Artificial Intelligence in Information Systems Research," Intl. J. of Information Management, vol. 60, 2021.
- [9] J. A. Zhiyuli et al., "BookGPT: A General Framework for Book Recommendation Based on a LLM," arXiv:2305.15673v1, 2023.
- [10] J. M. Kumar and N. Mahmoud, "A Review on Chatbot Design and Implementation Techniques," Intl. J. of Computer Design Studies, vol. 16, 2020.