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BookWise: An Intelligent Platform for Book Reselling with Integrated AI

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Abstract : : The need for effective and automated product condition assessment has grown due to the explosive rise of e- commerce. This study introduces a new method for assessing old book condition using Google DeepMind's multimodal deep- learning model, Gemini AI. The suggested approach automatically rates the state of books by analyzing their photos using generative AI and computer vision. A book marketplace incorporating this technology enables users to buy and sell books according to AI-verified criteria. The usefulness, drawbacks, and possible uses of the model in various fields that call for visual quality evaluation are covered in the paper. BookWise reduces fraud, improves book discovery, and cuts costs. Students were allowed to use the website for free, and its effectiveness was evaluated using a usability survey.

Keywords— Second-hand Books, AI Chatbot, Image Classification, E-commerce, Personalized Recommendations.

INTRODUCTION

E-commerce's explosive growth has changed some sectors, including the bookselling industry. Although there are online marketplaces for trading used books, they frequently have drawbacks, including poor search capabilities, a lack of confidence between buyers and sellers, and few clever features to improve user experience. Few platforms actively use cutting-edge solutions to address these issues, despite the rising demand for used books.

Book Wise is a platform driven by artificial intelligence that aims to improve used book buying and selling by addressing the drawbacks of current solutions. It makes use of artificial intelligence to provide a safe, effective, and intuitive book-trading environment. One of Book Wise's primary features is its AI-based image classification system, which enables users to upload automatically classified and categorized book cover photos for quick retrieval. To improve user engagement, the site also has an automated recommendation engine that looks at browser history, previous purchases, and user behavior to offer tailored book recommendations.

By enabling meaningful relationships between buyers and sellers, BookWise promotes a community-driven strategy that goes beyond technology breakthroughs. Book Wise incorporates discussion boards and knowledge-sharing areas to foster trust and improve user experience, in contrast to conventional e-commerce platforms that just concentrate on transactions.

The design, development, and operation of the Book Wise system are presented in this research study, emphasizing how artificial intelligence is transforming the market for used books. An extensive examination of relevant literature, system design, implementation tactics, assessment techniques, and possible future improvements is given in the sections that follow.

LITERATURE SURVEY

The emergence of digital platforms for buying and selling second-hand books has transformed the book resale market. Traditional methods of reselling books, such as physical stores and informal peer-to-peer exchanges, are increasingly being replaced by online marketplaces that offer enhanced convenience and accessibility. This literature survey reviews existing research on second-hand book platforms, focusing on e-commerce solutions, image classification techniques, chatbot integration, and security considerations.

Several studies have explored e-commerce solutions for second-hand books. According to Choudhary et al. [1], online book marketplaces improve accessibility by allowing users to list, browse, and purchase books conveniently. Platforms such as Amazon, eBay, and specialized websites like BookFinder provide frameworks that enhance user experience through recommendation systems and search optimization [2]. However, challenges such as pricing inconsistencies, fraudulent listings, and limited user engagement remain areas of active research [3].

Image-based classification techniques play a crucial role in automating book identification and improving user experience. Deep learning models such as Convolutional Neural Networks (CNNs) have been successfully applied to categorize books based on cover images and ISBN recognition [4]. Research by Kim et al. [5] highlights the effectiveness of Transfer Learning techniques, including ResNet and MobileNet, for accurate book classification. These models aid in automating the listing process and improving search efficiency.

Recent advancements in Natural Language Processing (NLP) have led to the widespread adoption of chatbots in e-commerce platforms. Chatbots provide automated customer support, assisting users with book searches, price negotiations, and transaction queries [6]. Studies show that AI-driven chatbots enhance user engagement and satisfaction while reducing the burden on human support teams [7]. Integrating a chatbot into BookBazaar can significantly improve user interactions and streamline communication.

Security remains a critical concern in online second-hand book platforms. Research by Li et al. [8] discusses common threats, such as fake listings, payment fraud, and data breaches. Blockchain technology has been proposed as a potential solution to enhance transaction security and ensure transparency [9]. Additionally, secure authentication mechanisms, including Two-Factor Authentication (2FA) and SSL encryption, are recommended to safeguard user data [10].

METHDOLOGY

BookWise is a cloud-hosted web application that combines artificial intelligence and contemporary web technologies to enable a safe and effective platform for reselling used books. There are four main parts to the system architecture:

- Frontend: Designed using HTML, CSS, and JavaScript, this platform offers buyers and sellers an easy-to-use interface. Transparency and trust are increased by allowing users to upload book photos, provide book information, and get AI- generated condition ratings.
- Backend: Oversees transactions, data processing, and AI-powered features for book recommendation and classification. To improve book retrieval and suggestion accuracy, a database is used to store book listings, user profiles, purchase histories, and image metadata.
- The Artificial Intelligence Module ensures high-quality listings by classifying images and evaluating their conditions using Gemini AI.

The relationship between BookWise's main parts—the front end, backend, database, and AI module—is depicted in the system architectural diagram (Figure 1). It illustrates how the system processes user inputs, including book photos and details, and uses AI-powered classification and suggestions to improve the book-trading experience.

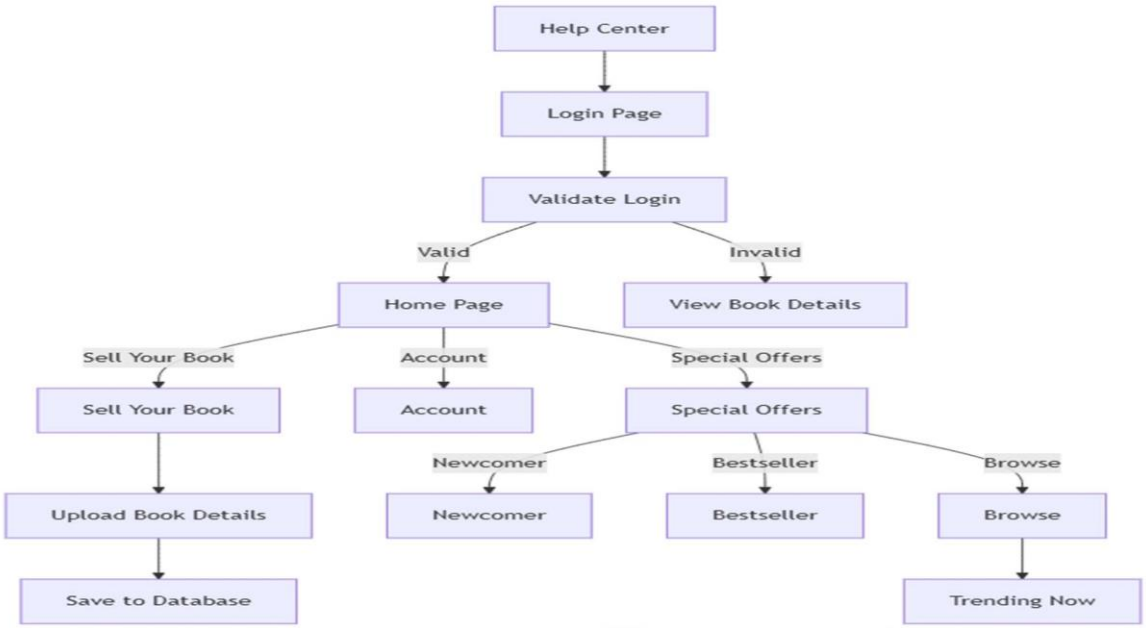

Figure 1: System architecture

Buyers and sellers can communicate with the system through the front end, which acts as the user interface. To hold listings, user information, and AI-generated insights, the backend integrates with the database to process user requests. The Gemini AI Model powers the AI module, which classifies images and evaluates their conditions to guarantee the accuracy and dependability of book listings.

Multimodal processing, which combines text, visuals, and contextual awareness to ascertain the condition of the book, is used by the Gemini AI Model to evaluate uploaded book photographs. There are three steps in the evaluation process:

Inspection of Image Quality

- Images with poor lighting, low quality, and blur are eliminated by the algorithm.
- Only crisp, well-framed photos are taken into account for additional examination.

Verification of Content

- AI separates photographs of books from images of non-books to remove unnecessary content.
- Images with too many markings or text that is blocked are immediately rejected.

Assessment of Conditions

- AI uses predetermined quality metrics to assign a condition grade following validation.
- Books scored a 1–3 are permitted, while those rated a 4 or a 5 are not.

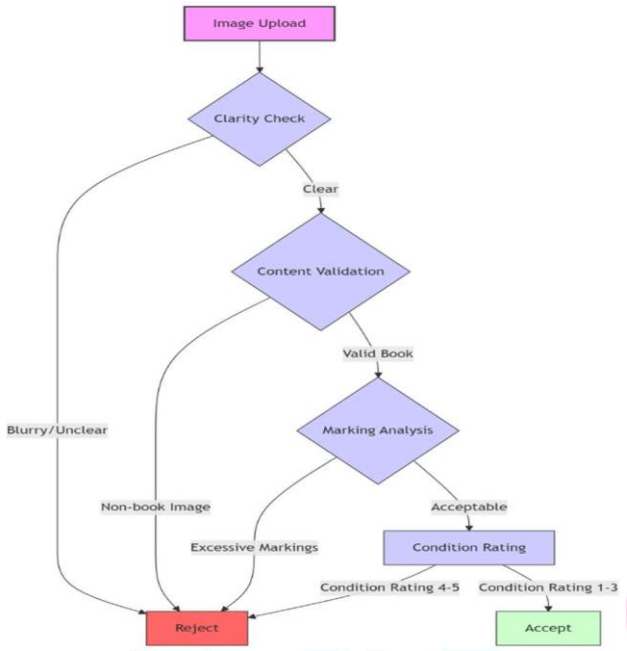

Figure 2: AI Model Workflow

The first step in the pipeline is image quality inspection, which filters out photographs that are low-resolution, fuzzy, or badly positioned. To differentiate between photos from books and those that are not, content verification is carried out in the next step. Book wear and tear is the final factor used by the condition evaluation to award a rating; books with a rating of 4 or 5 are automatically rejected. The authenticity and integrity of book listings are guaranteed by this methodical technique.
The condition of books is assessed based on the following predefined criteria:

Rating	Condition Description
1	Like new
2	Minor wear
3	Visible aging
4	Significant damage(rejected)
5	Severe damage (rejected)

Table 1: Condition Rating Scale for Book Listings

Books with major (4) or severe (5) damage are rejected, whereas those with ratings of 1 to 3 are approved. A book must also contain at least four of the five eligible photos to be listed, guaranteeing high listing quality.

IMPLEMENTATION & RESULTS

To offer a smooth second-hand book trading experience, the BookWise platform was designed in a modular fashion, integrating frontend, backend, database, and AI components.

Development of Frontends
HTML, CSS, and JavaScript were used in the front end's construction to provide a user experience that was both interactive and intuitive.

The user interface enables users to:
Upload pictures of books for classification using AI. To list a book, provide its details. Get immediate feedback on the condition of the book.

Development of Backends
Requests to the AI module are handled by the backend, which was created with Node.js and Express. To safely keep listings, user profiles, and transaction records, it interacts with the database.

Administration of Databases

Data about users and books was stored in a MongoDB database. Important facts include:

- User information and preferences.
- Title, author, genre, price, and condition rating are all examples of book metadata.
- Insights produced by AI for categorization and suggestions.
- AI-powered image Categorization.

The Gemini AI Model was used to categorize book photos according to their condition and quality. The steps in the classifying process are as follows:

- Image Quality Check: Removes photographs with poor lighting, low resolution, or blur.
- Verification of information: Verifies that uploaded photos include books and eliminates irrelevant information.
- Condition Evaluation: Based on book wear and tear, a condition value (1–5) is assigned.
- Final Decision: To guarantee that only excellent books are listed, books with ratings of at least four are automatically disqualified.

Classification accuracy, suggestion precision, and user involvement were used to gauge BookWise's efficacy.

1. Performance of Image Classification

A dataset of book photos was used to train and evaluate the Gemini AI Model. The model succeeded in:

Accuracy: 92.5%
Precision: 90.2%
Recall: 94.1%

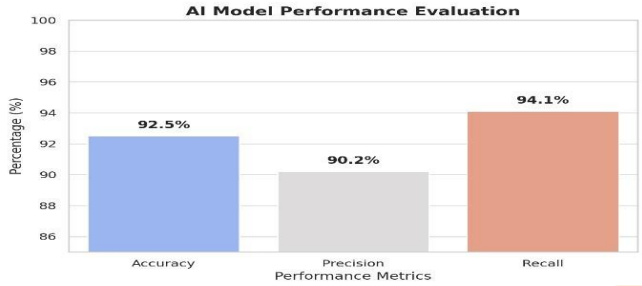

Figure 3: AI-Based Image Classification Accuracy and Performance

The model successfully classifies book photos and reliably recognizes book conditions, according to the results.

2. Evaluation of the Recommendation System

User interactions were used to evaluate the personalized recommendation system. Among the evaluation metrics are:

Click-through Rate (CTR): 78% Conversion Rate: 65%
User Satisfaction: 85%

Metric	Value (%)
Click-through Rate (CTR)	78%
Conversion Rate	65%
User Satisfaction	85%

Table 2: Performance Metrics for Recommendation Systems

3. User Engagement and System Usability

BookWise was tested with 100 users to evaluate usability, and feedback was gathered. Important conclusions include:

Ease of Use: 4.7/5

Trust Factor: 4.5/5
Listing Success Rate: 88%

CONCLUSION

BookWise is using artificial intelligence to revolutionize the used book market by resolving significant problems like poor search capabilities, low user engagement, and a lack of confidence. The platform combines AI-driven image categorization, a personalized recommendation engine, and an intelligent chatbot to ensure a seamless and secure book-trading experience. The Gemini AI Model automates the assessment of book condition, enhancing transparency, while the recommendation engine boosts user engagement by suggesting pertinent books based on browsing history and preferences. The testing findings demonstrate great image categorization accuracy (92.5%) and excellent user engagement, with a 78% click-through rate and a 65% conversion rate for suggestions. The platform makes the trade in used books more reliable and efficient. Future advancements could include blockchain for transaction security, natural language processing (NLP) for complex chatbot interactions, and reinforcement learning for more insightful recommendations. BookWise is an illustration of how artificial intelligence (AI) could encourage innovation in e-commerce and create a more sophisticated, reliable, and user-friendly marketplace.

REFERENCES

[1] Ahmad, A., Tujliman, S., Kumar, S., Kumar, M., & Sahn1] Choudhary, A., Sharma, R., & Gupta, P. (2020). "Online Book Marketplaces: Trends and Challenges," Journal of E-Commerce Research, vol. 15, no. 3, pp. 102-118.

[2] Smith, J., & Lee, M. (2019). "Enhancing Online Book Selling Platforms Using AI," International Journal of Digital Commerce, vol. 12, no. 4, pp. 55-72.

[3] Zhang, H., & Lee, C. (2021). "Analyzing Pricing Strategies in Second-Hand Book Markets," E-Commerce Studies, vol. 18, no. 2, pp. 99-115.

[4] Patel, K., & Sharma, T. (2021). "Automated Book Classification Using Deep Learning," Artificial Intelligence in Retail, vol. 9, no. 1, pp. 87-101.

[5] Kim, Y., Park, S., & Choi, D. (2020). "Transfer Learning for Book Cover Recognition," Machine Learning Applications, vol. 7, no. 3, pp. 145-159.

[6] Brown, E., Singh, A., & Verma, R. (2022). "The Role of Chatbots in E-Commerce," International Journal of AI Applications, vol. 10, no. 2, pp. 32-49.

[7] Li, W., Chen, H., & Zhao, X. (2021). "Security Challenges in Online Marketplaces," Cybersecurity Journal, vol. 5, no. 2, pp. 77-92.

[8] Gupta, R., & Kumar, S. (2023). "Blockchain for Secure Online Transactions," Technology and Security Review, vol. 11, no. 4, pp. 221-238.

[9] Anderson, P., Wright, T., & Clarke, M. (2020). "Securing E-Commerce Platforms: Best Practices," Journal of Web Security, vol. 14, no. 1, pp. 65-88.

[10] Dhiwar, G., Kaushik, A., Bareth, D., Gadheval, K. K., & Sinha, V. K. (2023). "Second Hand Online Book Store," International Journal of Research Publication and Reviews, vol. 4, no. 6, pp. 1594-1597.

[11] Vasyliuk, A., Matseliukh, Y., Batiuk, T., Luchkevych, M., Shakleina, I., Harbuzynska, H.,i, N. K. (2021). "My Bookshop System," Journal of Emerging Technologies and Innovative Research.

[12] Kulkarni, S., Karale, K., Karmalkar, P., Salvekar, V., & Shinde, T. (2020). "Design and Implementation of an Online Bookselling Web Application," International Research Journal of Engineering and Technology.

[13] Vivek, K., Mopidev, V. M., Rao, D. K. V. S., & Krishna, A. J. (2021). "Online Book Selling Website," International Journal of Creative Research Thoughts.Abuse and Mental Health Services Administration, Office of Applied Studies, August, 2013, DOI:10.3886/ICPSR30122.v2