

BOOK RECOMMENDATION SYSTEM USING NEURAL NETWORKS

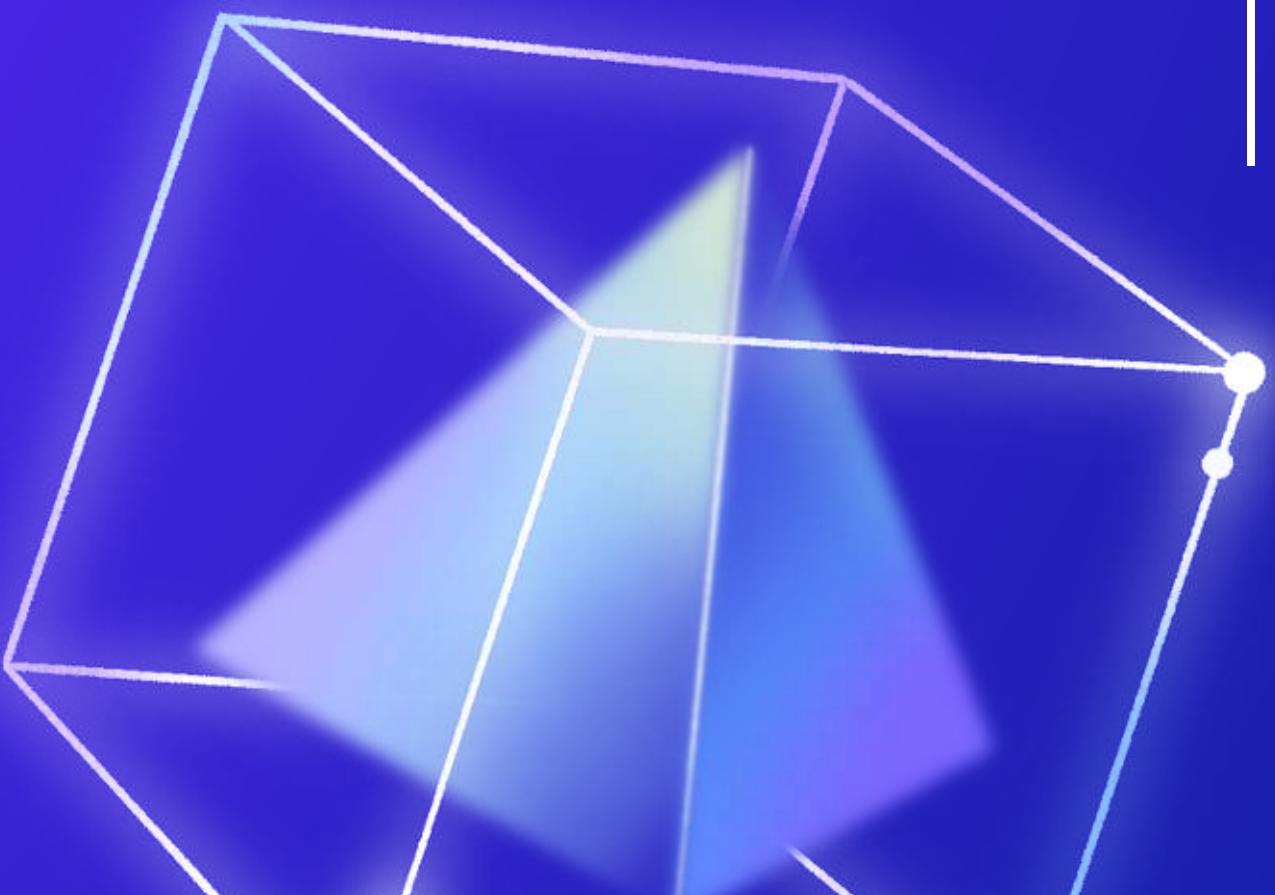
Team

Anas Mohammad - 50322515
Vijaya Ranjan Arra - 50319051



TABLE OF CONTENTS

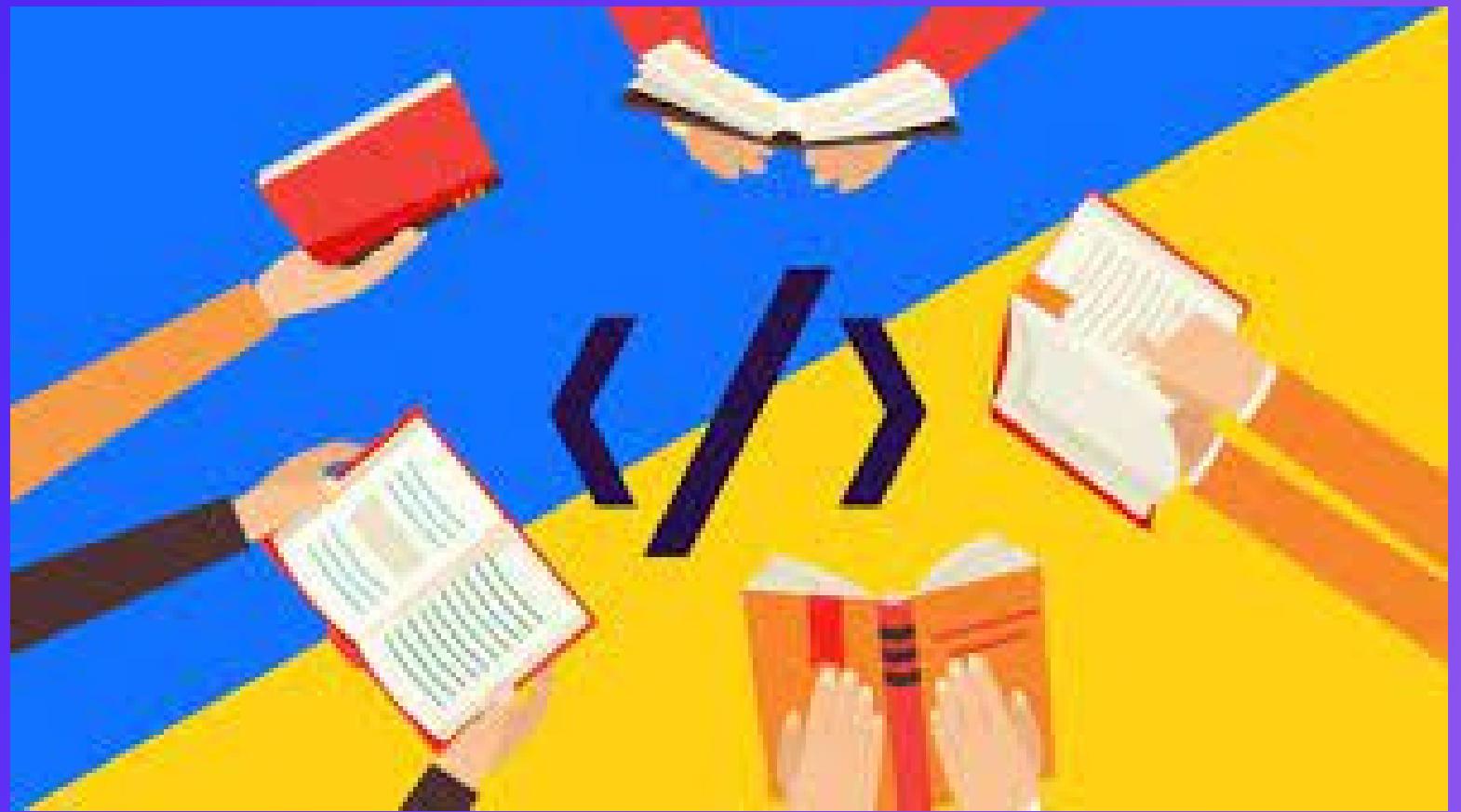
• Introduction	01
• Project Objectives	02
• Data Collection	03
• Methods	04
• Project Scope	05
• Results and Achievements	06
• Conclusion	07
• References	08



INTRODUCTION

In the era of digital content consumption, recommender systems play a pivotal role in enhancing user experiences across various platforms.

Our project focuses on the development of an innovative Book Recommendation System using Neural Networks to cater to individual user preferences. The primary objective is to elevate user engagement by delivering personalized book suggestions based on historical user ratings.



PROJECT OBJECTIVES



User Preference

Traditional recommendation systems often struggle to capture the nuanced preferences of users, leading to a gap between user expectations and the recommendations provided.

Scalability

Addressing demanding situations including information privacy, scalability, and adapting to dynamic consumer possibilities in a fast-converting online surroundings.



DATA COLLECTION

This involves gathering a comprehensive dataset containing user ratings, book details, and user profiles. The dataset serves as the foundation for training and evaluating the collaborative filtering model.

We have used a dataset : goodbooks-10k.

This dataset comprises ratings for ten thousand widely-read books. The ratings were obtained from the internet, with each book typically having around 100 reviews, though some books may have a smaller number of ratings. The rating scale ranges from one to five. The book IDs and user IDs are sequentially numbered. Book IDs range from 1 to 10000, while user IDs span from 1 to 53424. Importantly, all users have submitted a minimum of two ratings. The median number of ratings per user is 8, providing a measure of the typical user engagement with the dataset.

METHODS



Data Preprocessing

- Handling Missing Data
- Encoding Categorical Variables.
- Scaling Ratings



Neural Network Architecture

This involves creating separate embedding layers for users and books



Model Training

The model needs to be trained on the preprocessed data



Model Evaluation & Recommendations

Evaluate the model on the test dataset to assess its performance.
Generate recommendations for users based on the trained model.

PROJECT SCOPE



TECHNICAL SCOPE

Implement a collaborative filtering model using neural networks to capture intricate patterns in user behavior and enhance recommendation accuracy.

DYNAMIC USER FEEDBACK

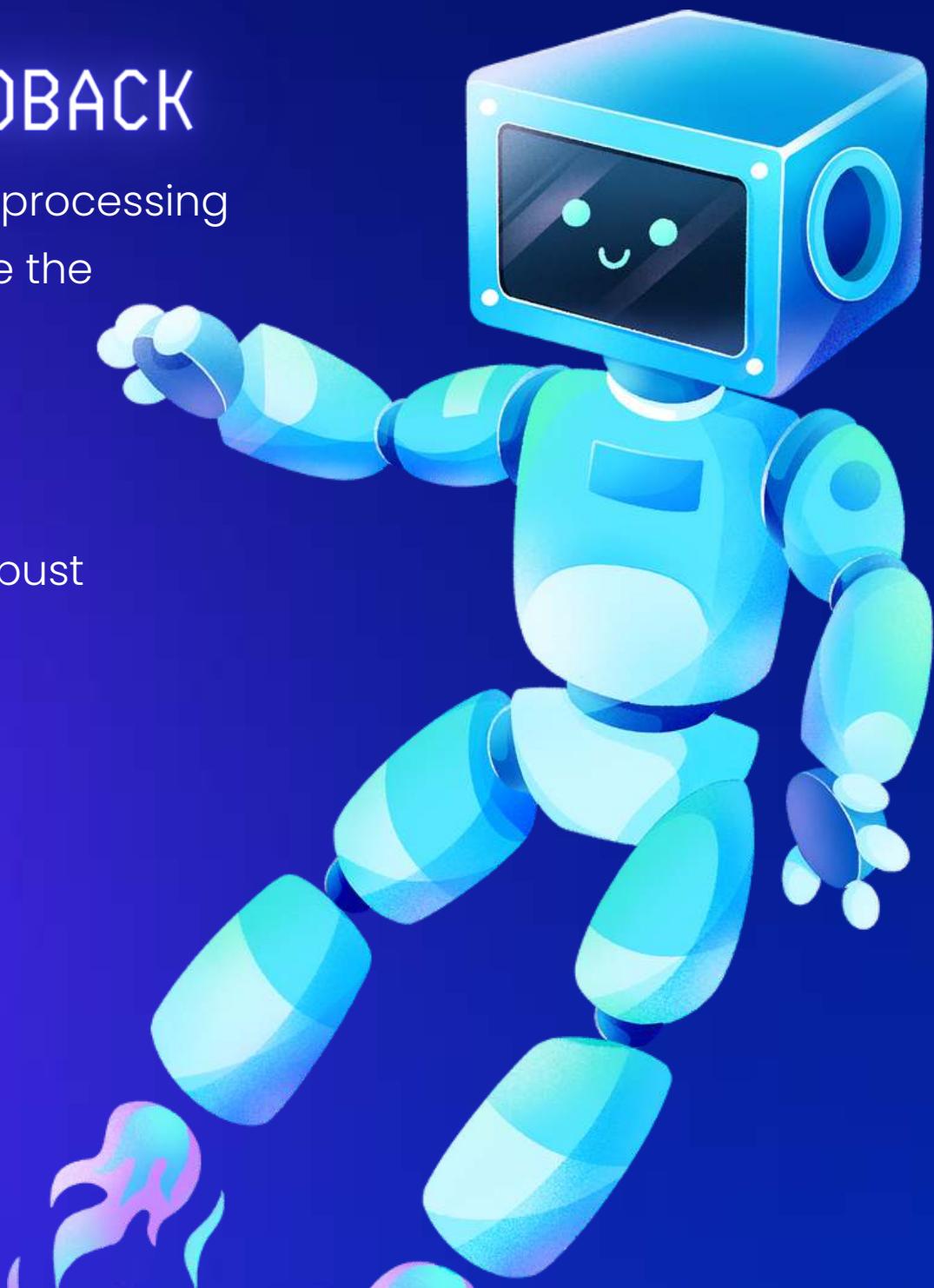
Design a module for collecting and processing user feedback to continuously refine the recommendation model.

PRIVACY

Prioritize user privacy by implementing robust data security measures and ensuring compliance with privacy regulations.

ENHANCED UPDATE

Collaboration with external platforms for cross-system recommendations



RESULTS AND ACHIEVEMENTS

01

The results and evaluation phase will assess the performance of the collaborative filtering model. Key evaluation metrics, such as Mean Squared Error (MSE) or Root Mean Squared Error (RMSE), will be used to measure the accuracy of predictions.

02

- Identified the significance of interpretability in neural network-based recommendation systems.
- Noted the importance of a user-friendly interface in encouraging user engagement with the recommendation system

REFERENCES

- [1]. Furtado, F., & Singh, A. (2020). Movie recommendation system using machine learning. International journal of research in industrial engineering, 9(1), 84-98.
- [2]. Balush, I., Vysotska, V., & Albota, S. (2021). Recommendation System Development Based on Intelligent Search NLP and Machine Learning Methods. In CEUR Workshop Proceedings (Vol. 2917, pp. 584-617).
- [3] B. Sarwar, G. Karypis, J. Konstan, and J. Riedl, “Item-based Collaborative Filtering Recommendation Algorithms”, In Proceedings Tenth Int. WWW Conf., 2001, pp. 285-295.
- [4] M. Rajatish, S.D. Partha, J. Gerdur, and S. Sandip, “Movies2Go - an online voting based movie recommender system”, Fifth International Conference on Autonomous Agents, Montreal, Canada, 2001.
- [5]. <https://www.kaggle.com/datasets/zygmunt/goodbooks-10k>

THANK YOU!

