

Resumen

This article explores various numerical methods for solving recommendation systems. We discuss the mathematical foundations, implementation details, and performance evaluations of these methods.

1. Introduction

Recommendation systems are crucial in various applications such as e-commerce, streaming services, and social media. This paper investigates numerical methods to solve recommendation systems efficiently.

2. Mathematical Background

2.1. Matrix Factorization

Explain the concept of matrix factorization and its relevance to recommendation systems.

2.2. Gradient Descent

Discuss the gradient descent algorithm and its application in optimizing recommendation systems.

3. Numerical Methods

3.1. Singular Value Decomposition (SVD)

Detail the SVD method and how it can be used to decompose the user-item interaction matrix.

3.2. Alternating Least Squares (ALS)

Explain the ALS algorithm and its implementation for recommendation systems.

4. Implementation

4.1. Dataset

Describe the dataset used for testing the numerical methods.

4.2. Algorithm Implementation

Provide details on the implementation of the discussed algorithms.

5. Results

Present the results of the numerical methods applied to the dataset. Include performance metrics and comparisons.

6. Conclusion

Summarize the findings and discuss potential future work in the field of recommendation systems using numerical methods.

Referencias

- [1] Author, *Title*, Journal, Year.
- [2] Author, *Title*, Journal, Year.