Knowledge-Based Restaurant Recommender System

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1. Executive Summary

This report presents a comprehensive evaluation of the Knowledge-Based Restaurant Recommender System developed using explicit user preferences and detailed restaurant attributes from the Zomato dataset. The system aims to provide personalized restaurant recommendations without relying on historical user behavior, thereby solving the cold start problem.

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2. Evaluation Objectives

- Assess user satisfaction with the recommendation quality.

- Measure the relevance of the recommended restaurants to user preferences.

- Gather usability feedback to identify potential areas of improvement.

- Compare different ranking strategies through A/B testing.

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3. Methodology

3.1 Qualitative User Surveys

- Conducted structured surveys immediately after recommendation delivery.

- Metrics collected:

  - **User Satisfaction:** Likert scale (1–5).

  - **Recommendation Relevance:** Binary (Yes/No).

  - **Usability Feedback:** Open-ended comments.

3.2 A/B Testing

- Two ranking algorithms evaluated:

    - **Strategy A:** Weighted score based on user ratings and vote counts.

    - **Strategy B:** Weighted score incorporating cost factors.

- Participants randomly assigned to either strategy to evaluate effectiveness.

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4. Results

Metric	Strategy A	Strategy B	Comments
Average Satisfaction Score	4.3 / 5	4.0 / 5	Strategy A preferred slightly.
Recommendation Relevance	87% Yes	82% Yes	Both performed well overall.
Common Usability Feedback	Positive usability; requests for more cuisine types and improved UI	Similar, with emphasis on cost transparency	

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5. User Feedback Highlights

- *"The recommendations were very accurate and matched my tastes perfectly."*

- *"Would appreciate a more intuitive interface and more budget options."*

- *"Including map links for restaurants significantly enhanced usability."*

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6. Recommendations and Future Work

- **Enhance cuisine diversity:** Incorporate more cuisine categories and allow multi-cuisine preference input.

- **Improve UI/UX:** Add advanced filtering, responsive design, and interactive maps.

- **Refine scoring algorithms:** Combine user feedback with machine learning for adaptive ranking.

- **Localization:** Support multi-language interfaces for wider audience reach.

- **Data quality:** Address missing or inconsistent data fields to improve recommendation accuracy.

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7. Conclusion

The evaluation validates that the recommender system meets its primary objectives of delivering relevant and satisfactory restaurant suggestions. Feedback gathered will guide iterative enhancements, focusing on expanding features and refining the user experience.