Leveraging Natural Language Processing for Waste Reduction in Mess Operations through Virtual Money System

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April 6th, 2024

This research paper explores the integration of Natural Language Processing (NLP) techniques within a virtual money system to reduce food wastage in mess operations. The proposed system allows users to pre-order food items using virtual money, thereby enabling them to choose only the items they intend to consume. NLP algorithms are employed to analyze user feedback, optimize menu offerings, provide personalized recommendations, and forecast demand, thereby enhancing user satisfaction and minimizing food wastage.

1 Introduction

Food wastage in mess operations poses significant environmental, economic, and ethical challenges. Traditional meal systems often result in excess food production and disposal due to mismatched demand and supply. To address this issue, a virtual money system is proposed, allowing users to pre-order food items based on their preferences and dietary requirements. NLP techniques are leveraged to optimize menu offerings, personalize recommendations, and forecast demand, thereby reducing food wastage.

2 Literature Review

Previous studies have highlighted the detrimental effects of food wastage and proposed various strategies for waste reduction in institutional settings. Virtual money systems have been explored as a means to empower users to make informed choices and reduce overproduction. Additionally, NLP has been increasingly utilized in the food industry for sentiment analysis, menu optimization, and personalized recommendations.

3 Methodology

The proposed system integrates NLP algorithms within a virtual money platform to analyze user feedback, optimize menu offerings, and forecast demand. Sentiment analysis is performed on user feedback to gauge satisfaction levels and identify areas for improvement. Menu optimization is achieved through NLP-driven analysis of past orders and popularity trends. Personalized recommendations are generated based on user preferences and feedback. Predictive analytics are employed to forecast demand for different food items, aiding in efficient procurement and production planning.

4 Results and Discussion

Preliminary implementation of the virtual money system demonstrates promising results in reducing food wastage and enhancing user satisfaction. Analysis of user feedback reveals positive sentiments towards the personalized ordering experience. Menu optimization based on NLP-driven insights leads to a reduction in unpopular items and an increase in the consumption of favored dishes. Predictive analytics assist in aligning food production with demand, thereby minimizing both wastage and shortages.

5 Conclusion and Future Work

The integration of NLP within a virtual money system offers a viable solution to mitigate food wastage in mess operations. By harnessing the power of NLP algorithms for feedback analysis, menu optimization, and demand forecasting, institutions can achieve significant reductions in food wastage while improving user experience and satisfaction. Future research endeavors may focus on refining NLP algorithms, expanding the scope of personalized recommendations, and scaling up implementation across diverse institutional settings.

6 References

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