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Customer Profiling Model for Ecommerce Apps

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Abstract: ***Researchers are developing new ways to evaluate credit in e-commerce, combining traditional RFM analysis with machine learning such as SVM and random forests. This approach provides accurate information that distinguishes good customers from potential fraudsters, minimizing financial losses. Other models for online finance companies use clustering, advanced RFM feature selection, weighted averaging with logistic regression and random forest to better segment customers. These developments build on growing connections between traditional channels and technology between others, providing valuable insights for navigating today's financial challenges.***

I. INTRODUCTION

The e-commerce industry faces two major challenges: high return rates and diverse payment preferences. To address these issues, a system is being developed that can create personalized credit and purchasing profiles for customers without compromising their privacy. This system will leverage big data, AI, and statistical analysis to assess buying behaviour and establish creditworthiness, allowing for tailored delivery advantages and EMI options. By providing suitable payment options and minimizing risks associated with returns and defaults, this system aims to enhance service efficiency and customer satisfaction while safeguarding privacy.

The project will be significant as it will revolutionize e-commerce by personalizing customer experiences while safeguarding privacy. By optimizing services and minimising risks, this project has the potential to enhance operational efficiency and customer satisfaction

II. LITERATURE SURVEY

The existing methods for customer segmentation include Logistic Regression, Linear Discriminant Analysis, Decision Tree, Random Forest Algorithm, and Naive Bayes. These methods have accuracies ranging from 0.78 to 0.90. However, they all have limitations in their ability to deal with complex relationships and invisible parameters.

This project proposes a new method for customer segmentation that uses a hybrid approach of clustering and classification. This method can capture more complex relationships and invisible parameters, resulting in more accurate segmentation.

The proposed method was evaluated on a dataset of customers from a financial institute. The results showed that the proposed method was able to achieve an accuracy of 0.92, which is higher than the accuracy of any of the existing methods.

Overall, the proposed method is a promising new approach to customer segmentation. It can capture more complex relationships and invisible parameters, resulting in more accurate segmentation.

Here is a table summarizing the existing methods and their accuracies:

Method	Accuracy
Logistic Regression	0.87
Linear Discriminant Analysis	0.84
Decision Tree	0.78
Random Forest Algorithm	0.90
Naive Bayes	0.88

III. OBJECTIVE

1) Customer Classification: The system will categorize customers into four classes based on purchasing history: Worst, Average, Good, and Best.
2) Accuracy: The model will be trained to achieve over 85% accuracy in customer classification, reducing prediction errors.
3) Privacy Protection: Customer profiles will be developed with a focus on privacy and compliance with data protection regulations.
4) User-Friendly Interface: The system will have an intuitive interface for all users, including certificate issuers, students, and validators, to simplify certificate processes and encourage adoption

IV. METHODOLOGY

This methodology aims to identify and reward genuine customers by calculating their creditworthiness based on various factors, including RFM analysis, payment methods, and return behaviour.

Key Steps: Data Cleaning and Transformation, Redundancies are removed from the customer transaction database to prepare it for analysis.

A. Credit Score Calculation

RFM Scores

Recency: Measured as days since the last invoice.

Frequency: Number of invoice transactions.

Monetary: Sum of total order amounts.

Each RFM variable is divided into four segments by quantiles (Q = [0.25, 0.50, 0.75]).

Credit scores are awarded based on these segments

B. Classification based on Credit Score

The total credit score is again divided into four quantiles, creating four customer categories Each category receives specific benefits based on their loyalty level (ranging from no benefits for worst customers to premium benefits for excellent customers).

Overall, this methodology provides a comprehensive approach to understanding customer behaviour and rewarding loyalty by analysing purchase history, payment preferences, and return patterns. This can potentially reduce losses from fraudulent activities and attract genuine customers by offering tailored benefits

V. CONCLUSION

This project proposes an e-commerce system employing data analytics and AI to craft personalized customer profiles while protecting privacy. By analysing purchasing behaviour and establishing creditworthiness, this system aims to optimize services, minimize risks associated with returns and defaults, and enhance customer satisfaction. The anticipated outcomes include mitigating profit erosion, facilitating EMI payments, and personalizing delivery benefits and payment options based on individual profiles. Through a detailed execution plan spanning eight weeks, the project outlines data collection, model development, user interface creation, and application launch, culminating in continuous improvement based on user feedback and performance monitoring. This innovative approach has the potential to revolutionize e-commerce by fostering trust, optimizing operations, and providing a seamless and personalized shopping experience for customers.

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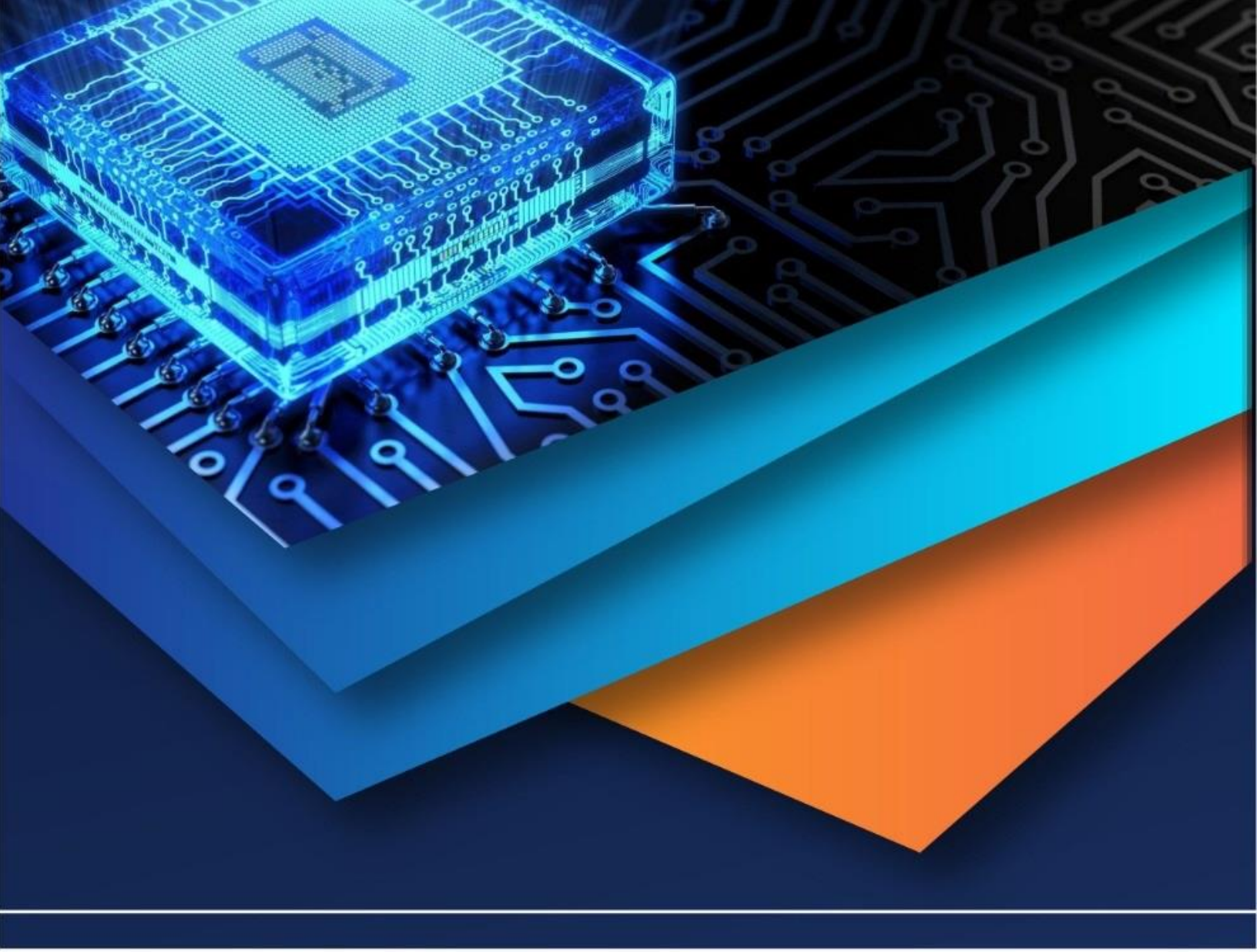

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