PARUL UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING DEPARTMENT

CRITICAL EVALUATION OF JOURNAL PAPER

This activity is an individual activity. Each student has to refer FIVE research papers related to their project title and each paper is to be reviewed as per below. Student need to prepare word file for each paper evaluation and submit it.

1. Student Details

Student Name:	**Sane Harsh Balkrishna**		
Enrollment No	**2203031250084**		
Title of Journal Paper	**Real-Time Customer Churn Scoring Model for the Telecommunications Industry**	**Branch:**	**CSE-BDA**
Authors	Nyashadzashe Tamuka, Khulumani Sibanda		
Journal / Conference:	University of Fort Hare		
Volume / Issue	IEEE	**Pages:**	9

2. Dissection of Paper

Section 01: Abstract / Introduction (Read the abstract and answer the following questions)

1 What is the objective of the Paper?

Ans: 1. The paper aims to develop a real-time customer churn prediction model for the telecommunications industry.

2. The study focuses on using machine learning techniques to analyze customer behavior and predict churn instantly.

2 What are the main results mentioned in the abstract?

Ans: 1. Logistic Regression achieved the lowest misclassification rate (2.2%) compared to other models.

2. Random Forest and Decision Tree had accuracy rates of 78.3% and 79.2%, respectively, but had higher misclassification rates.

3. Real-time scoring was successfully implemented using IBM Watson Studio.

3 What rational is given by the authors, attributing importance to the research problem?

Ans: 1. Prepaid customers in telecom industries can switch providers at any time, making churn prediction essential for customer retention.

2. Real-time churn prediction allows telecom companies to take immediate action to retain customers.

4 How many earlier works are cited by the authors, and what are the perceived drawbacks of these earlier works?

Ans: 1. Several studies focus on batch processing of historical data but lack real-time adaptability.

2. Existing models do not update dynamically with new customer behavior data.

Section 02: Methodology

1 Describe the methodology is used by author(s) to address the research problem?

Ans: 1. The study follows the CRISP-DM methodology, including data collection, preprocessing, modeling, evaluation, and deployment.

2. Machine learning models such as Logistic Regression, Random Forest, and Decision Tree were tested.

3. IBM Watson Studio was used for real-time deployment, enabling continuous updates.

2 In what way the methodology used by the authors is relevant to the methodology you proposed to adopt?

Ans: 1. The study highlights the importance of real-time model updates, which can improve customer retention strategies.
2. The focus on real-time data processing is highly relevant for industries requiring immediate decision-making.

Section 03: Results and conclusions

1 What are the variables used for the analysis

Ans: Customer demographics, service usage patterns, billing information, and call details.

2 List the results obtained by the authors.

Ans: 1. Logistic Regression had the lowest misclassification rate (2.2%).

2. Random Forest and Decision Tree models had good accuracy rates but higher misclassification errors.

3. Real-time scoring successfully detected high-risk customers.

3 What are the conclusions drawn by the authors from the study.

Ans: 1. Real-time churn prediction models provide better insights for customer retention strategies.

2. Logistic Regression is a reliable model for real-time telecom churn prediction.

3. Implementing real-time analytics can significantly improve proactive retention efforts.

Write a critical analysis of the paper (about 200 words)

This study provides valuable insights into real-time customer churn prediction using machine learning. Unlike traditional models that rely on batch processing of historical data, this research emphasizes the importance of continuously updated predictions. The use of IBM Watson Studio for real-time model deployment ensures that telecom companies can instantly detect and address customer churn.

One of the strengths of this study is its evaluation of multiple machine learning models, with Logistic Regression emerging as the most reliable due to its low misclassification rate (2.2%). Additionally, the research demonstrates that real-time analytics can enhance customer retention strategies by identifying high-risk customers immediately.

However, a limitation of this study is its limited focus on deep learning models, which could potentially improve accuracy further. Future work could explore hybrid models that combine real-time machine learning with advanced neural networks to enhance predictive performance. Overall, this study is highly relevant for telecom companies looking to implement real-time churn prediction systems. It highlights the need for continuous model updates and showcases the benefits of integrating AI-driven customer retention strategies in fast-paced industries.