



Insurance Cold Calling Optimization Using Random Forest Regression Compared With K - Nearest Neighbours For Improved Accuracy

INTRODUCTION

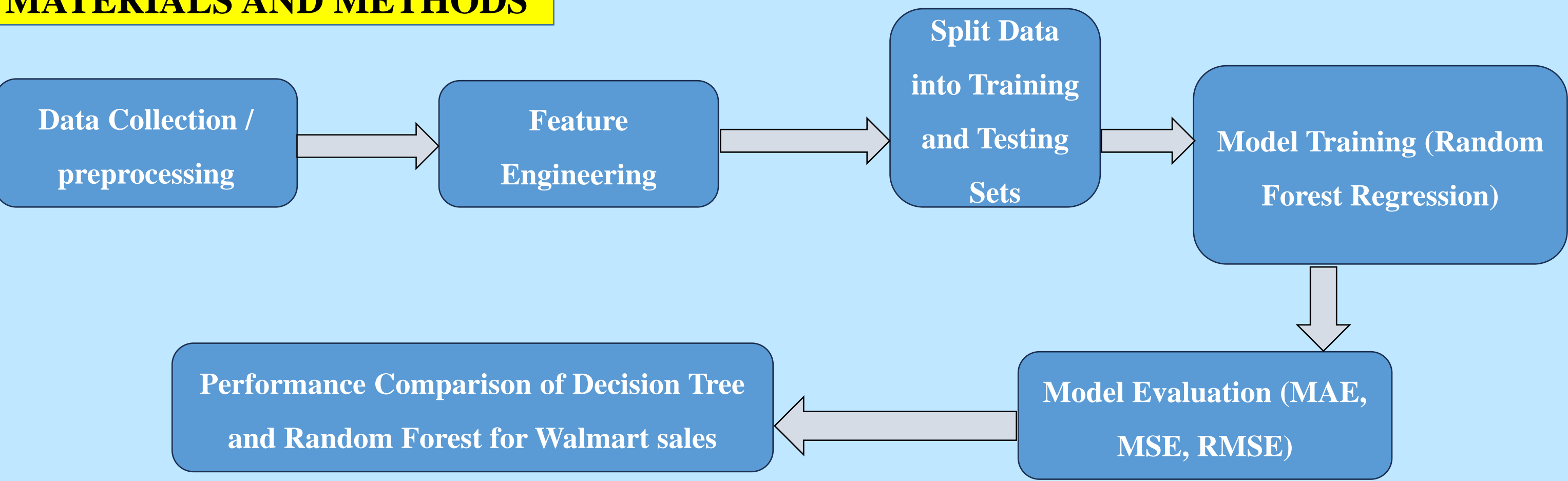
- The primary aim of this research is to optimize the cold-calling process for insurance companies, focusing on improving efficiency, reducing resource consumption, and enhancing overall productivity. By refining cold-calling strategies, insurance companies can more effectively attract new customers and maximize profits
- To identify factors like call timing, audience demographics, and communication skills that affect cold-calling success and to evaluate the effectiveness of various machine learning techniques, such as Random Forest Regression and K-Nearest Neighbours (KNN), in streamlining marketing and sales initiatives for insurance companies
- Use machine learning algorithms, such as Random Forest Regression and K-Nearest Neighbours (KNN), to analyze and optimize cold-calling strategies
- Enhanced sales outcomes for insurance companies, with higher conversion rates and increased customer satisfaction, resulting from more targeted and data-driven cold-calling methods

6 Steps for Sales teams to Ace Their Cold Calling Game



Fig 1. Steps for mastering Cold Calling

MATERIALS AND METHODS



Process of evaluating and optimizing Insurance Cold Calling

- The Data was collected from Kaggle
- The data has been preprocessed and performed various techniques like Data cleaning, feature engineering
- The data has been split into two different datasets (i.e. Training set – 75% and Testing set – 25%)
- Then, performed model evaluation and model validation using Random Forest regression and K – Nearest Neighbours

RESULTS

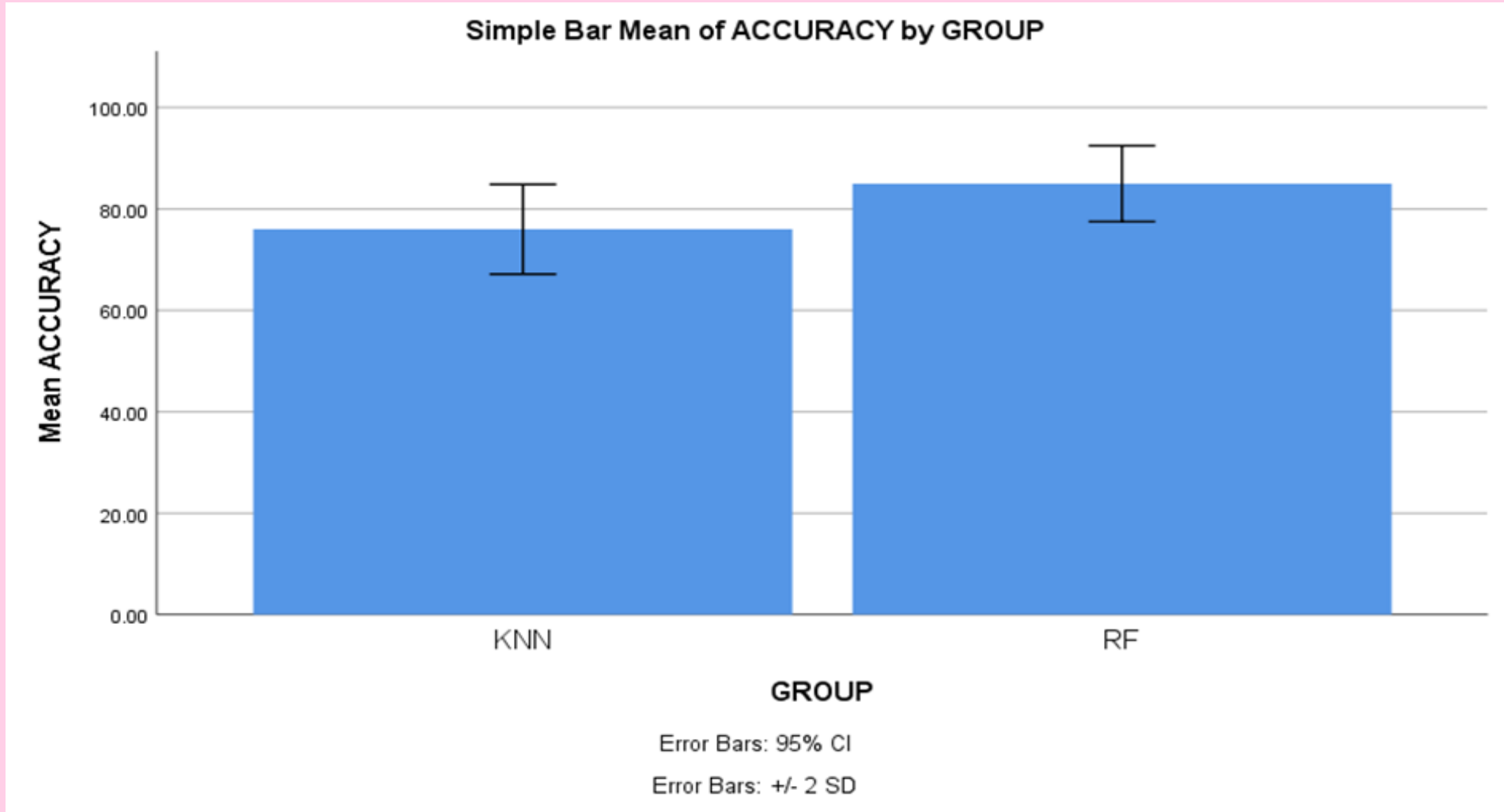


Fig 2. The Mean Accuracy Graph

Table 1. The Mean Accuracy of the Random Forest Regression algorithm and the K-Nearest Neighbours.

	Group	N	mean	Std. Deviation	Std. Error mean
Accuracy	Random Forest Regression	10	85.4000	3.74166	1.18322
	K – Nearest Neighbours	10	74.5000	4.42217	1.39841

- The figure shows the mean accuracy of the Random Forest Regression is greater than the K-Nearest Neighbours algorithm. X axis is Random Forest Regression vs K-Nearest Neighbours , Y axis is Mean Accuracy. Error bar is +/- 2 SD

DISCUSSION AND CONCLUSION

- Random Forest Regression outperformed K-Nearest Neighbours (KNN) algorithm in optimizing insurance cold calls, achieving an average accuracy of 85.4% compared to 74.5%
- Statistical comparisons between Random Forest Regression and KNN algorithms included mean accuracy, standard deviation, and mean standard error, with Random Forest Regression exhibiting superior performance
- Independent sample tests further supported the superiority of Random Forest Regression over KNN, with a significance level indicating the reliability of the results
- The findings align with previous studies, highlighting the effectiveness of Random Forest Regression in sequential data processing tasks, particularly in the context of optimizing cold-calling procedures
- Random Forest Regression's strengths are well-suited for the procedural nature of the cold calling domain, whereas KNN algorithm may struggle with capturing complex temporal relationships in insurance cold calling data

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