SIMATS ENGINEERING
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Automated Aero Assist Recommendation using Random Forest and Compared with Logistic Regression with Improved Accuracy

INTRODUCTION

- An automated AreoAssist recommendation system is a computional model design to suggest optimal flight options to users based on their parameters and historical data.
- The aim of the study is to improve the accruacy of an autaomated Areoassist recommendation system by comparing the performance of RF and LG.
- Enhancing the accuracy of the Aeroassist recommendation system is crucial for improving user experience, increasing customer satisfaction, and optimizing airline.
- Random forest employs multiple decision trees to predict classes, while logistic regression analyzes datasets with independent variables to determine outcomes.
- Pervious reserach might focuses soley on the one algorithm or lacked a direct comparsion between random forest and logistic regression in context of AreoAssist system

Fig 1. Automated Aero Assist Recommendation

MATERIALS AND METHODS

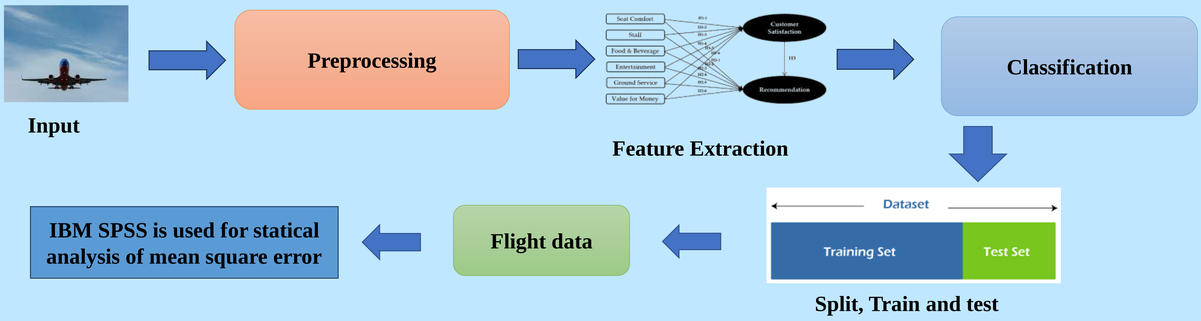

Fig 2. Automated Aero Assist Recommendation using machine learning algorithms

RESULTS

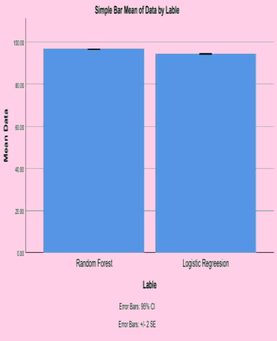

Fig 3.Random Forest and Logistic Regression

Table 1. The accuracy of Random Forest and Logistic Regression.

S.NO	Random Forest	Logistic Regression
1	96.16	94.72
2	96.61	94.93
3	96.02	94.95
4	96.99	94.04
5	96.34	94.79
6	96.76	94.03
7	96.93	94.71
8	96.97	94.18
9	96.83	94.93
10	96.66	94.35
Accuracy	96.57	94.39

- In, Automated AreoAssist Recommendation , Random Forest is compared with logistic regression and it depicts that the RF got highest accuracy than the LR.

Table 2.Mean table for Random forest and Logistic Regression.

	Algorithm	N	Mean	Std.Deviation	Std . Error Mean
Accuracy	Novel Random Forest	10	96.57	0.145	0.046
	Logistic Regression	10	94.39	0.275	0.087

- Group statistics of accuracy for the Novel Random Forest and Logistic Regression Algorithms . The above Novel Random Forest has 96.57% accuracy and the Logistic Regression has 96.42% of accuracy.

DISCUSSION AND CONCLUSION

- By independent sample test, there is a significant difference in accuracy attained by the algorithm is 0.0016($p<0.05$).
- The research with the help of machine learning methods revealed that the Random Forest algorithm perform 96.57% better that the Logistic regression, Which had an accuracy of 94.39%.
- Prioritizing user experience enhancement and addressing regulatory and ethical considerations will ensure responsible deployment and widespread adoption of the systems.
- Incorporating potential dependencies on data quality and availability, addressing challenges in interpretability, especially with random forest, may impact users' understanding and trust in the recommendations..
- From the work, it is concluded that the Random forest attains the high accuracy when comparing with other machince learning algorithms in Automated Aero Assist Recommendation.

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