SIMATS ENGINEERING
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SAVEETHA TRANSDISCIPLINARY ANNUAL RESEARCH SUMMIT
STAR SUMMIT 2024
SIMATS ENGINEERING
TECH STAR SUMMIT 2024

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Improved Accuracy for Automated Aero Assist Recommendation using Random Forest and Compared with Adaboost Classification with Improved Accuracy

INTRODUCTION

- The research project focuses on enhancing the accuracy of automated airline recommendations using machine learning algorithms, specifically Random Forest and Adaboost classifiers.
- The primary objective is to improve the precision of automated recommendations for airline selection, considering factors like price, schedule, airline reputation, and passenger preferences.
- Random Forest is an ensemble learning method that constructs multiple decision trees during training, while Adaboost combines multiple weak classifiers to form a strong one.
- The study aims to fill the gap in automated airline recommendations by employing advanced machine learning techniques, addressing issues of precision and personalization in methods.
- By comparing the performance of Random Forest and Adaboost classifiers and demonstrating improved accuracy, the research aims to contribute to advancements in travel systems.

Fig 1.Analysis of AreoAssist recommendation system

MATERIALS AND METHODS

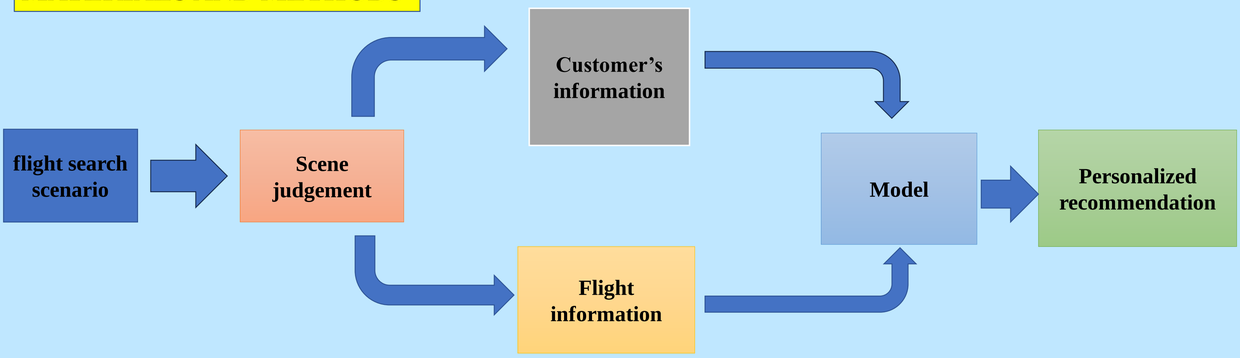

Fig 2. Automated Aero Assist Recommendation using machine learning algorithms

RESULTS

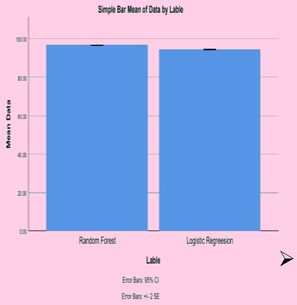

Fig 3.Random forest and Adaboost classification

Table 1.The accuracy of Random Forest and AdaBoost classification.

S.NO	Random Forest	AdaBoost Classification
1	96.16	92.96
2	96.61	92.38
3	96.02	92.39
4	96.99	92.92
5	96.34	92.36
6	96.76	92.29
7	96.93	92.59
8	96.97	92.65
9	96.83	92.86
10	96.66	92.83
Accuracy	96.57	92.37

- In, Automated AreoAssist Recommendation Random Forest is compared with AdaBoost Classification and it depicts that the RF got highest accuracy than AdaBoostClassification.

Table 2.Mean table for Random forest and Adaboost classification.

	Algorithm	N	Mean	Std.Deviation	Std . Error Mean
Accuracy	Novel Random Forest	10	96.57	0.145	0.046
	AdaBoost Classification	10	92.37	0.034	0.096

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

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 AdaBoost Classification , Which had an accuracy of 92.37%.
- Advancements in hardware and algorithmic optimizations can mitigate computational resource demands
- Random Forest and AdaBoost may have reduced interpretability compared to simpler models, and training them on large datasets or in real-time may demand significant computational resources.
- The high accuracy of Random Forest is attributed to its insight into feature importance, aiding in understanding the underlying factors driving recommendations for Aeroassist, compared to other machine learning algorithms.

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