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Enhanced Accuracy For Automated Aero Assist Recommendation Using Random Forest And Compared With Support Vector Machine With Improved Accuracy

INTRODUCTION

- The research paper aims to enhance the accuracy of automated Aero Assist recommendation systems using machine learning algorithms.
- The application domain likely involves aerospace engineering or related areas where automated assistance for aerodynamic processes is needed, such as aircraft design control
- The study compares Random Forest and Support Vector Machine (SVM) algorithms in terms of their accuracy for recommending aero assist strategies.
- A potential research gap is identified as the lack of studies comparing the accuracy of Random Forest and SVM specifically in the context of aero assist recommendation.
- The paper seeks to address this gap by providing insights into which algorithm performs better for recommending aero assist strategies in aerospace engineering or related fields.

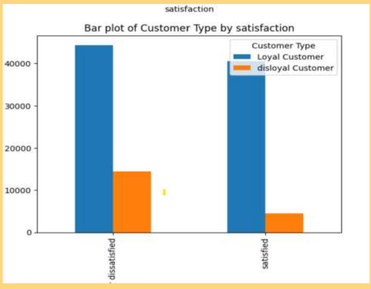

Fig 1: Customer satisfaction for Automated Aero Assist Recommendation

MATERIALS AND METHODS

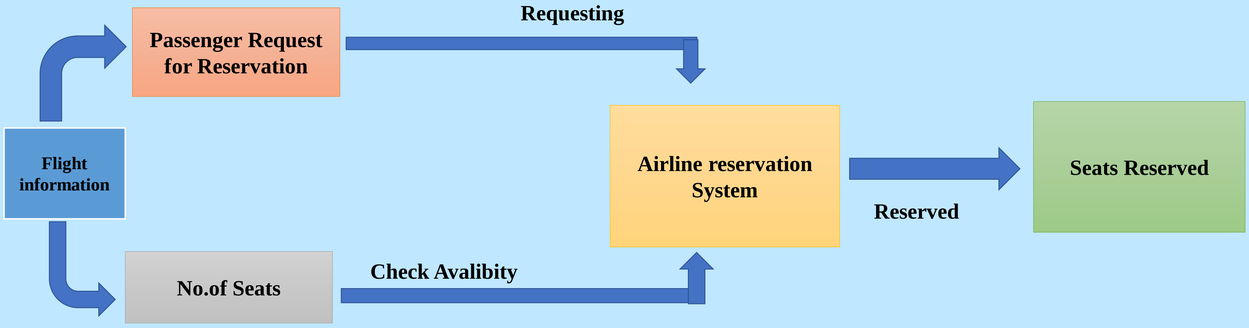

Fig 2. Automated Aero Assist Recommendation using machine learning algorithms

RESULTS

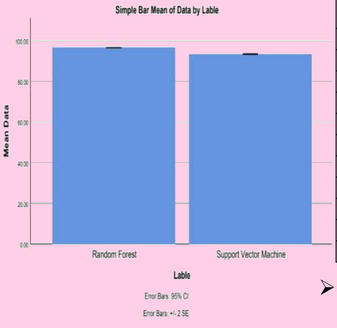

Fig 3.Random forest and Support Vector Machine

Table 1.Displays the accuracy of Random Forest and Support Vector Machine.

S.NO	Random Forest	Support Vector Machine
1	96.16	93.72
2	96.61	93.10
3	96.02	93.51
4	96.99	93.38
5	96.34	93.19
6	96.76	93.95
7	96.93	93.86
8	96.97	93.38
9	96.83	93.88
10	96.66	93.67
Accuracy	96.57	93.43

- Random Forest is compared with Support Vector Machine and it depicts that the Random Forest got highest accuracy than Support Vector Machine.

Table 2.Mean table for Random forest and Support Vector Machine

	Algorithm	N	Mean	Std.Deviation	Std . Error Mean
Accuracy	Novel Random Forest	10	96.57	0.145	0.046
	Support Vector Machine	10	93.43	0.269	0.085

- Group statistics of accuracy for the Novel Random Forest and Support Vector Machine Algorithms . The above Novel Random Forest has 96.57% accuracy the Support Vector Machine has 93.43%.

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 Support Vector Machine 93.43%, Which had an accuracy of 92.37%.
- Comparing Random Forest with Support Vector Machine in automated aero assist improves flight planning and enhances aviation safety.
- Selecting suitable machine learning algorithms tailored to aviation datasets is crucial for reliable automated assistance systems.
- Integrating Random Forest into automated systems enhances aviation safety by providing reliable decision-making support to pilots.

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