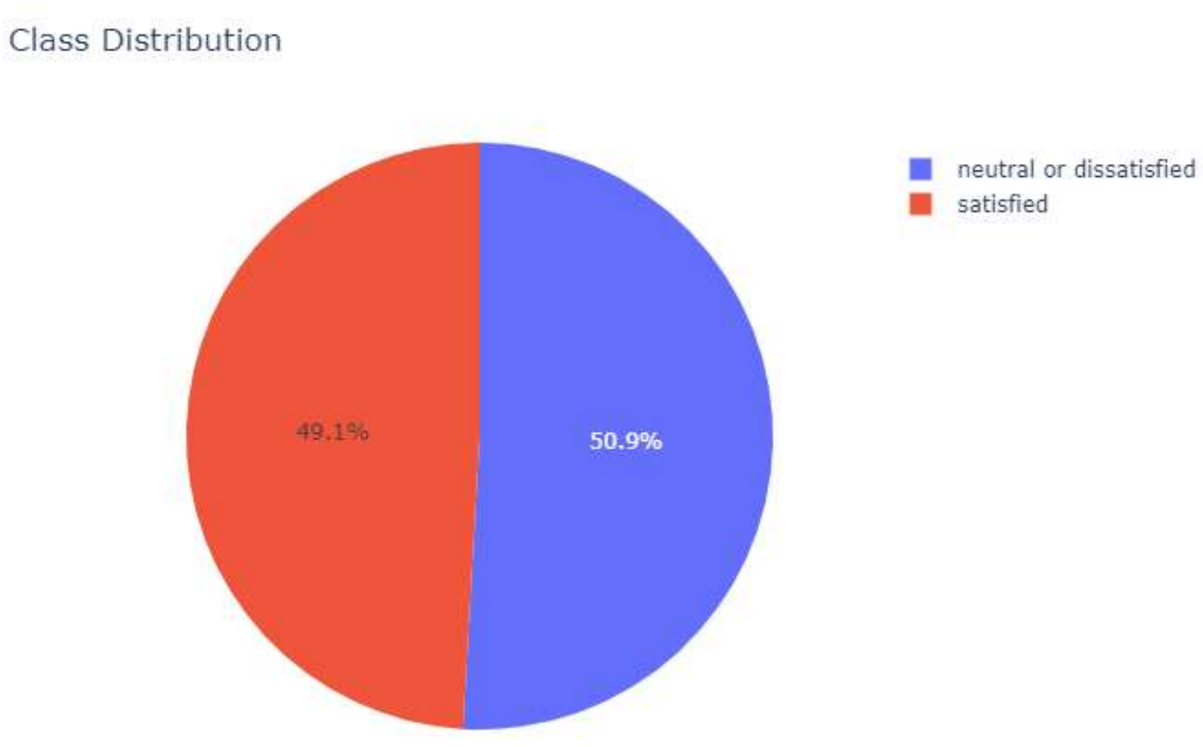
Travel and Entertainment AI-ML Case Study

AI has played a significant role in the travel and tourism industry by helping businesses understand and predict customer satisfaction. With the abundance of data available in the industry, Auto-ML algorithms can process vast amounts of information to identify patterns and trends that can help businesses improve customer satisfaction.

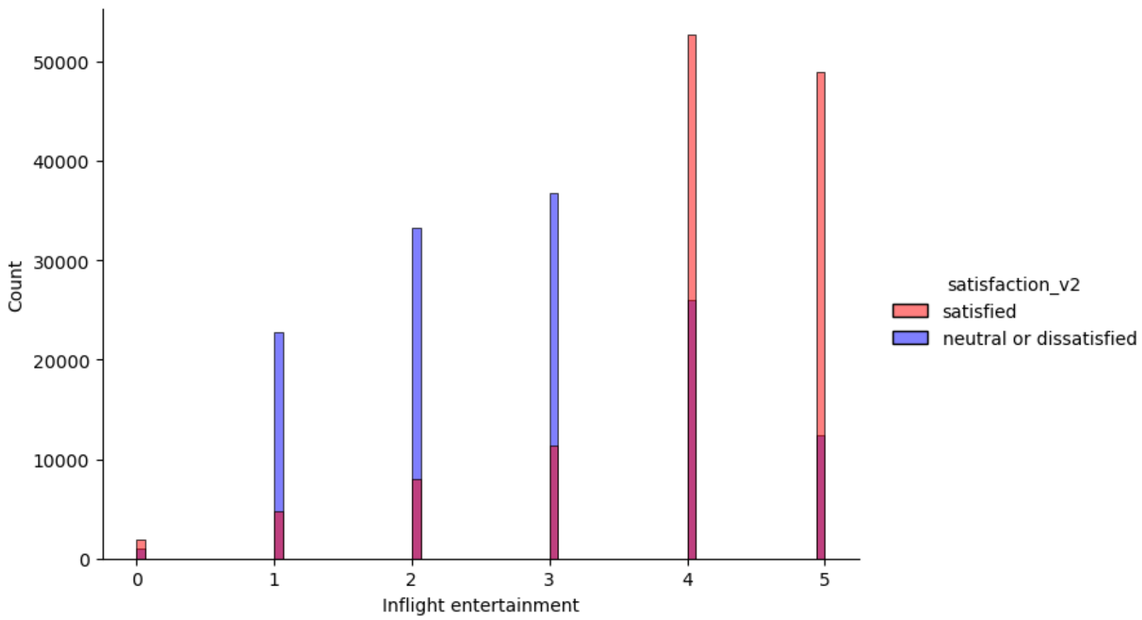
For instance, Auto-ML algorithms can be used to analyze customer reviews, ratings, and feedback to understand what customers like and dislike about their travel experiences. This information can then be used to improve customer satisfaction by addressing any issues that customers have raised, such as improving the quality of accommodations or the responsiveness of customer service.

The main goal of the project is to predict the satisfaction rate of the customers and help to identify the factors that determine the satisfaction levels using ML & AI.

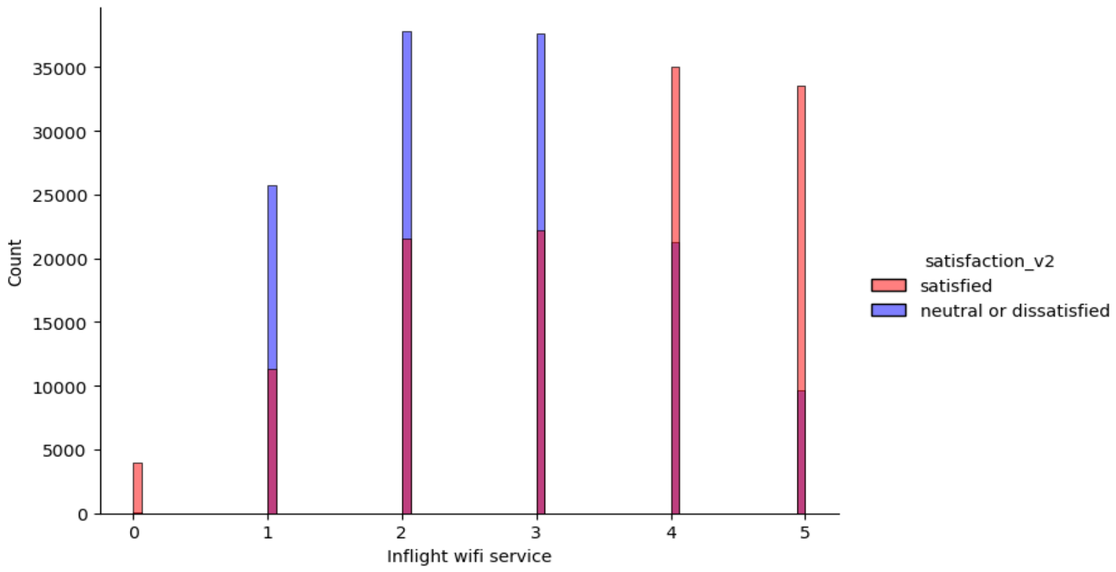


Satisfaction	No. of Customers
neutral or dissatisfied	132245
satisfied	127513
neutral or dissatisfied Rate	50.9 %
satisfied Rate	49.1 %

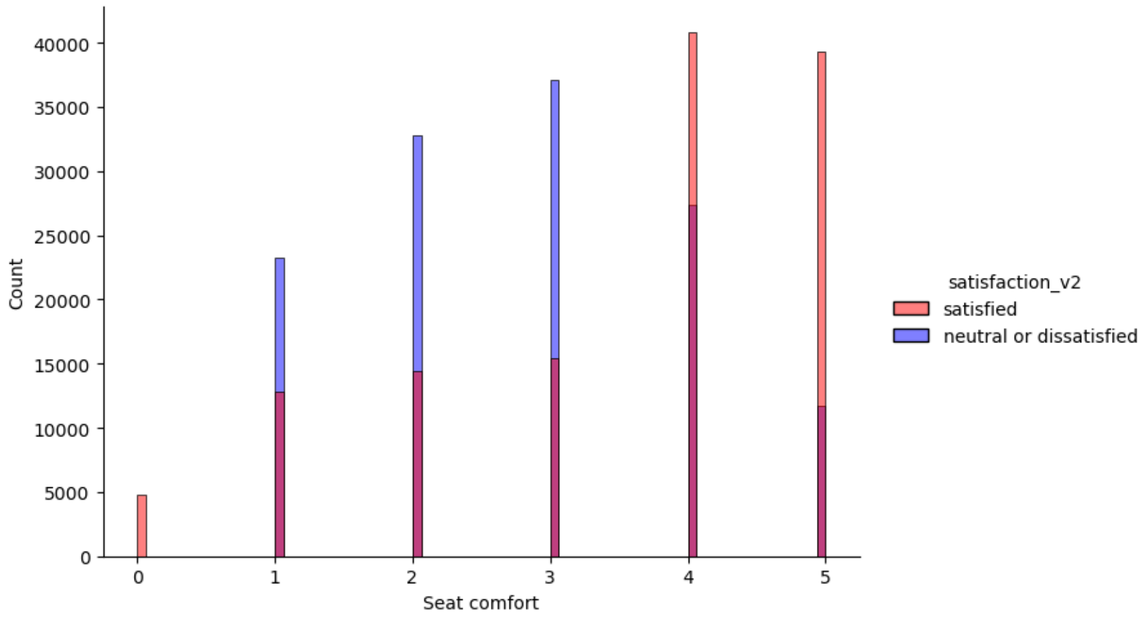
Features Responsible : Auto- ML



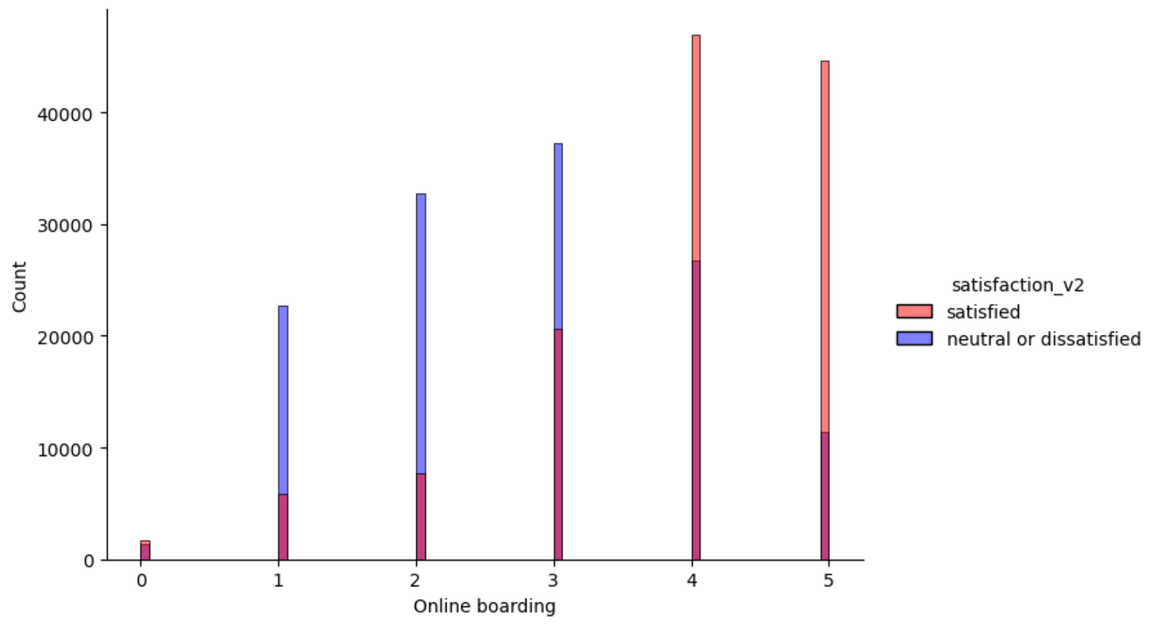
- **Inflight Entertainment** = Satisfaction level of inflight entertainment. In-flight entertainment (IFE), in airline parlance, is a collection of entertainment options available and offered to passengers to help them pass the time and avoid restlessness, flight fatigue, and boredom.



- **Inflight Wi-fi Service** = Satisfaction of level of the customers with respect to the experience with Wi-fi Service.



- **Seat Comfort** = Satisfaction of level of the customers with respect to the experience in seat comfort.



- **Online Boarding =** Satisfaction level of customers with respect to experience with online boarding. Online boarding pass is electronic document on personal mobile device that allows you to go through security and board your flight.

Auto-ML Methodology Results

Algorithms	Test Accuracy (25 percentile)	Test Accuracy (50 percentile)	Test Accuracy (75 percentile)	Test Accuracy (90 percentile)
Decsion Tree	85.61	91.67	93.72	99.86
Random Forest	93.97	98.51	99.27	99.37
XGBoost	95.77	98.2	99.4	99.53
MLP	82	83.45	88.52	82.37
ANN	79.42	78.22	82.74	83.32
Total Features	7	14	21	26
Avg. Accuracy	87.354	90.01	92.73	92.89

- **Based on our observation from the standard ML algorithms, 90th percentile has the best average accuracy.**
- **Decision Tree has the best performing algorithm accuracy with 99.86% accuracy in 90 percentile.**

Conclusion

In Conclusion, Auto-ML has significantly impacted the travel and tourism industry by providing businesses with valuable insights into customer behavior and preferences, allowing them to improve customer satisfaction by offering personalized recommendations and addressing customer concerns. Auto-ML can help solve various difficulties in the travel and tourist business linked to optimizing operations, improving the customer experience, and generating income. The dataset has 2,59,758 records with 6 Categorical and 19 Numerical Features.

For classification, models were created with algorithms using Auto-ML techniques likeDecsion Tree, Random forest, XGBoost, Multilayer Perceptron and Artificial Neural Network. With these models, performance measurement values were obtained for feature sets of 7, 14, 21 and 26. The Auto-ML algorithms were able to predict the satisfaction rate of the customers with an average accuracy between 86% – 93% and helped to identify the factors that determine satisfaction levels.

The major features include Inflight Entertainment, Seat Comfort, Inflight Wi-fi Service and Online Boarding. Overall, Auto-ML models has the potential to help utilities improve the efficiency and reliability of their operations, reduce costs, and provide better service to their customers.