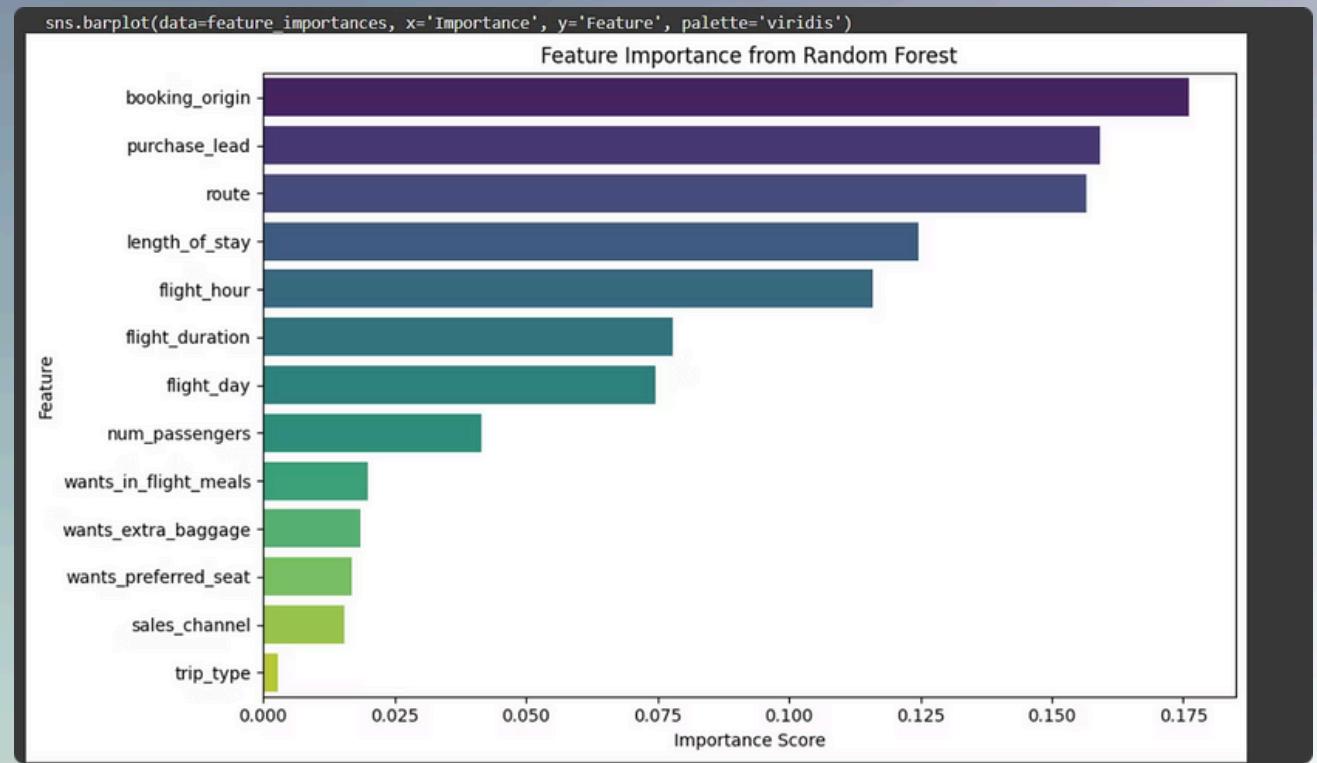


# Predicting Holiday Booking Completion Before Travel



This presentation covers a model predicting customer holiday bookings before travel.

The goal is to improve booking predictions from historical data using machine learning.

# Model Overview: Random Forest Classifier



## Objective

Predict if a customer will complete a holiday booking before travel.



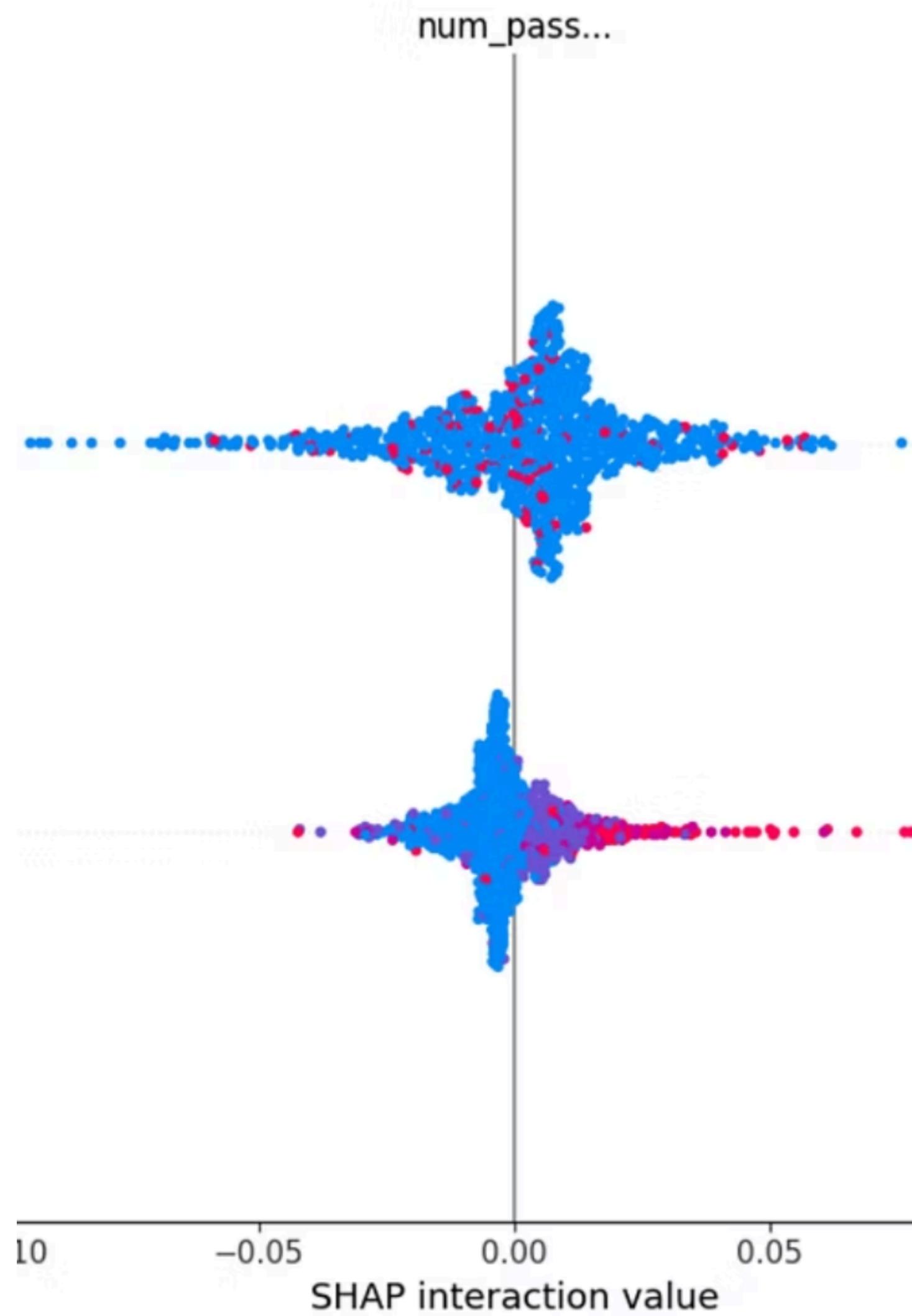
## Algorithm

Random Forest Classifier chosen for robust performance and interpretability.



## Data Source

Historical booking records including customer and travel details.



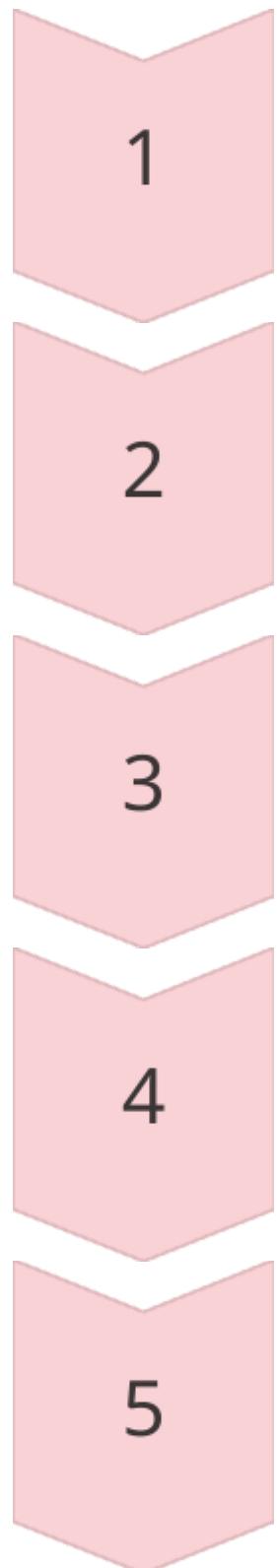
	precision	recall	f1-score	support
0	0.88	0.96	0.92	8520
1	0.48	0.23	0.31	1480
accuracy			0.85	10000
macro avg	0.68	0.59	0.61	10000
weighted avg	0.82	0.85	0.83	10000

# Model Performance Summary

Overall Accuracy	85%
Class 1 (Booking) Precision	0.48
Class 1 (Booking) Recall	0.23
Class 1 (Booking) F1-Score	0.31

Model handles non-booking predictions well but struggles with booking class due to imbalance.

# Top 5 Impactful Features



## **booking\_origin**

Starting point of the booking journey.

## **purchase\_lead**

Time between booking and trip start.

## **route**

Travel path influencing booking likelihood.

## **length\_of\_stay**

Duration impacting customer decision.

## **flight\_hour**

Time of day affecting booking behavior.

# Next Steps for Model Improvement



## Class Imbalance Solutions

- Apply SMOTE for synthetic data augmentation
- Use class weighting to balance training
- Implement cost-sensitive learning

## Model Exploration

Test Gradient Boosting and XGBoost for better bookings prediction.