Airline Passenger Satisfaction Analysis

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Problem Statement And Analysis

01

Limited Utilization of Extensive Data

02

Data-Driven Gap in Customer Satisfaction

03

Project Objective - Bridging the Gap

04

Empowering Airlines for Strategic Enhancement

Use-case Scenarios

- **Personalized Services and Operational Efficiency:**
  - Inflight services
  - Operational improvement- schedules and seating arrangement.
- **Resource Allocation and Customer Loyalty Programs:**
  - Staffing, amenities and services.
  - Customer retention.
- **Proactive Issue Resolution and Marketing and Branding:**
  - Potential source of dissatisfaction.
  - Marketing strategies and campaigns.
- **Benchmarking against competitors and Continuous Improvement:**
  - Satisfaction level compare to industry standards.
  - Feedback loop for continuous enhancement.

AI Algorithm and Model

Data Preprocessing:

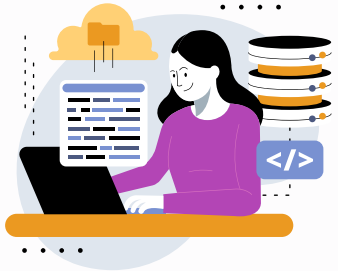
- Data cleaning
- Encoding the data
- Data standardization

Feature Selection:

- Random Forest Analysis
- Singular Value Decomposition Analysis
- Principal Component Analysis
- Variance Inflation Factor

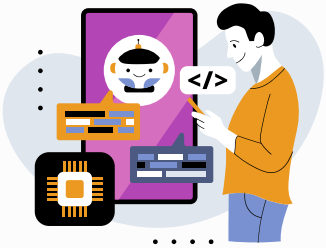
Classification Analysis:

- Decision tree(Pre-pruning, post pruning)
- Logistic regression
- KNN
- Neural Network

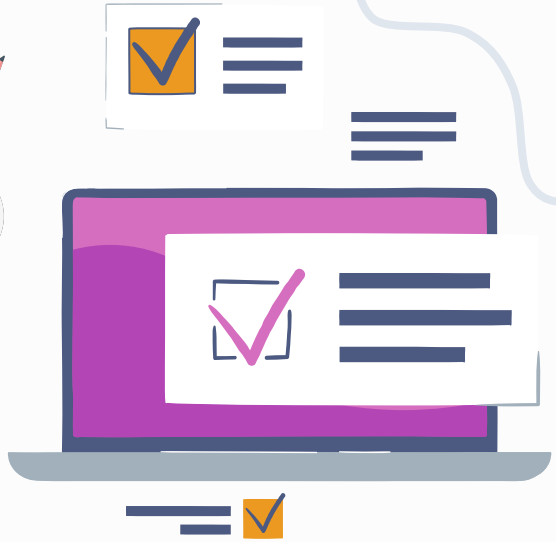


Redirecting to Google colab

Project DEVELOPMENT and DEMONSTRATION



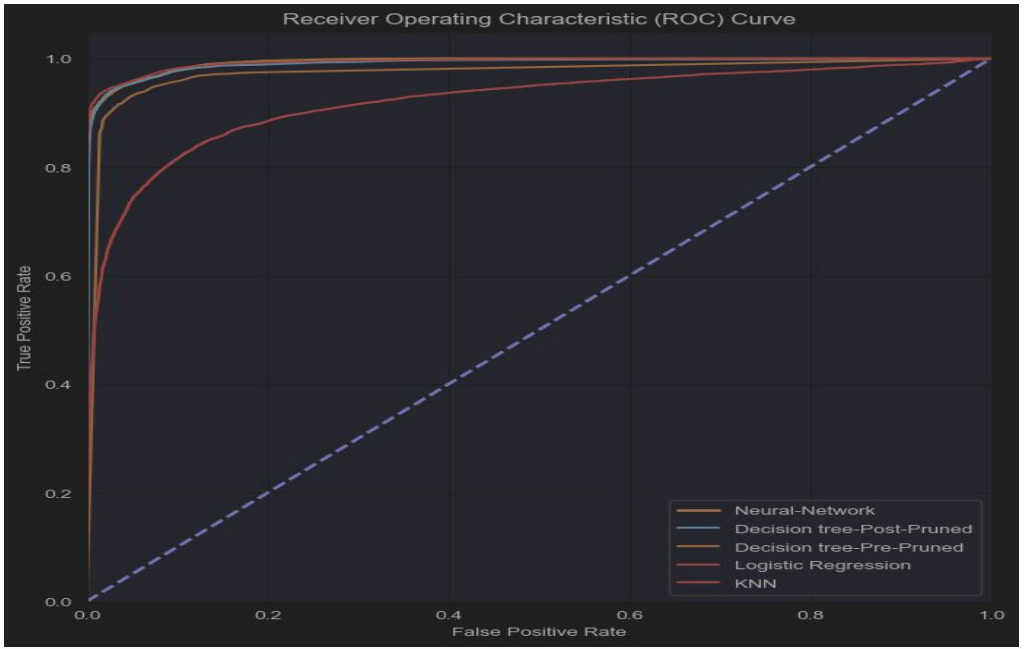
WHAT'S THE RESULT?



Model	Accuracy	Confusion matrix	Recall	AUC
Decision Tree Post-Pruned	0.96	[[14244 329] [744 10659]]	0.93	0.99
Logistic regression	0.86	[[13016 1557] [2017 9386]]	0.82	0.99
KNN	0.92	[[10581 502] [1026 7642]]	0.88	0.99
Neural-Network	0.96	[[14229 344] [767 10636]]	0.93	0.99

- Al models have accuracy (ranging from 86% to 96%)
- Decision-Tree Post-Pruned and Neural Network have the highest recall
- AUC scores consistently high at 0.99.

SHOW
GRAPH RESULTS?



- TPR vs FPR curve.
- Illustrates the trade-off between sensitivity and specificity
- Diagonal line represents a random classifier.
- Decision tree and Neural Network has high TPR and low FPR.

LESSONS LEARNED

- Understanding Data Collection and Cleaning
- Exploratory Data Analysis (EDA)
- Feature Engineering
- Model Selection and Evaluation
- Hyperparameter Tuning
- Model Interpretability
- Deployment and Ethical Considerations
- Continuous Learning and Conclusion Making

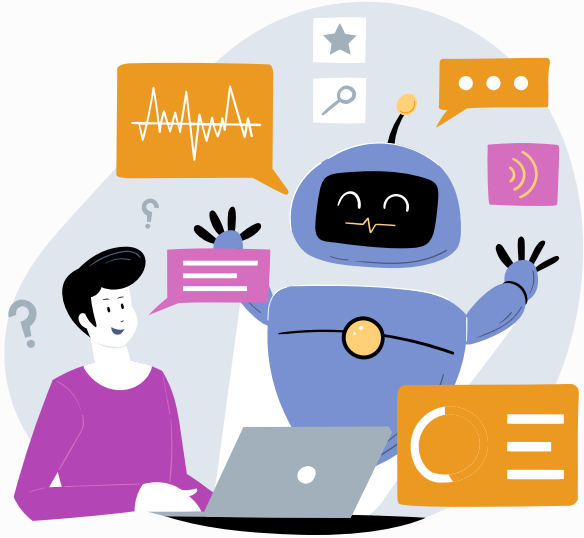
HOW CAN IT HELP THE AIRLINE COMPANY?

- Identify Pin-points based on customer satisfaction
- Competitive Advantage in Customer Retention
- Strategic Decision-Making on data-driven Insights
- Streamline Operation based on Feedback

THANK YOU!

DO YOU HAVE ANY QUESTIONS?

We are glad to help you, please reach out to us via mail.



REFERENCE:

Data Link:

https://raw.githubusercontent.com/shekharmnnit/AI_Project/main/test.csv

https://raw.githubusercontent.com/shekharmnnit/AI_Project/main/train.csv

Code link:

https://github.com/shekharmnnit/AI_Project/blob/main/AI_FinalProject.ipynb

Git File:

https://github.com/shekharmnnit/AI_Project