



PROJECT BRIEF

Customer Churn Prediction

“Predict, Explain, and Retain.”



AGENDA

- 1 Overview
- 2 Objective
- 3 Data Overview
- 4 Workflow
- 5 Business Insights
- 6 Technical Findings
- 7 Metrics of Success

OVERVIEW

In today's competitive hospitality sector, customer retention is as critical as acquisition. This project delivers an AI-driven churn prediction and recommendation platform that helps hotels forecast cancellations, explain customer behavior, and optimize retention ROI.

ACQUIRING NEW CUSTOMER IS 5 TO 25 TIMES COSTLIER THAN RETAINING EXISTING ONES.

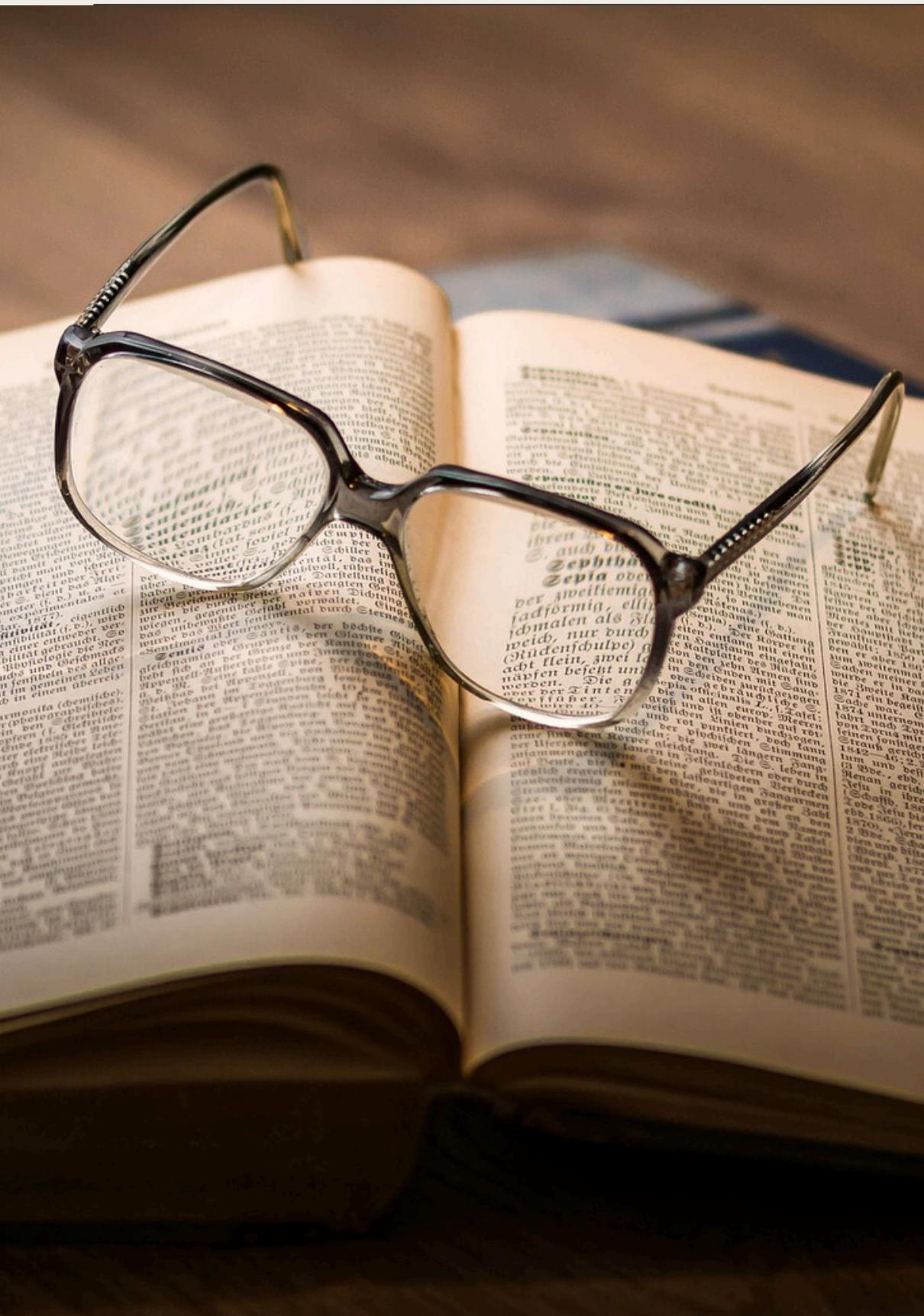
PERSONALIZED EXPERIENCES DIRECTLY INCREASE REPEAT BOOKINGS



OBJECTIVES



- Predict which guests are likely to cancel or not return.
- Understand the main reasons behind customer cancellations.
- Segment guests into clear behavior groups.
- Estimate the profit impact of retention efforts.





DATA OVERVIEW

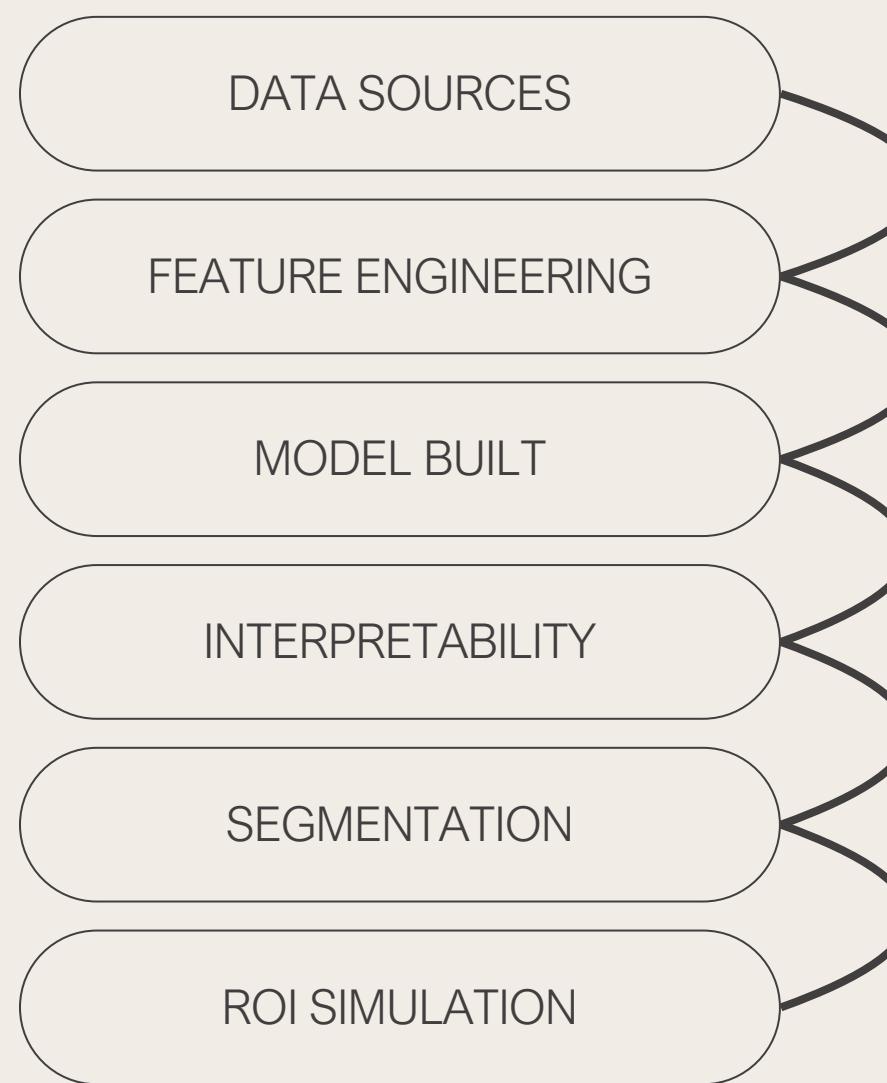
UNDERSTAND CUSTOMER BOOKING PATTERNS AND PREDICT WHO MIGHT STOP USING PLATFORM
(HOTEL BOOKING DEMAND)

UNDERSTAND CUSTOMER OPINIONS AND USE THEM TO MAKE BETTER RECOMMENDATIONS
(TRIPADVISOR HOTEL REVIEWS)

OVERVIEW

- The Hotel Booking Demand dataset helps us understand what customers do — their booking habits, cancellations, and stay patterns — to predict who might stop using the platform.
- The TripAdvisor Reviews dataset shows why customers choose or avoid certain hotels by analyzing their opinions and preferences. Together, these datasets enable personalized recommendations, predict customer churn, and help improve overall satisfaction and retention on the travel platform

WORKFLOW



WE COMBINED PAST HOTEL BOOKING DATA AND GUEST REVIEWS TO UNDERSTAND CUSTOMER BEHAVIOR. THE SYSTEM LOOKS FOR PATTERNS — SUCH AS HOW EARLY GUESTS BOOK, HOW LONG THEY STAY, OR WHAT CHANNEL THEY USE — TO PREDICT WHO MIGHT CANCEL. IT THEN EXPLAINS WHY USING AN EASY-TO-READ ANALYSIS. GUESTS ARE ALSO GROUPED INTO SEGMENTS LIKE BUSINESS OR FAMILY TRAVELERS, AND HOTELS CAN TEST OFFERS TO SEE HOW THEY AFFECT PROFITS AND RETENTION.

BUSINESS INSIGHTS

LONG LEAD TIME



HIGH ADR (AVERAGE DAILY RATE)



ONLINE BOOKINGS

Guest types:

- Family Leisure — plan early, cancel more if prices rise
- Business Travelers — steady bookings, high value
- Solo Explorers — irregular but responsive to deals

HIGH PRICES

NO DEPOSIT

Smart targeting pays off:

- Offering small discounts only to high-risk guests brings 2x more profit than giving discounts to everyone.

SHORT STAYS

TECHNICAL FINDINGS

EARLY BOOKERS CANCEL MORE	HIGH PRICES INCREASE CANCELLATIONS	ONLINE CHANNELS HAVE HIGHER CHURN	SPECIAL REQUESTS SIGNAL LOYALTY
GUESTS WHO BOOK FAR IN ADVANCE ARE MORE LIKELY TO CANCEL — OFTEN BECAUSE THEIR TRAVEL PLANS CHANGE OR THEY FIND BETTER DEALS LATER.	WHEN THE ROOM RATE (ADR) IS HIGH, GUESTS ARE MORE LIKELY TO CANCEL, SHOWING THAT PRICE SENSITIVITY PLAYS A BIG ROLE IN CHURN.	BOOKINGS MADE THROUGH TRAVEL WEBSITES (OTAS) CANCEL MORE OFTEN THAN DIRECT HOTEL BOOKINGS — LIKELY DUE TO EASIER CANCELLATION POLICIES.	GUESTS WHO MAKE SPECIAL REQUESTS OR LONGER STAYS ARE LESS LIKELY TO CANCEL — THEY'RE USUALLY MORE COMMITTED TO THEIR PLANS.

METRICS OF SUCCESS

“HOW OFTEN WE’RE RIGHT OVERALL”

Accuracy :

- If we check 100 bookings, and the system correctly predicts 90 of them (whether cancel or not), that's 90% accuracy.

“HOW MANY REAL CANCELLATIONS WE ACTUALLY CATCH”

Recall :

- Out of 100 real cancellations, if we successfully identified 85, recall is 85%.

“HOW TRUSTWORTHY OUR WARNINGS ARE”

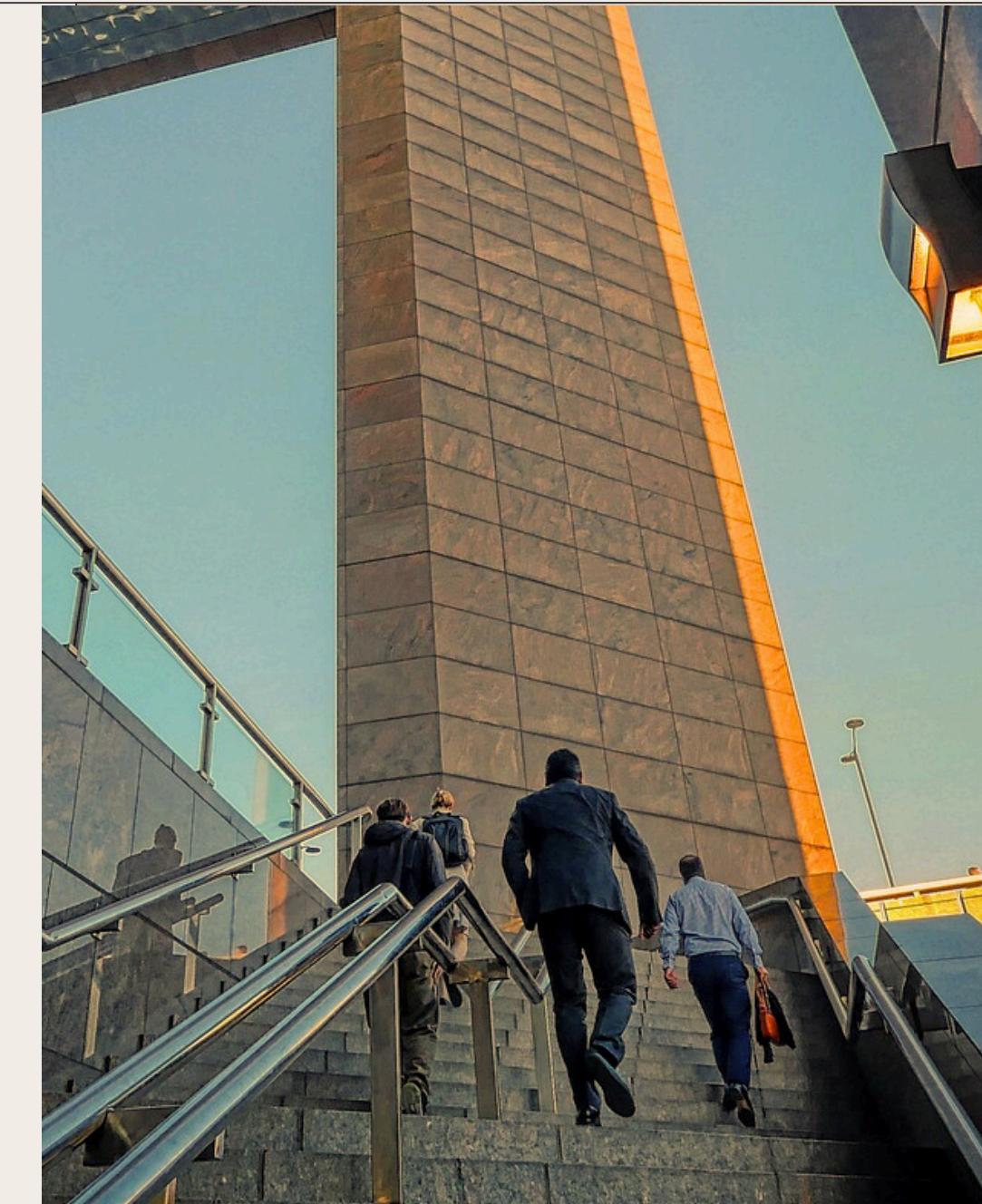
Precision :

- If the system flags 10 bookings as “likely to cancel,” and 8 actually do cancel, precision is 80%.

“HOW WELL THE SYSTEM SEPARATES CANCELERS FROM NON-CANCELERS”

AUC (Area Under the Curve) :

- It measures the model’s discrimination power — how clearly it tells apart those who will cancel from those who won’t.



THANK YOU