



TripAdvisor's AI Planner

Proof of concept

The background is a stylized landscape. At the top, there are blue mountains against a blue sky. Below the sky is a purple and pink gradient representing a sunset or sunrise. In the foreground, there is a blue body of water with white-capped waves. To the right, a green pyramid is visible. The bottom of the image shows a red-orange ground with small white dots.

Vision

We are going to be launching a chatbot to personalize travel planning, starting with bar recommendations. This initial step is part of a larger vision to create an AI-driven virtual travel assistant, offering end-to-end planning services. The goal is to enhance user experience, boost engagement, and establish TripAdvisor as a leader in travel technology through a scalable and comprehensive AI platform.



Table of contents

01

The Outlook

Brief understanding of the Tourism Industry in Singapore

02

Problem Statement

What problems are we addressing

03



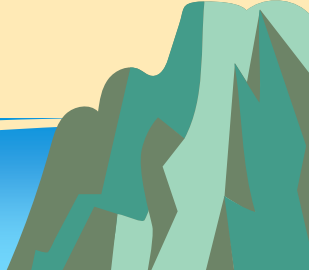

EDA

In the context of bars/pubs/clubs

04

Modelling

Machine Learning Models to accurately make predictions





01

The Outlook

All you need to know today

Arrivals:

12M to 14M Tourists

Receipts:

\$18b – \$21b

Recovery:

100% by 2024

Singapore's tourism sector recovers strongly in 2022, visitor numbers expected to double in 2023

SINGAPORE – International visitor arrivals to Singapore are expected to hit 12 million to 14 million in 2023, with full tourism recovery expected by 2024.

Tourism receipts are also anticipated to climb to \$18 billion to \$21 billion.

full tourism recovery
expected by 2024: STB

Tourism Valuation Industry Index(Singapore)

\$36.6B

Market Value
(2022)

4%

Growth Rate

\$54.3B

Market Value
(2034)

TripAdvisor vs Other Sites

	TripAdvisor	Expedia	Booking.com
Total Visits	150.5M	77.1M	515.2M
Pages per Visit	3.87 Pages	7.84 Pages	8.21 Pages
Average Visit Duration	2.48mins	5.45mins	8.23mins



02

Problem Statement

We aim to address the challenge of users having to navigate through lengthy lists of reviews to find suitable bars.

An intelligent chatbot will be developed to provide quick, personalized bar recommendations based on user preferences, streamlining the decision-making process

A tropical sunset scene with a red sun, yellow and orange horizontal stripes in the sky, blue water, and silhouettes of palm trees and green hills.

03

EDA

WordCloud (Grouped)

- Experience
- Service
- Drinks
- Bars/Clubs
- Staff
- Food
- Ambience



Rating ★ ★ ★ ★ ★

Word of Mouth

Positive	Experience, Service, Drinks, Singapore, View, Sling, Music
Negative	Experience, Service, Drinks, Long, Wait
Bi – Gram (2 words)	Singapore Sling, Long Wait, Good/Bad Experience, Enjoyable Times, Friendly Crowd
Tri – Gram (3 words)	Excellent Staff Service, Very Good Ambience, Long Wait Time, Very Good Music

What does this tell us?

Service	Personalized Attention, Efficiency, Knowledgeable staff
Wait Times	Customer Flow, Satisfaction(Long waits), Efficiency Perception.
Types of Drinks	Variety, Signature Offerings(Singapore Sling), Quality.
Type Of Patrons	Atmosphere, Safety and Comfort
Music and Ambience	Mood Setting, Cultural Fit, Atmospheric Cohesion
Cleanliness and Maintenance	Aesthetic Appeal, Operational Efficiency



04

Modelling

Pycaret

Rapid Prototyping

Efficient experimentation with minimal code



Flexibility

Fits into different parts of a machine learning workflow easily



Variety

Supports various ML tasks, including classification, regression and clustering



Visualization

Built-in tools for data and model analysis through visualization



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Do you need a longer text?

Mercury takes a little more than 58 days to complete its rotation, so try to imagine how long days must be there! Since the temperatures are so extreme and the solar radiation is so high, Mercury is deemed to be non-habitable

Venus has a beautiful name and is the second planet from the Sun. It's terribly hot, even hotter than Mercury, and its atmosphere is extremely poisonous. It's the second-brightest natural object in the night sky after the Moon

Maybe you need an infographic

Jupiter

It's the biggest planet in the Solar System



Jupiter

Mercury is the closest planet to the Sun



Venus

Venus is the second planet from the Sun



Saturn

Saturn is a gas giant and has several rings



Metrics Definition

Accuracy	Kappa	MCC (Matthew's Correlation Coefficient)	Training Time(sec)
Reflects the proportion of total correct predictions made by the model out of all predictions	Measures how well a classifier performs compared to random guessing.	A single number expressing a classifier's quality	Operational metrics that captures computational efficiency

Model Comparison

	Accuracy	Kappa	MCC	Training Time
Gradient Boosting Classifier	98.60	98.31	98.31	2.88 seconds
K-Neighbours Classifier	98.22	97.84	97.85	1.42 seconds
Random Forest Classifier	96.00	95.16	95.17	1.72 seconds

K-Neighbours Classifier



Speed

Demonstrated nearly
2x faster training
times



Accuracy

Accuracy was
competitive alternative
with less complexity



Simplicity

Straightforward and
easy to interpret



Minimal Data Assumption

Makes little to no
assumptions to the
underlying data
distribution



Incremental Learning

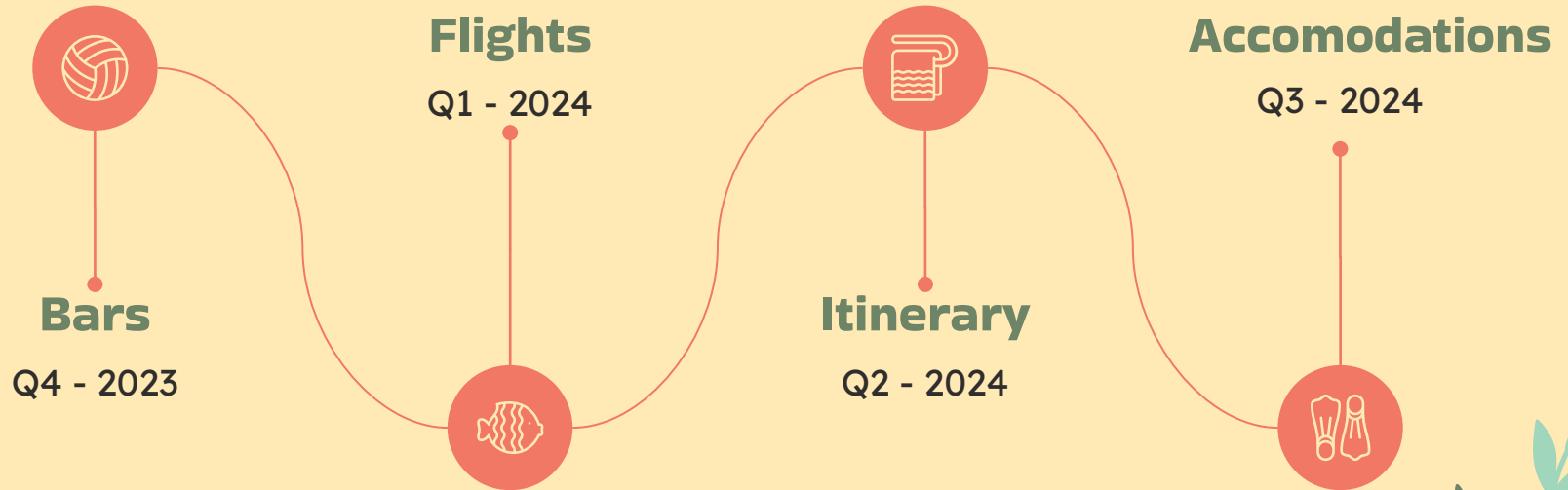
Adaptable to new data
without requiring a full
training of the model



05

Deployment

Product Roadmap



Cost Benefit Analysis (A)



Costs

1. Development
2. Maintenance
3. Marketing



Benefits

1. Increased Sales
2. Efficiency Savings
3. Data Monetization

Cost Benefit Analysis (B)

Costs

- Development : chatbot development and integration
- Maintenance : Monthly for server costs, updates and bug fixes
- Marketing : Initial Campaign to promote the new feature

Benefits

- Increased sales : Increase in bookings through the platform due to improved user experience
- Efficiency savings : Reduction of customer service queries
- Data Monetization : Targeted advertising and affiliate marketing

Cost Benefit Analysis (C)

Costs

- Development : SGD\$200,000
- Maintenance : SGD\$5000
- Marketing : SGD\$50,000

Benefits

- Increased sales : 10% (SGD\$500,000)
- Efficiency savings : 20% (SGD\$100,00)
- Data Monetization : SGD\$200,000/yr

ROI

$$\text{First year ROI} = \frac{\text{Total Benefits} - \text{Total Costs}}{\text{Total Cost}} \times 100$$

A stylized tropical sunset scene. The sky transitions from a deep blue at the top to a warm orange and red near the horizon. Silhouettes of palm trees are on the left and right, and dark, jagged mountain shapes are in the background. The foreground is a dark, solid black shape representing the ground or a shadow.

SGD\$490,000

SGD\$740,000



Ingredients



30 ml Gin

15 ml Cherry Brandy

7.5 ml Bénédictine DOM

7.5 ml Cointreau

120 ml Pineapple Juice

15 ml Lime Juice

A dash of Angostura Bitters

10 ml Grenadine