amenitiz

Background

Amenitiz offers a suite of tools designed to streamline hotel operations, including booking management, channel distribution, and website creation. To further empower hoteliers, we propose developing a price recommender system that predicts optimal pricing based on historical data.

PriceAdvisor aims to provide significant business value to hoteliers by enabling them to optimise their pricing strategies through a co-pilot and auto-pilot mode. By leveraging a price recommendation system, hoteliers can set optimal prices for the upcoming season, maximising Revenue Per Available Room (RevPAR).

Data Description

The file name is `ds-case_data_set.zip`. There are 4 sets of tables

`Ds_bookings:` Contains all the bookings from Spain since Jan 1st 2023

id	Is the id of each booking.
status	Status of the booking. 'Booked' and 'confirmed' have the same meaning.
total_price	Total price of the booking in euros. Total amount of the stay.
created_at	Booking creation date.
cancelled_at	Booking cancellation date.
source	Where the booking comes from.
arrival_date	Date of arrival from the property
departure_date	Date of departure from the property
payment_method	The method for paying for the booking.
cancelled_by	The agent/person who canceled the booking
hotel_id	Unique identifier of each Amenitiz account (hotel). It's unique for each hotelier

`Ds_booked_rooms:` Contains all the booked rooms details related to each booking from Spain since Jan 1st 2023. 1 booking can have more than one booked room.

id	Is the id for each booked room.
booking_id	Is the id of each booking.
total_adult	Total adults staying in the room.
total_children	Total children staying in the room.
room_id	Is the unique identifier of each room in Amenitiz.
room_size	Square meters of the room.
room_view	Facing views of the room.
room_type	Type of room.
total_price	Total price in euros of each booked room. Total amount of the stay.

`Ds_hotel_location:` Contains data about the location of each account (hotel).

id	Unique identifier of each hotel_location.
hotel_id	Unique identifier of each Amenitiz account (hotel). It's unique for each hotelier.
address	Address where the hotel is located.
city	City where the hotel is located.
zip	Zip code of the hotel.
country	Country where the hotel is located.
latitude	Google Maps latitude.
longitude	Google Maps longitude.

`Ds_rooms:` Contains data about the rooms of each account (hotel).

id	Is the unique identifier of each room in Amenitiz.
number_of_rooms	Number of individual rooms related to each room_id. E.g. If a hotel has 5 suites. The suite would have a room_id with 5 as number_of_rooms.
max_occupancy	Maximum occupancy allowed by room.

max_adults	Maximum number of adults allowed by room.
pricing_per_person	Boolean if the room allows pricing per person or not (for the entire room).
events_allowed	Boolean if events are allowed in the room.
pets_allowed	Boolean if pets are allowed in the room.
smoking_allowed	Boolean if smoking is allowed in the room.
children_allowed	Boolean if children are allowed in the room.

Your Assignment

Play with the data and tackle the problem using machine learning to build a price recommendation. The requirements are:

- Build a model that will be able to recommend optimal room prices to hoteliers for the given parameters
- You can formulate the problem as you prefer as long as you can justify your choice and test the recommendation model using applicable metrics
- Start with a baseline model that is more than a random pricing guess and see how much you can improve from there
- Show how you evaluate and improve your model performance. Explain your choice of evaluation technique. Use at least one metric that tests how well your model predicts optimal prices or maximizes revenue
- Using the provided dataset, derive additional features to demonstrate your data sense and creativity
- What consequences does your model have on new hotel listings?
- Identify opportunities of using your model in our company. For what other purposes could it be used?
- Please submit one document and provide code and a writeup (e.g., in R Markdown or iPython Notebook)