LodgIQ Data Science Take-Home Exercise

Introduction

This take-home exercise is intended to evaluate your coding, modeling, and problem-solving abilities as a data scientist. This serves a few purposes. LodgIQ gets to evaluate how you are as a prospective data scientist and you get the opportunity to see first-hand the types of problems that LodgIQ's data science team works on. We estimate that this exercise will take ~2 hours to complete. You have 7 days to submit your work.

Exercise

You've been given a dataset of an unknown hotel market from a member of the LodgIQ team. A hotel market can be considered as a travel destination like New York City, San Francisco, Boston, etc. The team is looking to add this market onto the LodgIQ platform and would like you to analyze the market KPIs (Occupancy, ADR, RevPAR). The csv contains actualized data for the market. Actualized data is the final reported numbers of the market. In addition to the analysis, the team wants to display a daily forecast for future occupancy in the LodgIQ platform so that customers can use this forecast as part of their pricing strategy at the hotel. The market.csv file contains Occupancy, ADR, and RevPAR data and spans from 2018-03-01 to 2021-12-31.

The analysis portion of this meant to be open-ended. Here are some sample questions that you might consider exploring:

- Explore the key dates from the data. What is interesting about them?
- What are the monthly patterns?
- What seasonal patterns are present in the dataset?

Please feel free to approach the analysis with any methodology you deem appropriate. Include any relevant plots, statistics, and metrics you see fit as part of your analysis. Include a paragraph describing your forecasting model, why you chose it, how you evaluated it, and your findings from the model.

Data Dictionary

stay_date	Date of arrival
occ	Percentage of rooms sold in the city
adr	Average rate rooms were sold in market
revpar	Revenue per Available Room in market

Evaluation Criteria and Submission

The analysis is meant to be open-ended. We are looking for a thoughtful analysis and commitment to an approach that effectively analyzes the problem. Please feel free to cite any material/code/libraries found online and source appropriately.

We will assess your work on:

- Your intent, methods, assumptions and conclusions
- Clear, well-documented and structured code
- A small write-up of your findings about the dataset with any relevant visualizations
- A small write-up of your forecasting model with relevant details
- Ideas you would have implemented given more time

Submit your work in a jupyter notebook. Submissions and any questions or concerns can be sent to harshinder@lodgiq.com.