

SMTP (Mathematics) Written Report

Decoding Hotel Reviews through Sentiment Analysis

Group 8-01

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1 Introduction and Rationale

After the Singapore government relaxed travel restrictions due to COVID-19, there has been a recent increase in the number of tourists travelling in and out of Singapore. As such, hotels have seen a rise in the number of prospective tourists to be housed, and this may encourage an increase in the number of reviews hotels may receive.

Today, it is common to use social networks, messengers, and review websites to receive data from customer opinions. This is especially true for hotels, where previous occupants may evaluate the hotel on several factors through their reviews — be it cleanliness, facilities, location and convenience, etc. These come in two forms — a quantitative review (based on stars, diamonds, hearts, etc.) and a more qualitative review through text.

However, quantitative reviews do not always paint the full picture of customers' opinions towards a certain hotel. Though it is certainly helpful to have a more objective rating system using numerical scores, eg. the Department of Tourism grading system in the Philippines, or the European Hotelstars Union system, these are given by customers subjectively and do not reflect the reasons for customers giving the rating. There is also evidence of manipulation of ratings by hotel management itself, where hotels may be compelled to forge positive or negative ratings to bias the overall rating. This made up 2.1% of the 66 million reviews submitted to TripAdvisor (TripAdvisor, 2019). Therefore, we propose using sentiment analysis to extract customers' true feedback on hotels instead.

2 Objectives and Research Questions

2.1 Objectives

1. To run sentiment analysis on individual words and quantify them on a numerical scale
2. To run sentiment analysis on paragraphs and quantify them on a numerical scale
3. To use sentiment analysis on hotel reviews to determine consumers' overall opinions of hotels

2.2 Research Questions

2.3 Field of Math

2.4 Terminology

3 Literature Review

4 Methodology

5 Results

6 Discussions and Further Extension