SEM Bidding – Predictive Modeling

Data Scientist – SEM Bidding (R0001896)

1. Introduction

Welcome to the trivago Data Scientist - SEM Bidding challenge!

In Marketing Intelligence we love data, but more importantly, we love getting insights from data and using these to help optimize marketing campaigns. We support all the areas of Marketing (Brand, SEM, DEA, Content Marketing) with their data needs, performing quantitative analysis to better understand our users.

As a Data Scientist for SEM Bidding you will interact with SEM data analysts and business analysts.

This assignment is designed to give you a glimpse of some of the basic challenges you will be facing in this role. Knowledge on trivago's business model will help. Please be aware there are no perfect solutions - for us, it's more important to see how you find solutions, process your ideas, structure your thoughts and how you make your decision paths.

Good luck!

2. Challenge

- Build a model that predicts the number of clicks for each search term in the week beginning 01/07/2019. The model will be evaluated using Mean Absolute Error (MAE)

$$\text{MAE} = \frac{\sum_{i=1}^{n} |y_i - x_i|}{n} = \frac{\sum_{i=1}^{n} |e_i|}{n}$$

- Share your reproducible code in a filetype of your choice.

- Create a presentation explaining your thought process, results and answers to the following questions:

  - Why do you think we are interested in predicting the number of clicks on a search term?

  - What was the most challenging part of the case study for you?

  - What were some of your interesting observations or findings?

  - How would you have approached this problem if you had more time, say 3 months?

  - If you could ask for any more data, what would it be and why?

3. Resources

In the resource section you will find:

- A weekly aggregated dataset with number of clicks for over 3000 search terms from 02/01/2017 - 24/06/2019
- The data dictionary to help with the task.

4. Deliverables

Please submit via the link in the email. Upload your files in a zip folder including the following:

- A pdf or a ppt explaining your thought process, any observations or experimentation, and results.
- A filetype of your choice containing the documented, reproducible source code you used for this task.
- A csv file containing two columns: Search ID and clicks; for all the week beginning 01/07/2019

5. About trivago n.v.

Our team of over 1,000 creative and driven entrepreneurs, from all corners of the globe, wake up every day to build a hotel search that is straightforward, fast and unbiased.

After years of testing, iteration and development, trivago has developed into a powerful global brand inspired by a transparent and authentic culture, which impacts the quality and efficiency of our daily execution. Our Mission is to be:

the traveler's first and independent source of information for finding the ideal hotel at the lowest rate

For us, it's all about reshaping the way travelers search for and compare hotels. Simultaneously, we are focused on enabling hotel advertisers to grow their businesses by providing access to a broad audience of travelers.

Life at trivago is…

- The belief that factual proof, not seniority, determines which path to take.

- Self-determined working hours based on measuring productivity through goals rather than number of hours spent in the office.

- Being supported in all your needs, including relocation assistance and language classes for international arrivals.

- The freedom to embrace small-scale failures as a path to large-scale success.

- The opportunity to develop personally and professionally with regular free workshops, seminars, sports and activities.

- The ability to push your ideas through to execution without being held back by bureaucracy.

- Working at our head office in Düsseldorf, a city boasting the 6th highest quality of life in the world for expats.

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