

# Booking.com Challenge

Booking.com Challenge - WebTour 2021  
ACM WSDM workshop



## ABOUT

Booking.com's mission is to make it easier for everyone to experience the world. By investing in the technology that helps take the friction out of travel, Booking.com seamlessly connects millions of travellers with memorable experiences, a range of transport options and incredible places to stay.

Many of the travellers go on trips which include more than one destination. For instance, a user from the US could fly to Amsterdam for 5 nights, then spend 2 nights in Brussels, 3 in Paris and 1 in Amsterdam again before heading back home. In this scenario, we suggest options for extending their trip immediately they make their booking. The goal of this challenge is to use a dataset based on millions of real anonymized accommodation reservations to come up with a strategy for making the best recommendation for their next destination in real-time.

The challenge is part of the [WebTour 2021 ACM WSDM workshop](#) on web tourism that will be held at the [14th ACM](#)

## Dataset

The training dataset consists of over a million of anonymized hotel reservations, based on real data, with the following features:

**user\_id** - User ID

**check-in** - Reservation check-in date

**checkout** - Reservation check-out date

**affiliate\_id** - An anonymized ID of affiliate channels where the booker came from (e.g. direct, some third party referrals, paid search engine, etc.)

**device\_class** - desktop/mobile

**booker\_country** - Country from which the reservation was made (anonymized)

**hotel\_country** - Country of the hotel (anonymized)

**city\_id** - city\_id of the hotel's city (anonymized)

**utrip\_id** - Unique identification of user's trip (a group of multi-destinations bookings within the same trip)

Each reservation is a part of a customer's trip (identified by utrip\_id) which includes at least 4 consecutive reservations.

The check-out date of a reservation is the check-in date of the following reservation in their trip.

The evaluation dataset is constructed similarly, however the city\_id of the final reservation of each trip is concealed and requires a prediction.

## Evaluation criteria

The goal of the challenge is to predict (and recommend) the final city (city\_id) of each trip (utrip\_id). We will evaluate the quality of the predictions based on the top four recommended cities for each trip by using Precision@4 metric (4 representing the four suggestion slots at Booking.com website). When the true city is one of the top 4 suggestions (regardless of the order), it is considered correct.

## Competition terms and conditions

The dataset is a property of Booking.com and may not be reused for commercial purposes.

Employees of online travel platform companies or other booking services (including Booking Holdings employees) are not eligible to compete for prizes in the challenge.

Participants are allowed to participate only once, with no concurrent submissions or code sharing between the teams.

The organizer is authorized to change the prize to award one that's equivalent in its monetary value.

## Submission guidelines

The test set will be released to registered e-mails on January 14st, 2021. The teams are expected to submit their top four city predictions per each trip on the test set until January 28th 2021. The submission should be completed on easychair website (<https://easychair.org/conferences/?conf=bookingwebtour21>). in a csv file named submission.csv with the following columns;

**utrip\_id** - 1000031\_1

**city\_id\_1** - 8655

**city\_id\_2** - 8652

**city\_id\_3** - 4323

**city\_id\_4** - 4332

Where utrip\_id represents each unique trip in the test and the rest of the columns represent the city\_id of top 4 predicted cities.

On February 4th, 2021 the organizers will reveal the performance on the test set and will announce the final leaderboard.

The top 10 teams will be invited to submit short papers (up to 4 pages + references in [ACM sigconf format](#)). The papers will include the team and the authors names, an abstract, a text describing the method and the achieved score, and a link to their code repository. Please refer to the Booking.com WSDM WebTour 21 challenge in the following format:

Dmitri Goldenberg, Kostia Kofman, Pavel Levin, Sarai Mizrachi, Maayan Kafry, and Guy Nadav. 2021. Booking.com WSDM WebTour 2021 Challenge. <https://www.bookingchallenge.com>. In ACM WSDM Workshop on Web Tourism (WSDM Webtour'21), March 12, 2021, Jerusalem, Israel.

Bibtex:

@InProceedings{booking2021challenge,

author = {Goldenberg, Dmitri and Kofman, Kostia and Levin, Pavel and Mizrachi, Sarai and Kafry, Maayan and Nadav, Guy},

title = {Booking.com WSDM WebTour 2021 Challenge},

booktitle = {ACM WSDM Workshop on Web Tourism (WSDM WebTour'21)},

year = {2021},  
howpublished = {\url{https://www.bookingchallenge.com}},

Paper submission is mandatory in order to be eligible for a prize (top 3 scores and best paper award). Selected papers are expected to present their work in the workshop (in a virtual format). Please note that the paper quality will be peer-reviewed. Badly written papers or absence from the workshop may prevent the team from being eligible for a prize. The submitted papers will be peer-reviewed and evaluated based on their clarity, novelty, and results presentation.

**For any problems or questions please contact [wsdmchallenge@booking.com](mailto:wsdmchallenge@booking.com)**

## Get the dataset

Register here to join our challenge and receive access to the dataset.

Full name

Email

By registering, I agree that my personal details will be processed by Booking.com for receiving the training dataset and facilitating any communication for the purpose of this challenge. For more information, please see our Privacy Statement.

**Submit**

## PRIZES

The top three performing teams will receive Booking.com Travel Credits.  
The best paper team will receive an additional prize of 300\$ worth Booking.com Travel Credits.

Paper submission and virtual participation at the workshop is mandatory in order to be eligible for a prize (top 3 scores and best paper award)



1,500\$



800\$



500\$

## Schedule

Challenge starts

**December 6th, 2020**

The training dataset is accessible after a short pre-registration

Test set release

**January 14th, 2021**

The test set will be released to registered e-mails

Challenge closes

**January 28th, 2021**

The teams are expected to submit their top four city predictions per each trip on the test set . The submission should be completed on easychair website

Announcement on the winners

**February 4th, 2021**

The organizers will reveal the performance on the test set and will announce the final leaderboard

Paper submission deadline

**February 18th, 2021**

The top 10 teams will be invited to submit short papers

Paper notification

**February 25th, 2021**

Selected papers are expected to present their work in the workshop (in a virtual format)

Camera ready  
submission

**March 4th, 2021**

Participants submit their papers via easychair website

Workshop day

**March 12th, 2021**

Virtual participation at the workshop is mandatory in order to be eligible for a prize

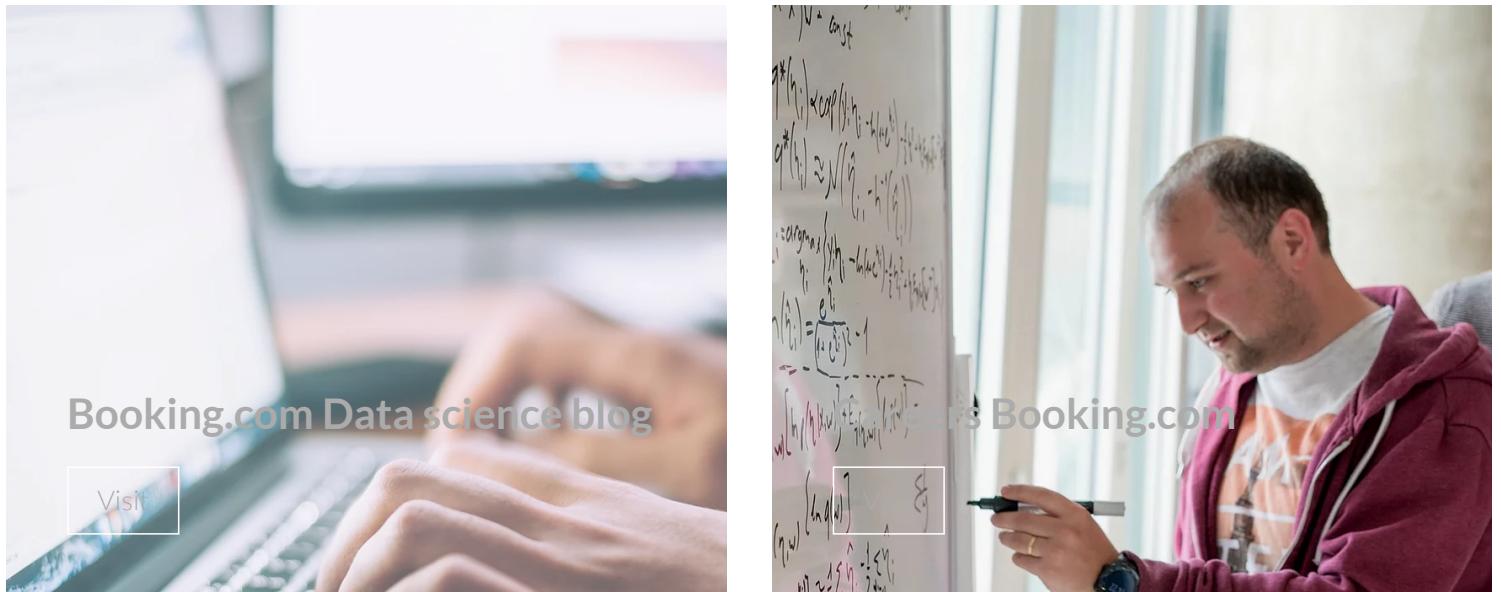
## Useful resources

Mizrachi, Sarai, and Pavel Levin. "Combining Context Features in Sequence-Aware Recommender Systems." RecSys (Late-Breaking Results). 2019.

Bernardi, Lucas, Themistoklis Mavridis, and Pablo Estevez. "150 successful machine learning models: 6 lessons learned at booking.com." Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining. 2019.

Kiseleva, Julia, Melanie JI Mueller, Lucas Bernardi, Chad Davis, Ivan Kovacek, Mats Stafsgeng Einarsen, Jaap Kamps, Alexander Tuzhilin, and Djoerd Hiemstra. "Where to go on your next trip? Optimizing travel destinations based on user preferences." In Proceedings of the 38th International ACM SIGIR Conference on Research and Development in Information Retrieval, pp. 1097-1100. 2015.

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