

# RecTour 2018

## Workshop on Recommenders in Tourism

Vancouver, Canada, October 7<sup>th</sup>, 2018

### Proceedings

Edited by

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**Co-located with the 12th ACM Conference on  
Recommender Systems (RecSys 2018)**



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Julia Neidhardt, Wolfgang Wörndl, Tsvi Kuflik and Markus Zanker (editors).

Further information about the workshop can be found at: <http://www.ec.tuwien.ac.at/rectour2018/>

# Preface

This volume contains the contributions presented at the Workshop on Recommenders in Tourism (RecTour), held in conjunction with the 12th ACM Conference on Recommender System (RecSys 2018), in Vancouver, Canada.

RecTour 2018 focuses on a variety of challenges specific to recommender systems in the tourism domain. This domain offers considerably more complicated scenarios than matching travelers with the presumably best items. Planning a vacation usually involves searching for interconnected and dependent product bundles, such as means of transportation, accommodations, attractions, and activities, with limited availabilities and contextual aspects (e.g., spatio-temporal context, social context, activity sequence, and environment) with a major impact. In addition, travel related products are emotionally “loaded” and thus largely experiential in nature; therefore, decision taking is often not solely based on rational or objective criteria. Therefore, information provisioning at the right time about destinations, accommodations and various further services and possible activities is challenging. Additionally, and in contrast to many other recommendation domains, information providers are usually small and medium sized enterprises (SMEs) that many times do not possess the capacity to implement basic recommender systems. Moreover, there is no single, standard format to house information which might be included in these systems. Last, much of the tourism experience is co-produced, i.e., it occurs during the consumption of the product and interaction with the provider. Therefore, the context of the recommendation is extremely important. Thus given this diversity, building effective recommender systems within the tourism domain is extremely challenging.

The rapid development of information and communication technologies (ICT) in general and the web in particular has transformed the tourism domain whereby most travelers rely little on travel agents or agencies. Indeed, recent studies indicate that travelers now actively search for information using ICT in order to compose their vacation packages according to their specific emotionally driven preferences. Additionally when on-site, they search for freely available information about the site itself rather than renting a visitor guide that may be available, but considered to be expensive and sometimes outdated. However, like in many other cases, the blessing of the web comes with a curse; the curse of information overload. As such, recommender systems have been suggested as a practical tool for overcoming this information overload. However, because the tourism domain is extremely complex, those designing tourism-focused recommender systems face huge challenges.

This workshop brings together researchers and practitioners from different fields (e.g., tourism, recommender systems, user modeling, user interaction, mobile, ubiquitous and ambient technologies, artificial intelligence and web information systems) working in the tourism recommendation domain. The workshop aims to provide a forum for these people to discuss novel ideas for addressing the specific challenges for recommender systems in tourism with the goal to advance the current state-of-the-art in this field. Another goal of the workshop is to identify practical applications of these technologies within tourism settings from the point of view of individual users and user groups, service providers, as well as from additional stakeholders (e.g., destination management organizations). Finally, RecTour 2018 aims to continue the community building processes and discussions started at previous RecTour Workshops, i.e., at RecTour 2016 in Boston, MA, USA and at RecTour 2017 in Como, Italy.

# Workshop Committees

## Organizers

- **Julia Neidhardt**, TU Wien, Austria
- **Wolfgang Wörndl**, TU München, Germany
- **Tsvi Kuflik**, The University of Haifa, Israel
- **Markus Zanker**, Free University of Bozen/Bolzano, Italy

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- **Hannes Werthner**, TU Wien, Austria
- **Zheng Xiang**, Virginia Tech, USA
- **David Zibriczky**, trivago, Germany

# Workshop Program

## 9:00 - 10:30 Session 1: Workshop Opening and Keynote

- Workshop opening
- Keynote *Recommender Systems in Tourism: A Case for Interactive Approaches* by **Dietmar Jannach** (Alpen-Adria-Universität Klagenfurt, Austria)

## 10:30 - 11:00 Coffee Break

## 11:00 - 12:30 Session 2: Hotel Recommendation and Trip Planning

- **Marie Al-Ghossein, Talel Abdessalem and Anthony Barré**: *Cross-Domain Recommendation in the Hotel Sector*.
- **Catalin-Mihai Barbu and Jürgen Ziegler**: *Designing Interactive Visualizations of Personalized Review Data for a Hotel Recommender System*.
- **Daniel Herzog, Nikolaos Promponas-Kefalas and Wolfgang Wörndl**: *Integrating Public Displays into Tourist Trip Recommender Systems*.
- **Koji Kawamata and Kenta Oku**: *Roadscape-based Route Recommender System using Coarse-to-fine Route Search*.

## 12:30 - 14:00 Lunch Break

## 14:00 - 15:30 Session 3: Industry Perspective

- Keynote *User Experience and Data: Bridging the Gap* by **Themis Mavridis** (Booking.com, Netherlands)
- **Alejandro Mottini, Alix Lheritier, Rodrigo Acuna-Agost and Maria A. Zuluaga**: *Understanding Customer Choices to Improve Recommendations in the Air Travel Industry*.

## 15:30 - 16:00 Coffee Break

## 16:00 - 17:30 Session 4: Crowdsourcing and Evaluation

- **Öykü Kapcak, Simone Spagnoli, Vincent Robbmond, Soumitri Vadali, Shabnam Najafian and Nava Tintarev**: *TourExplain: A Crowdsourcing Pipeline for Generating Explanations for Groups of Tourists*.
- **Linus W. Dietz and Achim Weimert**: *Recommending Crowdsourced Trips on wOndary*.
- **Pablo Sánchez and Alejandro Bellogin**: *Challenges on Evaluating Venue Recommendation Approaches: Position Paper*.
- Workshop closing

# ***Keynote Recommender Systems in Tourism: A Case for Interactive Approaches***

by **Dietmar Jannach**, Alpen-Adria-Universität Klagenfurt, Austria

## **Abstract**



There are various ways in which recommender systems can support their users in touristic contexts, from the selection of a destination, over pre-trip itinerary planning, to point-of-interest recommendation during the trip. In many of these application scenarios, building a recommender system solely on long-term interest profiles is not possible. Instead, interactive approaches are required in which users have the opportunity to interactively state and eventually revise their needs and preferences, and where the system is also able to explain its suggestions.

In this talk, we first review several application scenarios for recommender systems in tourism and summarize their specific requirements. We then focus on interactive recommendation approaches and specifically address the topics of explanations for recommender systems and mechanisms for user control.

## **About the speaker**

Dietmar Jannach is a full professor of Information Systems at AAU Klagenfurt, Austria. Before joining AAU in 2017, he was a professor of Computer Science at TU Dortmund, Germany. In his research, he focuses on the application of intelligent system technology to practical problems and the development of methods for building knowledge-intensive software applications.

In the last years, Dietmar Jannach worked on various practical aspects of recommender systems. He is the main author of the first textbook on the topic published by Cambridge University Press in 2010 and was the co-founder of a tech startup that created an award-winning product for interactive advisory solutions.

# Keynote *User Experience and Data: Bridging the Gap*

by **Themis Mavridis**, Booking.com, Netherlands

## Abstract



Booking.com is the world's largest virtual two-sided marketplace with multi-dimensional, diverse and rich inventory. It aims to provide optimal shopping experience for our guests even with minimal user interaction. In this talk, I will discuss about the various unique and complex business cases, and the challenges that we face while we strive to bridge the gap between user experience and data. Finally, I will describe how we successfully utilize Machine Learning validated through rigorous Randomized Controlled Experiments in every step of the user journey.

## About the speaker

Themis Mavridis is a Senior Data Scientist at Booking.com. In his work, he loves to apply machine learning, software engineering and statistics to customer-facing products. He leads the Machine Learning on Search at Booking.com. He is usually handling out-of-core / online algorithms for search, ranking and recommendations. Themis really enjoys “eating” Big Data with Vowpal Wabbit.

Furthermore, he used to do applied research on search engines, crawlers and topic modeling. His background is in Electrical & Computer Engineering. Themis studied at the Aristotle University of Thessaloniki (AUTH) in Greece and at the Vrije Universiteit (VU) Amsterdam in the Netherlands.