

# RecTour 2019

## Workshop on Recommenders in Tourism

Copenhagen, Denmark, September 19th, 2019

### Proceedings

Edited by

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**Co-located with the 13th ACM Conference on  
Recommender Systems (RecSys 2019)**

 The ACM Conference Series on  
**Recommender Systems**



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This volume is published by Julia Neidhardt, Wolfgang Wörndl, Tsvi Kuflik, Markus Zanker and Catalin-Mihai Barbu.

Published online at [CEUR-WS.org](http://CEUR-WS.org).

Proceedings of the Workshop on Recommenders in Tourism (RecTour 2019), held in conjunction with the 13th ACM Conference on Recommender Systems (RecSys 2019), September 16th - 20th, 2019, Copenhagen, Denmark, <https://recsys.acm.org/recsys19/>.

Julia Neidhardt, Wolfgang Wörndl, Tsvi Kuflik, Markus Zanker and Catalin-Mihai Barbu (editors).

Further information about the workshop can be found at: <http://www.ec.tuwien.ac.at/rectour2019/>

# Preface

This volume contains the contributions of the Workshop on Recommenders in Tourism (RecTour), organized in conjunction with the 13th ACM Conference on Recommender System (RecSys 2019), in Copenhagen, Denmark.

RecTour 2019 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) having a major impact. In addition, travel related products can be considered as emotionally loaded and are 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, those designing tourism-focused recommender systems face huge challenges as the tourism domain is extremely complex.

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 2019 aims to continue the community building processes and discussions started at previous RecTour Workshops, i.e., at RecTour 2016 in Boston, MA, USA, at RecTour 2017 in Como, Italy, and at RecTour 2018 in Vancouver, BC, Canada.

# 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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- **Antonio Moreno**, Universitat Rovira i Virgili, Spain
- **Francesco Ricci**, University of Bozen/Bolzano, Italy
- **Hannes Werthner**, TU Wien, Austria

# Workshop Program

## 14:00 - 15:30 Session 1

- 14:00 – 14:05 Workshop opening
- 14:05 – 14:50 Keynote *Building Useful Recommender Systems for Tourists* by **Francesco Ricci** (Free University of Bozen-Bolzano, Italy)
- 14:50 – 15:05 **Sebastian Vallejos, Marcelo Gabriel Armentano and Luis Berdun**: *TourWithMe: Recommending peers to Visit Attractions Together*
- 14:05 – 15:25 **David Massimo and Francesco Ricci**: *Users' Evaluation of Next-POI Recommendations*
- 15:25 – 15:30 Poster madness:
  - **Ercan Ezin, Hugo Alcaraz-Herrera and Iván Palomares**: *Balancing Preferences, Popularity and Location in Context-Aware Restaurant Deal Recommendation: A Bristol Case Study*
  - **Ramon Hermoso, Sergio Ilarri and Raquel Trillo-Lado**: *Re-CoSKQ: Towards POIs Recommendation Using Collective Spatial Keyword Queries*

## 15:30 - 16:00 Coffee Break and Posters

## 16:00 - 17:30 Session 2

- 16:00 – 16:15 Poster presentations
- 16:15 – 16:35 **Eoin Thomas, Antonio Gonzalez Ferrer, Benoit Lardeux, Mourad Boudia, Christian Haas-Frangii and Rodrigo Acuna Agost**: *Cascaded Machine Learning Model for Efficient Hotel Recommendations from Air Travel Bookings*
- 16:35 – 16:50 **Pavlos Mitsoulis Ntompos, Meisam Hejazinia, Serena Zhang and Travis Brady**: *A Simple Deep Personalized Recommendation System*
- 16:50 – 17:05 **Leonhard Seyfang and Julia Neidhardt**: *A Framework for Recommender Systems Based on a Finite Multidimensional Model Space*
- 17:05 – 17:20 **Linus W. Dietz, Saadi Myftija and Wolfgang Wörndl**: *Designing a Conversational Travel Recommender System Based on Data-Driven Destination Characterization*
- 17:20 – 17:30 Closing discussion

# *Building Useful Recommender Systems for Tourists*

**Keynote by Francesco Ricci** (Free University of Bozen-Bolzano, Italy)

## **Abstract**



Recommender systems are information search and filtering tools that should provide suggestions for items to be of use to a user. State of the art recommender systems exploit data mining and information retrieval techniques to predict to what extent an item fits the user needs and wants, but often they end up in making obvious and uninteresting suggestions especially in complex domains, such as tourism. In the talk, classical recommender systems ideas and techniques will be introduced and criticised. We will discuss some of the key ingredients necessary to build a useful recommender system for tourist. Hence, we will point out some limitations and open challenges for recommender systems research. We will then present a couple of novel techniques that are

leveraging data collected from observation of tourists behaviour to generate more useful individual and group recommendations.

## **About the speaker**

Prof. Dr. Francesco Ricci is full professor and dean of the Faculty of Computer Science, Free University of Bozen-Bolzano (Italy). F. Ricci has established in Bolzano a reference point for the research on Recommender Systems. He has co-edited the Recommender Systems Handbook (Springer 2011, 2015), and has been actively working in this community as President of the Steering Committee of the ACM conference on Recommender Systems (2007-2010). He was previously (from 2000 to 2006) senior researcher and the technical director of the eCommerce and Tourism Research Lab (eCTRL) at ITC-irst (Trento, Italy). From 1998 to 2000 he was system architect in the Research and Technology Department (Process and Reuse Technologies) of Sodalia s.p.a. F. Ricci has participated to several international research projects such as: RECOM (funded by Deutsche Telekom), etPackaging (funded by ECCA), European Tourist Destination Portal (funded by European Travel Commission), Harmoten (funded by IST), DieToRecs (Intelligent Recommendation for Tourist Destination Decision Making, funded by IST). Francesco Ricci is author of more than one hundred fifty refereed publications and, according to Google Scholar, has H-index 51 and around 15,000 citations.

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