8th Joint Workshop on Interfaces and Human Decision Making for Recommender Systems (IntRS) 2021

Online Event, September 25th and September 29th, 2021

Proceedings

edited by

Peter Brusilovsky
Marco de Gemmis
Alexander Felfernig
Elisabeth Lex
Pasquale Lops
Giovanni Semeraro
Martijn C. Willemsen

in conjunction with

15th ACM Conference on Recommender Systems (RecSys 2021)
Preface

This volume contains the papers presented at the 8th Joint Workshop on Interfaces and Human Decision Making for Recommender Systems (IntRS), held as part of the 15th ACM Conference on Recommender Systems (RecSys), the premier international forum for the presentation of new research results, systems and techniques in the broad field of recommender systems. The workshop was organized as a virtual event with the possibility to arrange physical sessions at the venue of the main conference, Amsterdam. The workshop had a physical session on September 29.

Recommender systems were originally developed as interactive intelligent systems that can proactively guide users to items that match their preferences. Despite its origin on the crossroads of HCI and AI, the majority of research on recommender systems gradually focused on objective accuracy criteria paying less and less attention to how users interact with the system as well as the efficacy of interface designs from users’ perspectives. This trend is reversing with the increased volume of research that looks beyond algorithms, into users’ interactions, decision making processes, and overall experience.

The series of workshops on Interfaces and Human Decision Making for Recommender Systems focuses on the “human side” of recommender systems. The goal of the research stream featured at the workshop is to improve users’ overall experience with recommender systems by integrating different theories of human decision making into the construction of recommender systems and exploring better interfaces for recommender systems.

The 8th Joint Workshop on Interfaces and Human Decision Making for Recommender Systems (IntRS’21) takes a user-centric perspective on recommender systems research. The workshop highlights research incorporating psychological theories and models and findings from HCI into the recommendation process.

It also studies interface-related aspects of recommender systems, i.e., how recommendations are presented to the user and what kind of interactions are crucial to user satisfaction with the system as a whole. The IntRS’21 workshop brings together an interdisciplinary community of researchers and practitioners who share research on novel (psychology-informed) recommender systems, including new design technologies and evaluation methodologies, and who aim to identify critical challenges and emerging topics in the field.

The workshop covers three main research strands:

- User modeling and human decision making (e.g., cognitive, affective, and personality-based user models for recommender systems, human-recommender interaction, decision biases, cognitive biases, decision theory, preference construction, human memory theory, persuasive recommendation and argumentation, cultural differences);
- User interfaces (e.g., visual interfaces, explanation interfaces, collaborative multi-user interfaces, spoken and natural language interfaces, trust-aware and social interfaces, context-aware interfaces, ubiquitous and mobile interfaces, example and demonstration-based interfaces, and decision making);
- Evaluation (e.g., user-centric evaluation, novel evaluation metrics, case studies, benchmarking platforms, empirical studies of new interfaces and interaction designs).

IntRS’21 follows successful workshops on the same topic organized at RecSys conferences in 2014 - 2020.

The workshop series was created by merging two original RecSys workshops series: Human Decision Making and Recommender Systems (Decisions@RecSys – 2010–2013) and Interfaces for Recommender Systems (InterfaceRS’12). The idea of merging the two workshops was motivated by the strong inter-relationship between the user interface and human decision making topics. The combination of these two aspects seems to be highly attractive. Earlier workshops, such as the IntRS’15 workshop in Vienna, the IntRS’16 in Boston, the IntRS’17 in Como, the IntRS’18 in Vancouver, the IntRS’19 in Copenhagen and the IntRS’20 (virtual conference) had attendance rates of over 50 participants.

The program includes an invited talk by Antony Jameson, Chusuble AG, on Group Decision Making and Group Recommender Systems, and 8 technical papers, that were selected among 10 submissions, through a rigorous reviewing process, where each paper was reviewed by three PC members.
The IntRS chairs would like to thank the RecSys 2021 workshop chairs, Jennifer Golbeck, Marijn Koolen, and Denis Parra, for their guidance during the workshop organization. We also wish to thank all authors and all presenters, and the members of the program committee. All of them secured the workshop’s high quality standards.

September 2021

Peter Brusilovsky
Marco de Gemmis
Alexander Felfernig
Elisabeth Lex
Pasquale Lops
Giovanni Semeraro
Martijn C. Willemsen
IntRS 2021 Workshop Organization

**Chairs:** Peter Brusilovsky, *School of Information Sciences, University of Pittsburgh, USA*
Marco de Gemmis, *Dept. of Computer Science, University of Bari Aldo Moro, Italy*
Alexander Felfernig, *Institute for Software Technology, Graz University of Technology, Austria*
Elisabeth Lex, *Institute of Interactive Systems and Data Science, Graz University of Technology, Austria*
Pasquale Lops, *Dept. of Computer Science, University of Bari Aldo Moro, Italy*
Giovanni Semeraro, *Dept. of Computer Science, University of Bari Aldo Moro, Italy*
Martijn C. Willemsen, *Eindhoven University of Technology, The Netherlands*

**Proceedings Chairs:** Marco de Gemmis, *Dept. of Computer Science, University of Bari Aldo Moro, Italy*
Pasquale Lops, *Dept. of Computer Science, University of Bari Aldo Moro, Italy*

**Web Chair:** Pasquale Lops, *Dept. of Computer Science, University of Bari Aldo Moro, Italy*

**Program Committee:** Ludovico Boratto, *Eurecat, Spain*
Robin Burke, *University of Colorado Boulder, United States*
Peter Dolog, *Aalborg University, Denmark*
Michael Ekstrand, *Boise State University, United States*
Sergiu Gordea, *Austrian Institute of Technology, Austria*
Denis Helic, *Graz University of Technology, Austria*
Andreas Holzinger, *Medical University Graz and Graz Univ. of Technology, Austria*
Dietmar Jannach, *University of Klagenfurt, Austria*
Julia Neidhardt, *Vienna University of Technology, Austria*
Marco Polignano, *University of Bari Aldo Moro, Italy*
Behnam Rahdari, *University of Pittsburgh, United States*
Olga C. Santos, *National Distance Education University, Madrid, Spain*
Alain Starke, *Univ. of Bergen, Norway & Wageningen Univ. & Research, Netherlands*
Luis Terán, *University of Fribourg, Switzerland*
Marko Tkalčič, *University of Primorska, Slovenia*
Chun-Hua Tsai, *The Pennsylvania State University, United States*
Wolfgang Wörndl, *Technical University of Munich, Germany*
Markus Zanker, *Free University of Bozen-Bolzano, Italy*
# Table of Contents

## Invited Talk

**Group Decision Making and Group Recommender Systems**

*Anthony Jameson*

1

## Long Papers

**ConvEx-DS: A dataset for conversational explanations in recommender systems**

*Diana C. Hernandez-Bocanegra, Jürgen Ziegler*

3

**Mixed-Modality Interaction in Conversational Recommender Systems**

*Yuan Ma, Timm Kleemann, Jürgen Ziegler*

21

**How does the User’s Knowledge of the Recommender Influence their Behavior?**

*Muheeb Faizan Ghori, Arman Dehpanah, Jonathan Gemmell, Hamed Qahri-Saremi, Bamshad Mobasher*

38

**Input or Output: Effects of Explanation Focus on the Perception of Explainable Recommendation with Varying Level of Details**

*Mouadh Guesmi, Mohamed Amine Chatti, Laura Vorgerd, Shoeb Joarder, Qurat Ul Ain, Thao Ngo, Shadi Zumor, Yiqi Sun, Fangzheng Ji, Arham Muslim*

55

**Evaluating Explainable Interfaces for a Knowledge Graph-Based Recommender System**

*Erasmo Purificato, Baalakrishnan Aiyer Manikandan, Prasanth Vaidya Karanam, Mahantesh Vishvanath Pattadkal, Ernesto William De Luca*

73

## Short Papers

**Your eyes explain everything: exploring the use of eye tracking to provide explanations on-the-fly**

*Martijn Millecamp, Toon Willemot, Katrien Verbert*

89

**The Immunity of Users’ Item Selection from Serial Position Effects in Multi-Attribute Item Recommendation Scenarios**

*Thi Ngoc Trang Tran, Carmen Isabella Baumann, Alexander Felfernig, Viet Man Le*

101

**Controlling Personalized Recommendations in Two Dimensions with a Carousel-Based Interface**

*Behnam Rahdari, Peter Brusilovsky, Alireza Javadian Sabet*

112