Workshop on Explainable User Models and Personalized Systems (ExUM 2020)

Musto, Cataldo; Tintarev, Nava; Inel, Oana; Polignano, Marco; Semeraro, Giovanni; Ziegler, Juergen

DOI
10.1145/3340631.3398673

Publication date
2020

Document Version
Final published version

Published in
UMAP 2020 - Proceedings of the 28th ACM Conference on User Modeling, Adaptation and Personalization

Workshop on Explainable User Models and Personalized Systems (ExUM 2020)

Cataldo Musto
cataldo.musto@uniba.it
University of Bari
Italy

Nava Tintarev
n.tintarev@tudelft.nl
Delft University of Technology
Holland

Oana Inel
o.inel@tudelft.nl
Delft University of Technology
Holland

Marco Polignano
marco.polignano@uniba.it
University of Bari
Italy

Giovanni Semeraro
giovanni.semeraro@uniba.it
University of Bari
Italy

Juergen Ziegler
juergen.ziegler@uni-due.de
University of Duisburg-Essen
Germany

ABSTRACT

Adaptive and personalized systems have become pervasive technologies which are gradually playing an increasingly important role in our daily lives. Indeed, we are now used to interact every day with algorithms that help us in several scenarios, ranging from services that suggest us music to be listened to or movies to be watched, to personal assistants able to proactively support us in complex decision-making tasks.

As the importance of such technologies in our everyday lives grows, it is fundamental that the internal mechanisms that guide these algorithms are as clear as possible. Unfortunately, the current research tends to go in the opposite direction, since most of the approaches try to maximize the effectiveness of the personalization strategy (e.g., recommendation accuracy) at the expense of the explainability and the transparency of the model.

The main research questions which arise from this scenario is simple and straightforward: *How can we deal with such a dichotomy between the need for effective adaptive systems and the right to transparency and interpretability*?

The workshop aims to provide a forum for discussing such problems, challenges and innovative research approaches in the area, by investigating the role of transparency and explainability on the recent methodologies for building user models or for developing personalized and adaptive systems.

CCS CONCEPTS

• **Information systems** → **Recommender systems**; **Personalization**; **Personalization**; • **Computing methodologies** → **Natural language processing**; • **Human-centered computing** → **User models**.

KEYWORDS

Conversational Agents, Chatbots, User Models, Personalization

UMAP '20, July 14–17, 2020, Genoa, Italy

ACM ISBN 978-1-4503-6861-2/20/07.
https://doi.org/10.1145/3340631.3398673

ACM Reference Format:
Cataldo Musto, Nava Tintarev, Oana Inel, Marco Polignano, Giovanni Semeraro, and Juergen Ziegler. 2020. Workshop on Explainable User Models and Personalized Systems (ExUM 2020). In *Proceedings of the 28th ACM Conference on User Modeling, Adaptation and Personalization (UMAP '20), July 14–17, 2020, Genoa, Italy.* ACM, New York, NY, USA, 2 pages. https://doi.org/10.1145/3340631.3398673

1 INTRODUCTION

The spread of adaptive and personalized systems is one of the most interesting phenomena we are recently witnessing. Indeed, nowadays we are used to interact with algorithms that exploit such personal data to support us in several scenarios, such as suggesting music to be listened to or movies to be watched. These personalized and adaptive services are continuously evolving and are becoming part of our everyday life, increasingly acting as personal assistants able to proactively help us in complex decision-making tasks.

Unfortunately, most of these systems adopt black box models whose internal mechanisms are opaque to end users. Indeed, users typically enjoy personalized suggestions or like to be supported in their decision-making tasks, but they are not aware of the general rationale that guides the algorithms in the adaptation and personalization process. Moreover, the metrics that are usually adopted to evaluate the effectiveness of the algorithms reward very opaque methodologies as matrix factorization and neural network-based techniques, that maximize the accuracy of the suggestions at the expense of the transparency and explainability of the model.

This issue is even more felt in the light of the recent General Data Protection Regulation (GDPR), which further emphasized the need and the right for scrutable and transparent methodologies that can guide the user in a complete comprehension of the information about her which are held by the systems and of the internal behavior of personalization algorithms. As a consequence, the main motivation of the workshop is simple and straightforward: how can we deal with such a dichotomy between the need for effective adaptive systems and the right to transparency and interpretability?

Several research questions are triggered by this questioning:

(1) How can we build transparent user models? Can we design transparent data extraction strategies?
(2) Can we think about novel recommendation and personalization strategies that consider transparency and explainability?

(3) What is the role of explanation algorithms with a view to more transparent and explainable personalization pipelines?
(4) Can we introduce explanation strategies in opaque models, as neural networks and matrix factorization techniques?
(5) Can we think about novel metrics that go beyond the accuracy and reward more transparent and explainable recommendations?
(6) Can we think about novel personalization paradigms (e.g., chatbots, conversational recommender systems) that enable a more transparent interaction?
(7) What is the role of final users in personalization and adaptation algorithms?

The workshop aims to provide a forum for discussing such problems, challenges and innovative research approaches in the area, by investigating the role of transparency and explainability on the recent methodologies for building user models or for developing personalized and adaptive systems.

2 ACCEPTED PAPERS

We believe that the program provides a good balance between the different topics covered by the workshop. We accepted papers related to the area of explanations, namely argumentative textual explanations for review-based recommendations, feature-based collaborative explanations, content-based explanations for the public radio domain, to the area of personalization and user modeling as well as to the area of explainability for deep learning models.

- Joanna Misztal-Radecka (AGH University of Science and Technology, Ringier Axel Springer); Bipin Indurhkya (Jagiellonian University). ***"Persona Prototypes for Improving the Qualitative Evaluation of Recommendation Systems"***

- Cataldo Musto (University of Bari); Fedelucio Narducci (Polytechnic University of Bari); Marco Polignano (University of Bari); Marco de Gemmis (University of Bari); Pasquale Lops (University of Bari); Giovanni Semeraro (University of Bari). ***"Towards Queryable User Profiles: Introducing Conversational Agents in a Platform for Holistic User Modeling"***

- Diana C Hernandez-Bocanegra (University of Duisburg); Jürgen Ziegler (University of Duisburg); Tim Donkers (University of Duisburg). ***"Effects of argumentative explanation types on the perception of review-based recommendations"***

- Sidra Naveed (University of Duisburg); Benedikt Loepp (University of Duisburg); Jürgen Ziegler (University of Duisburg). ***"On the Use of Feature-based Collaborative Explanations: An Empirical Comparison of Explanation Styles"***

- Mirko Polato (University of Padova); Tommaso Carraro (University of Padova); Fabio Aiolli (University of Padova). ***"A look inside the black-box: towards the interpretability of Conditioned Variational Autoencoder for Collaborative Filtering"***

- Stefan Hirschmeier (University of Cologne); Detlef Schoder (University of Cologne). ***An Approach to Explanations for Public Radio Recommendations***

3 ORGANIZATION

- Cataldo Musto - Assistant Professor at University of Bari. *His research focuses on the adoption of natural language processing techniques for semantic content representation in recommender systems and user modeling platforms.*
- Nava Tintarev - Assistant Professor and Technology Fellow at Delft University of Technology. *Her research looks at how to improve the transparency of, and decision support for, recommender systems.*
- Oana Inel - Postdoctoral Researcher at Delft University. of Technology. *Currently, she is working on the development of AI-driven, human-empowering solutions for the digital society, in the context of responsible data science.*
- Marco Polignano - Postdoctoral Research Fellow at the University of Bari Aldo Moro. *His research interests include Recommender Systems, Natural Language Processing, Machine Learning and User Profiling.*
- Giovanni Semeraro - Full Professor at the University of Bari. He leads the Semantic Web Access and Personalization (SWAP) "Antonio Bello" research group. *His research interests include AI, recommender systems, intelligent information mining, retrieval, and filtering, semantic and social computing, the Semantic Web, natural language processing, machine learning, and personalization.*
- Jürgen Ziegler - Full Professor at the University of Duisburg-Essen where he directs the Interactive Systems Research Group. *His main research interests lie in the areas of human-computer interaction, human-AI cooperation, recommender systems, information visualization, and health applications.*