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Workshop on Explainable User Models and Personalized Systems (ExUM 2021)

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ABSTRACT

Adaptive and personalized systems have become pervasive technologies that 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 developing personalized and adaptive systems.

CCS CONCEPTS

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

KEYWORDS

Explainability, Explanation, Transparency, Recommender Systems, User Models, Personalization

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 to a complete comprehension of the information about them 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, such 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 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 and transparency in adaptive and personalized systems. The list of the papers follows:

- Noemi Mauro (University of Torino), Zhongli Filippo Hu (University of Torino), Liliana Ardissono (University of Torino) and Gianmarco Izzi (University of Torino). *"A Service-oriented Perspective on the Summarization of Recommendations: Preliminary Experiment"*

- Melanie Heck (University of Mannheim), Paulina Sonntag (University of Mannheim) and Christian Becker (University of Mannheim). *"Is This Really Relevant? A Guide to Best Practice Gaze-based Relevance Prediction Research"*

- Alain Starke (Wageningen University & Research), Martijn Willemsen (Jheronimus Academy of Data Science & Eindhoven University of Technology) and Chris Snijders (Eindhoven University of Technology). *"Using Explanations as Energy-Saving Frames: A User-Centric Recommender Study"*

- Run Yu (New York University), Zach Pardos (University of California, Berkeley), Hung Chau (University of Pittsburgh) and Peter Brusilovsky (University of Pittsburgh). *"Orienting Students to Course Recommendations Using Three Types of Explanation"*

- Mouadh Guesmi (University of Duisburg-Essen), Mohamed Amine Chatti (University of Duisburg-Essen), Laura Vorgerd (University of Duisburg-Essen), Shoeb Joarder (University of Duisburg-Essen), Shadi Zumor (University of Duisburg-Essen), Yiqi Sun (University of Duisburg-Essen), Fangzheng

Ji (University of Duisburg-Essen) and Arham Muslim (University of Duisburg-Essen). *"On-demand Personalized Explanation for Transparent Recommendation"*

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 - Full Professor Explainable AI at Maastricht University. *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 - Assistant Professor at University of Bari Aldo Moro. *His research interests include Recommender Systems, Natural Language Processing, Machine Learning and User Profiling.*

- Giovanni Semeraro - Full Professor at 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 access, semantic and social computing, the Semantic Web, NLP, machine learning, eXplainable AI and personalization.*

- Jürgen Ziegler - Full Professor at 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.*
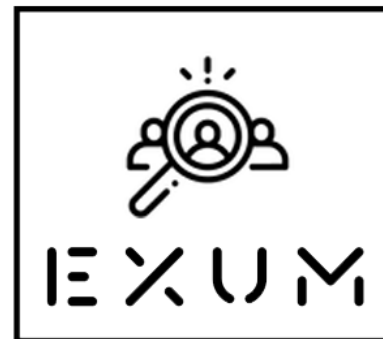
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