From User Control and Explainability in Recommendation Interfaces to Visual XAI

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Abstract

Transparency and explainability are topics studied for more than two decades in the area of recommender systems, due to its impact on the user experience of personalized systems. Interestingly, only in recent years these topics have reached importance within Artificial Intelligence (AI) as a whole, under the umbrella of the term XAI (eXplainable AI). Some authors have shown that advances in XAI from different fields (computer science, design, HCI, IR, AI, etc.) have not been properly integrated into a common body of knowledge due to lack of connection among these communities. This talk gives one small step to bridge this gap, by showing how works on explainability, transparency, visualization, user interfaces and user control in recommender systems are significantly related to XAI and can inspire new ideas of research on visual XAI.

1. Introduction

Transparency and explainability in artificial intelligence are very important topics, specially considering how quickly AI is permeating critical domains such as medicine, law, finance, and defense [1]. Since the early days of recommendation systems (RecSys), transparency and explainability have also been topics of high relevancy in the area [2, 3], due to its impact on the user experience of personalized information filtering systems. Despite this relevance, when the topic of eXplainable AI (XAI) was introduced by David Gunning in a DARPA challenge starting in 2017 [1], related research from RecSys was not frequently cited outside its own community. Although this could be seen as a specific disconnection between the applied research on recommendation systems and the more theoretical work of researchers on artificial intelligence, Abdul et al. [4] found that it is indeed common that very related research on intelligent systems from different conferences is rarely cited across different communities, such as computer-human interaction (CHI), machine learning (AAAI, Neurips, ICML) and applied AI topics such as recommendation systems (RecSys), information retrieval (SIGIR), intelligent user interfaces (IUI) or natural language processing (ACL, NAACL, EMNLP), for naming just

a few. Abdul et al. [4] point toward the need for creating bridges among theses communities doing similar research in order to develop a deeper and wider progress of transparency and explainability in AI and applied domains.

In this talk, Prof. Denis Parra attempts a small step to bridge this gap. He surveys several works on explainability, transparency, visualization, user interfaces and user control in RecSys [5] and then shows how they inspire and contribute to current research on XAI. He also shows research on Visual XAI emerging thanks to lessons from these diverse fields.

2. Bio

Denis Parra is Associate Professor at the Department of Computer Science, in the School of Engineering at Pontificia Universidad Católica de Chile. He is also principal researcher at the excellence research centers CENIA (National Center for Research in Artificial Intelligence in Chile), iHealth (Millennium Institute for Intelligent Healthcare Engineering), and adjunct researcher at the IMFD (Millennium Institute for Research on Data Fundamentals). He earned a Fulbright scholarship to pursue his PhD studies between 2008-2013 at the University of Pittsburgh, USA. Prof. Parra has published numerous articles in prestigious journals such as ACM TiiS, ACM CSUR, IJHCS, ESWA, and PloS ONE, as well as in conferences such ACM IUI, ACM RecSys, UMAP, ECIR, and EuroVis among others. Prof. Parra has been awarded a student best paper award at UMAP conference 2011, as well as candidate best paper awards twice at ACM IUI, in 2018 and 2019, for his research on intelligent user interfaces for recommender systems and on AI medical applications. Prof. Parra has served as senior PC chair in conferences such as IUI, RecSys, UMAP, SIGIR, The Web Conference and WSDM. Prof. Parra research interests are Recommender Systems, Intelligent User Interfaces, Applications of Machine Learning (Healthcare, Creative AI) and Information Visualization. He is currently leading the Human-centered AI and Visualization (HAIVis) research group as well as co-leading the CreativAI Lab with professor Rodrigo Cádiz. He is also a faculty member of the PUC Artificial Intelligence Laboratory, IA Lab.

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