

XAI.it 2022 - Preface to the Third Italian Workshop on Explainable Artificial Intelligence

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Abstract

Artificial Intelligence systems are increasingly playing an increasingly important role in our daily lives. As their importance in our everyday lives grows, it is fundamental that the internal mechanisms that guide these algorithms are as clear as possible. It is not by chance that the recent General Data Protection Regulation (GDPR) emphasized the users' right to explanation when people face artificial intelligence-based technologies. Unfortunately, the current research tends to go in the opposite direction, since most of the approaches try to maximize the effectiveness of the models (e.g., recommendation accuracy) at the expense of the explainability and the transparency. The main research questions which arise from this scenario is 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 lines are triggered by this question: building transparent intelligent systems, analyzing the impact of opaque algorithms on final users, studying the role of explanation strategies, investigating how to provide users with more control in the behavior of intelligent systems. XAI.it, the Italian workshop on Explainable AI, tries to address these research lines and aims to provide a forum for the Italian community to discuss problems, challenges and innovative approaches in the various sub-fields of XAI.

1. Background and Motivations

Nowadays we are witnessing a new summer of Artificial Intelligence, since the AI-based algorithms are being adopting in a growing number of contexts and applications domains, ranging from media and entertainment to medical, finance and legal decision-making. While the very first AI systems were easily interpretable, the current trend showed the rise of opaque methodologies such as those based on Deep Neural Networks (DNN), whose (very good) effectiveness is contrasted by the enormous complexity of the models, which is due to the huge number of layers and parameters that characterize these models.

As intelligent systems become more and more widely applied (especially in very “sensitive” domain), it is not possible to adopt opaque or inscrutable black-box models or to ignore the

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general rationale that guides the algorithms in the task it carries on. Moreover, the metrics that are usually adopted to evaluate the effectiveness of the algorithms reward very opaque methodologies that maximize the accuracy of the model at the expense of the transparency and explainability.

This issue is even more felt in the light of the recent experiences, such as the General Data Protection Regulation (GDPR) and DARPA's Explainable AI Project, 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 held and managed by AI-based systems.

Accordingly, the main motivation of the workshop is simple and straightforward: *how can we deal with such a dichotomy between the need for effective intelligent systems and the right to transparency and interpretability?*

These questions trigger several lines, that are particularly relevant for the current research in AI. The workshop tries to address these research lines and aims to provide a forum for the Italian community to discuss problems, challenges and innovative approaches in the area.

2. Accepted Papers

We believe that the program provides a good balance between the different topics related to the area of Explainable AI. Moreover, the program will be further enriched through a keynote given by Pasquale Minervini from University of Edinburgh and University College London.

The accepted papers range from the definition of new methodologies to explain the behavior of artificial intelligence systems to the development of new applications implementing the principles of Explainable AI. In total, 11 contributions were accepted at XAI.it 2022 (9 of them included in the proceedings):

1. Andrea Apicella, Francesco Isgro, Andrea Pollastro and Roberto Prevete - *Toward the application of XAI methods in EEG-based systems*
2. Luca Putelli, Alfonso Emilio Gerevini, Alberto Lavelli, Tahir Mehmood and Ivan Serina - *On the Behaviour of BERT's Attention for the Classification of Medical Reports*
3. Nina Spreitzer, Hinda Haned and Ilse van der Linden - *Evaluating the Practicality of Counterfactual Explanations*
4. Erasmo Purificato, Saijal Shahania and Ernesto William De Luca - *Tell Me Why It's Fake: Developing an Explainable User Interface for a Fake News Detection System*
5. Mario Alviano, Francesco Bartoli, Marco Botta, Roberto Esposito, Laura Giordano, Valentina Gliozzi and Daniele Theseider Dupre - *Towards a Conditional and Multi-preferential Approach to Explainability of Neural Network Models in Computational Logic*
6. Francesca Naretto, Francesco Bodria, Fosca Giannotti and Dino Pedreschi - *Benchmark analysis of black box local explanation methods*
7. Mario Alfonso Prado-Romero, Bardh Prenkaj, Giovanni Stilo, Alessandro Celi, Ernesto Estevanell-Valladares and Daniel Alejandro Valdés-Pérez - *Ensemble approaches for Graph Counterfactual Explanations*
8. Simona Colucci, Francesco M Donini and Eugenio Di Sciascio - *A Human-readable Explanation for the Similarity of RDF Resources*

9. José Luis Corcuera Bárcena, Mattia Daole, Pietro Ducange, Francesco Marcelloni, Alessandro Renda, Fabrizio Ruffini and Alessio Schiavo - *Fed-XAI: Federated Learning of Explainable Artificial Intelligence Models*

3. Program Committee

As a final remark, the program co-chairs would like to thank all the members of the Program Committee (listed below), as well as the organizers of the AIXIA 2022 Conference¹.

- Davide Bacciu, *Università di Pisa*
- Matteo Baldoni, *Università di Torino*
- Valerio Basile, *Università di Torino*
- Ludovico Boratto, *Università di Cagliari*
- Roberta Calegari, *Università di Bologna*
- Federica Cena, *Università di Torino*
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- Andrea Iovine, *Università di Bari*
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- Antonio Rago, *Imperial College London*
- Amon Rapp, *Università di Torino*
- Gaetano Rossiello, *IBM Research*
- Salvatore Ruggieri, *Università di Pisa*
- Giuseppe Sansonetti, *Roma Tre University*
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- Francesca Toni, *Imperial College London*
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¹<https://aixia2022.uniud.it/>