Proceedings of the Second Multimodal, Affective and Interactive eXplainable AI Workshop (MAI-XAI 2025) co-located with the 28th European Conference on Artificial Intelligence 25-30 October 2025 (ECAI 2025)

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Abstract

This collection comprises the papers presented at the 2nd Workshop on Multimodal, Affective and Interactive eXplainable AI (MAI-XAI), collocated with the European Conference on Artificial Intelligence (ECAI). The workshop attempts to offer researchers and practitioners the opportunity to identify new promising research directions on XAI along the above-mentioned lines, focusing on how to provide "natural explanations". The workshop explores three pillars toward creating more natural explanations: i) Multimodal XAI, ii) Affective XAI and iii) Interactive XAI.

Preface

1. Introduction

The field of eXplainable Artificial Intelligence (XAI) is concerned with developing methods that make the decisions / predictions by machine learned models accessible and understandable to different stakeholders, ranging from machine learning experts to lay users. An important goal is to design systems in a human-centered manner, ensuring that explanations are effective in enhancing the understanding of human users about the model and empower them to perform an appropriate action.

Yet, the current state of the art in XAI is limited in this respect. Many studies in the field of XAI are concerned with evaluating technology in an intrinsic fashion regarding measures such as validity, proximity, etc., that tell us little about the actual effectiveness of explanations from an end-user perspective. Further, there is a lack of methods that allow for the interactively tailoring of explanations to the (evolving) needs of explainees as well as to measure the effectiveness of the provided explanations in terms of enhancing user understanding. The MAI-XAI workshop focuses on improving the effectiveness of explanations by moving to "natural" explanations that are more accessible to a non-technical audience. Natural explanations leverage multiple modalities (e.g., text, speech, visual, tabular, etc.) to select the form of presentation of an explanation that most suits the context and the explanatory needs of an explainee. XAI systems providing natural explanations might react to affective aspects and emotions to for example, identify dissatisfaction with an explanation and react accordingly. Finally, XAI systems should be able to effectively interact with the user to move from one-shot static

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explanations to dynamically adapted explanations that can be informed by the reactions or feedback of a user during the interaction.

We aim to offer researchers and practitioners the opportunity to identify new promising research directions on XAI along the above-mentioned lines, focusing on how to provide "natural explanations". Attendees are encouraged to present case studies of real-world applications where XAI has been successfully applied, emphasizing the practical benefits and challenges encountered. The workshop explores three pillars toward creating more natural explanations: i) Multimodal XAI, ii) Affective XAI and iii) Interactive XAI.

Multimodal XAI Multi-modality is demanded at the level of both data and models. Multi-modality requires dealing properly with structured and non-structured heterogeneous data (i.e., tabular data, text, images, sound, video, etc.). Multi-modal explanations must be customizable and easy to adapt not only to either user preferences or user needs but also adaptable to different communication channels in the form of natural phenotropics multi-lingual human–machine interactions. Nonetheless, most existing resources are developed ad-hoc for specific applications, usually considering only one or two modalities, being hard to combine, reuse and recycle in a human-centred and sustainable way..

Affective XAI The extent to which XAI systems should be equipped with abilities to detect and express human emotions remains an open question. Some researchers have hypothesized that including an affective component might increase the predictability of systems and help users in reasoning about the causality of systems and predictions. The technical challenges for the systems developed within the affective computing spectrum are related to multimodal natural language processing, such as sentiment analysis tools that use natural language processing and text analysis in addition to emotion detection from signals and modalities, including gestures, posture, facial information, heart rate, electrodermal activity, voice, speech rate, pitch, and intensity.

Interactive XAI Beyond regarding an explainee as a passive receiver of an (adapted) explanation, previous research has proposed that explainees should have a more active role, being able to actively co-shape the explanation in an interactive manner. However, there has been little emphasis so far on methods that adapt the explanation dynamically to a user's needs by evaluating whether the user has understood the explanation. We, therefore, need novel methods to better identify the information needs of a user as well as novel methods to measure the degree to which a user has understood the explanation, both in order to adapt the explanation further as well as to determine whether the explanation has been successful.

2. Submission, Reviewing and Selection Process

The workshop received 18 submissions covering the three main topics mentioned in the call for papers. All the submissions received at least two reviews. Out of these papers, 9 were selected for presentation at the workshop, yielding an acceptance rate of 50%.

3. Invited Speakers

The workshop will feature two high-profile invited speakers: Anna Monreale (University of Pisa) and Francesca Toni (Imperial College London).

4. Program Committee

We would like to express our gratitude to the following program committee members for their help in reviewing papers and in compiling an exciting program:

- Zach Anthis, Neapolis University Paphos, Cyprus
- Alessandro Bogliolo, University of Urbino, Italy
- Hubert Baniecki, University of Warsaw, Poland
- Rafael Berlanga, Universitat Jaume I, Spain
- Przemyslaw Biecek, Warsaw University of Technology, Poland
- Gabriela Casalino, University of Bari, Italy
- Roberto Confalonieri, University of Padova, Italy
- Ulises Cortés, Universitat Politécnica de Catalunya, Spain
- Vicent Costa, IIIA-CSIC, Spain
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- Zoe Falomir, Umeå University, Sweden
- Benoit Frenay, Uni Namur, Belgium
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- Jose Mancera, Lucerne University of Applied Sciences and Arts, Switzerland
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- Elpiniki Papageorgiou, University of Thessaly, Greek
- Direnc Pekaslan, University of Nottingham, UK
- Edy Portmann, Human-IST Institute, Switzerland
- Clemente Rubio-Manzano, University of Bio-Bio, Chile
- Carles Sierra, IIIA-CSIC, Spain
- Ilia Stepin, Universidad Autonoma de Madrid, Spain
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