1st International Workshop on Explainable AI and Knowledge Graphs (XAI-KG)

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Abstract

Achieving a productive synergy between Explainable Artificial Intelligence (XAI) and Knowledge Graphs (KG) presents foundational, conceptual, and technical challenges. The XAI-KG workshop aims to bring together researchers, practitioners, and industry experts to share ideas, foster collaborations, and address both theoretical advances and practical hurdles at the intersection of XAI and KGs.

Keywords

Explainable AI, Knowledge Graphs, Knowledge representation

1. Introduction

The synergy between eXplainable AI (XAI) and Knowledge Graphs (KGs) has gained momentum as an essential approach for achieving transparency, trust, and understanding in AI systems. Knowledge Graphs provide a structured, interconnected framework for representing domain-specific knowledge, while XAI aims either to provide insight for predicted results or to clarify how machine learning models function internally, particularly deep learning systems, which are often complex and difficult to interpret. By leveraging KGs within XAI, researchers and practitioners can enhance the understanding and interpretability of AI models, enabling explanations that are both contextual and relevant to domain knowledge, making it easier for users to trust and understand AI-driven insights and decisions.

The combination of XAI and KGs presents unique advantages and challenges. KGs can serve as an intuitive map for AI reasoning paths, offering insights into the relationships and logic that AI systems use to reach conclusions. This can be particularly valuable in applications requiring high levels of transparency, such as healthcare, finance, and law, where understanding the rationale behind AI predictions and actions is crucial. Conversely, XAI can assist in constructing and refining KGs, helping to identify which aspects of a graph's structure contribute most

to accurate, reliable reasoning, ultimately enriching KG content with a layer of explainable intelligence. This workshop has the aim to bring together researchers, practitioners, and industry experts to explore the vast opportunities and specific challenges of combining XAI with KGs.

2. Program Overview

The workshop began with a short introduction by Claudia d'Amato and Valeria Fionda, focusing on the motivation for organising a workshop at the intersection of Explainable AI and Knowledge Graphs.

This half-day workshop featured an invited keynote talk, along with presentations that covered a range of topics related to the intersection of XAI and KG. The discussions spanned theoretical foundations, technological developments, and real world applications, including case studies demonstrating the use of KG based explanations in critical domains such as healthcare and finance. The workshop program included two presentation sessions featuring five regular papers and two short papers, all of which were selected through a peer review process, and five of which are included in the workshop proceedings.

3. Program Committee

- Roberto Barile, University of Bari, Italy
- Aidan Hogan, Universidad de Chile
- Antonio Ielo, University of Calabria, Italy
- Pierre Monnin, Université Côte d'Azur, Inria, CNRS, France
- Alessandra Mileo, Dublin City University, Ireland
- Giuseppe Pirrò, University of Calabria, Italy

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