iSee: Intelligent Sharing of Explanation Experiences

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Abstract

The right to an explanation of the decision reached by a machine learning (ML) model is now an EU regulation. However, different system stakeholders may have different background knowledge, competencies and goals, thus requiring different kinds of explanations. There is a growing armoury of XAI methods, interpreting ML models and explaining their predictions, recommendations and diagnoses. We refer to these collectively as "explanation strategies". As these explanation strategies mature, practitioners gain experience in understanding which strategies to deploy in different circumstances. What is lacking, and what the iSee project will address, is the science and technology for capturing, sharing and re-using explanation strategies based on similar user experiences, along with a much-needed route to explainable AI (XAI) compliance. Our vision is to improve every user's experience of AI, by harnessing experiences of best practice in XAI by providing an interactive environment where personalised explanation experiences are accessible to everyone.
Video Link: https://youtu.be/81O6-q_yx0s

Keywords

Explainability, Case-Based Reasoning, Project Showcase

1. iSee System Overview

The iSee platform employs a Case-Based Reasoning (CBR) methodology to capture, store and recommend explanation experiences. When queried, the system draws on a case-base of historical explanation experiences to suggest an appropriate explanation strategy (i.e. combination of explainer algorithms designed to holistically satisfy a set of personas and corresponding intents). Cases are formed of knowledge of the AI model and its user group (problem component), the explanation strategy recommended (solution component), and feedback from the user group to describe whether the provisioned explanations were satisfactory (outcome component). In this manner, cases represent a comprehensive record of explanation experience.

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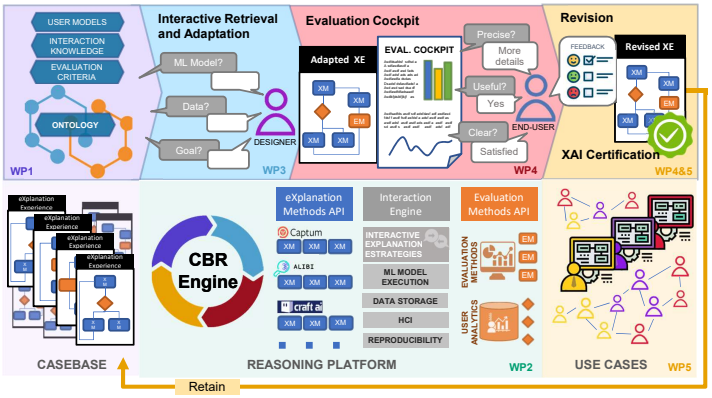

Figure 1: iSee System Diagram

We have developed novel knowledge bases and algorithms to fill the CBR knowledge containers. The case base knowledge container is filled with explanation experiences, where the above case composition has been applied to novel application of XAI in literature and real-life use cases. We have created iSeeOnto, an ontology for the description of XAI systems which fills the vocabulary container and describe AI models, how they are explained and how these explanations are evaluated. The similarity knowledge container is currently under development. There we are building novel similarity methods based on Many-Are-Called, Few-Are-Chosen (MAC/FAC) and edit distance based methods. Finally, the adaptation container will empower users to adapt their personalised user strategy, in the first instance through constructive adaptation during reuse, and finally by helping to evaluate their explanation strategy with end users to and modification to meet needs by revisiting earlier retrieval stages of the process.

2. Community Support

The iSee project aims to become a platform which facilitates capture of explanation experiences and empowers reuse of explanation strategies. To achieve this, iSee would benefit from community support in two areas:

1. Provision of explainer algorithms to increase available explanation strategies.
2. Description of known use cases to expand explanation experience coverage.

As a benefit to the community, by providing these artefacts the XAI research community can expect wider impact and more convenient reusability of their contributions.

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