XDesign: Integrating Interface Design into Explainable AI Education

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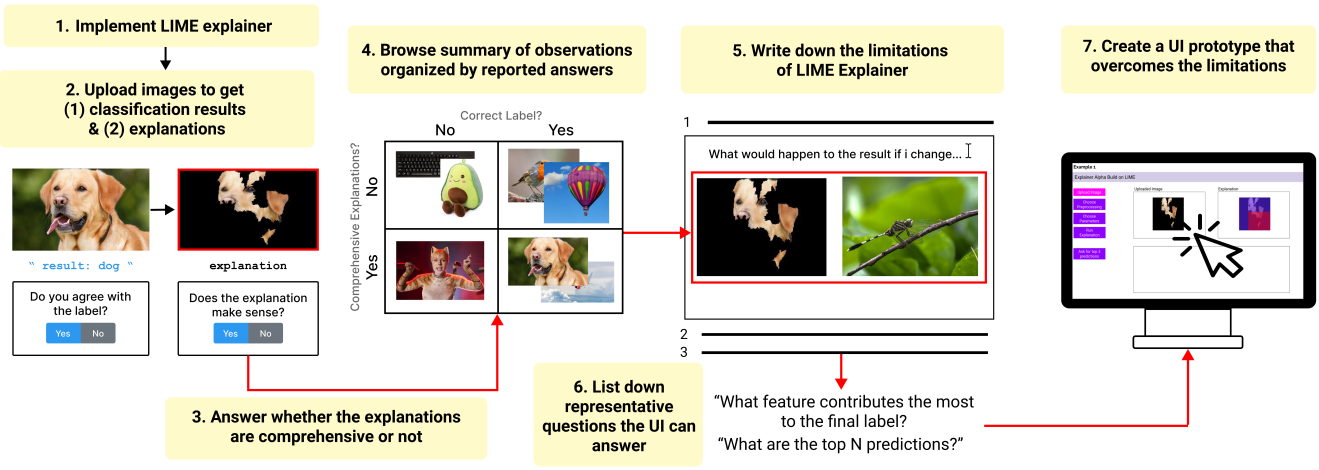

Figure 1: A design process supported by XDesign, a web-based interactive platform for XAI education.

ABSTRACT

We introduce XDesign, a web-based interactive platform that guides learners through a multi-stage design process for creating user-centered explanations of AI models. Results from a course deployment show that students were able to identify concrete user needs in interacting with explanations, highlight user tasks to support the needs, and design a user interface that aids the tasks.

KEYWORDS

Explainable AI, Design process, UI prototyping, Usable explanation

1 INTRODUCTION

Research on Explainable AI (XAI) seeks to help humans comprehend results produced by the AI models. Explanations should not only accurately represent model results but also be comprehensive and interpretable to users. In other words, explanations need to be *usable* by effectively supporting user needs. Most of the currently available learning materials for XAI have focused on algorithms for generating explanations and discussions of ethical perspectives of explanations, but few materials address how to design *usable* explanations that involve a user-centered design process [1].

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2 OVERVIEW & EVALUATION

We built XDesign, a web-based interactive platform that provides step-by-step instructions that guide learners to create an interactive UI prototype that presents explanations. The platform asks learners to use the LIME explainer [2], a model-agnostic algorithm for generating explanations, to identify when it fails to present comprehensive explanations and design an interactive UI prototype that can address the limitations. XDesign offers specific tasks to students in each step (Figure 1). Our evaluation with 44 students at our university shows that students were able to successfully create UI prototypes by identifying concrete user needs from observations.

3 CONTRIBUTIONS & FUTURE WORK

Our main contributions are: (1) XDesign, a web-based interactive platform that guides learners to create an interactive UI prototype with usable explanations, and (2) results from a class deployment over two semesters showing that students were able to easily follow the design process to create UI prototypes that address user needs for XAI. As future work, we would like to further improve XDesign to cover other types of machine learning tasks and XAI techniques, thereby generalizing the platform to broader responsible AI education contexts such as transparency, fairness, and trust.

REFERENCES

[1] Q Vera Liao, Milena Pribić, Jaesik Han, Sarah Miller, and Daby Sow. 2021. Question-Driven Design Process for Explainable AI User Experiences. *arXiv preprint arXiv:2104.03483* (2021).
[2] Marco Tulio Ribeiro, Sameer Singh, and Carlos Guestrin. 2016. "Why Should I Trust You?": Explaining the Predictions of Any Classifier. arXiv:1602.04938 [cs.LG]