

REASONX: a declarative explanation tool

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Explaining opaque machine learning (ML) models is an increasingly relevant problem. However, current explainable artificial intelligence (XAI) methods suffer several shortcomings, among others a lack of abstraction and interactivity with the user, and an insufficient incorporation of background knowledge.

This talk will introduce REASONX, an explanation tool based on constraint logic programming (CLP). REASONX can provide declarative, interactive explanations for decision trees, which can be the ML models under analysis or global/local surrogate models of any black-box model. Users can express background knowledge using linear constraints and MILP optimization over features of factual and contrastive instances, and interact with the answer constraints at different levels of abstraction, from fully specified instances to under-specified ones. While the core of REASONX is implemented in CLP, the tool also provides a Python layer for easier integration of data and models.

More information can be found in here:

- "Declarative Reasoning on Explanations Using Constraint Logic Programming" by Laura State, Salvatore Ruggieri and Franco Turini [[available here](#)]
- "Reason to explain: Interactive contrastive explanations (REASONX)" by Laura State, Salvatore Ruggieri and Franco Turini [[available here](#)]
- REASONX on github: <https://github.com/lstate/REASONX>