Explaining Answers to Datalog Queries (Invited Talk)

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Abstract

Datalog emerged in the 1970s as a prominent logic-based query language from Logic Programming and has found numerous applications over the years. It essentially extends the language of unions of conjunctive queries, which corresponds to the select-project-join-union fragment of Relational Algebra, with the important feature of recursion much needed to express some natural queries. As for every other query language, explaining why a result to a Datalog query is obtained is an essential task towards explainable and transparent query evaluation. Several natural explainability notions for Datalog queries have been proposed in the literature that can be captured via the unifying framework of semiring provenance. The goal of this invited talk is to give an overview of those explainability notions and present very recent results concerning their computational complexity, as well as discussing interesting open problems. We will also discuss the possibility of devising algorithms for explaining answers to Datalog queries based on sophisticated SAT solvers.

This talk is based on joint work with Marco Calautti, Ester Livshits and Markus Schneider.

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