What we talk about when we talk about graphs

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1. INVITED TALK ABSTRACT

An old idea from the humanistic sciences has it that the language we use not only restricts the manner in which we view the world, but also, in a very real sense, shapes the world around us. This view has deep roots across fields as diverse as anthropology, linguistics, and philosophy. Recently, my colleagues and I have been exploring the interesting ways in which this idea manifests itself in data management. In particular, we have been studying the expressive power of graph query languages at the instance level, where the focus is on characterizing the ability of languages to restrict and shape concrete graph instances, purely in terms of the structure of the instances.

In this talk, I will begin with a brief recap of such structural characterizations of query languages for structured and semi-structured data [4, 7, 8]. I will then introduce the theoretical framework we have been developing for reasoning over graph structured data [1, 2, 3, 6]. Following this, I will discuss how we put the framework to work, with the design of structural indexes for (RDF) graphs [5, 12]. I will also give an overview of our recent results on effectively computing the characterizations on which these index data structures are built [9, 10, 11]. Finally, I will conclude with a discussion of broader applications of the framework in data management and indications for further research.

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2. REFERENCES