

Managing Change in Graph-structured Data Using Description Logics

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Abstract. Graph-structured data, which are receiving increased attention in the database community, are tightly connected to Description Logics (DLs), given that these two formalisms share the underlying interpretation structures. In this talk, we consider the challenging setting of graph-structured data that evolve as a result of update operations adding and deleting facts in the style of action languages, under constraints capturing domain knowledge. We argue that expressive variants of DLs provide indeed quite powerful mechanisms for expressing forms of constraints over graph-structured data, and we draw interesting connections to path-constraints studied in databases. In this setting we discuss two fundamental reasoning tasks, considering both lightweight and expressive variants of DLs: verification, i.e., checking the consistency of a sequence of operations with respect to constraints; and plan existence, i.e., existence of a sequence of operations leading to a goal state. The talk is based on joint work with Shqiponja Ahmetaj, Magdalena Ortiz, and Mantas Simkus.