

An Update on Dynamic Complexity Theory

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Abstract

In many modern data management scenarios, data is subject to frequent changes. In order to avoid costly re-computing query answers from scratch after each small update, one can try to use auxiliary relations that have been computed before. Of course, the auxiliary relations need to be updated dynamically whenever the data changes.

Dynamic complexity theory studies which queries and auxiliary relations can be updated in a highly parallel fashion, that is, by constant-depth circuits or, equivalently, by first-order formulas or the relational algebra. After gently introducing dynamic complexity theory, I will discuss recent results of the area with a focus on the dynamic complexity of the reachability query.

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