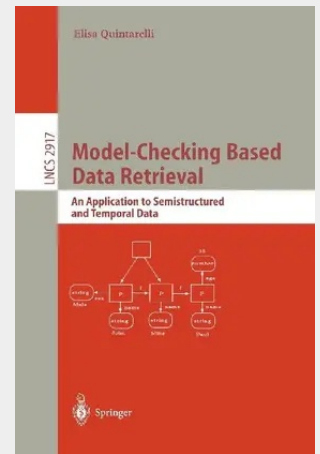


## Model-Checking Based Data Retrieval

This thesis deals with the problems of characterizing the semantics of and assuring efficient execution for database query languages, where the database contains semistructured and time-varying information. This area of technology is of much interest and significance for databases and knowledge bases; it also presents many challenging research problems deserving an in-depth investigation. Thus, the topic of Elisa Quintarelli's dissertation is well chosen and totally appropriate to the current research trends. In her thesis, Elisa addresses a number of related problems. However, her work and contributions concentrate on two main problems. The first is the definition of an effective graph-based approach to the formalization of query languages for semistructured and temporal information. In her approach, query execution is viewed as the process of matching the query graph with the database instance graph; therefore, query execution reduces to searching the database for subgraphs that are similar to the given query graph. The search for such matches can be supported through the computational process of bisimulation. This approach is used to define the semantics of several languages, including graphical languages, such as G-Log and GraphLog, semistructured information languages, such as Lorel, and temporal languages, such as TSS-QL. Both graph-based approaches and bisimulation had been used by previous authors for defining query languages and their semantics; however, this work goes well beyond previous approaches by integrating and refining these techniques into a flexible and powerful paradigm that Elisa demonstrates to be effective on a spectrum of languages and a suite of alternative semantics.

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