Dissertation Defense

Enabling Relational Databases for Effective CSP Solving

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Abstract: Constraint satisfaction problems (CSP) are frequently solved over data residing in relational database systems. In such scenarios, the database is typically just used as a data storage back end. However, there exist important advantages, such as the wide availability of database practices and tools for modeling, to having database systems that are capable of natively modeling and solving CSPs. This research introduces general concepts and techniques to extend a database system with constraint processing capabilities. Topics include relational constraint satisfaction problems (RCSP) and their specification in SQL, compiling RCSP into SAT, supporting multiple solving algorithms, and automated problem decomposition.

Monday, June 6, 2011, 1:00 pm
Mathematics and Science Center: W304

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