Database Research at MCC

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Abstract

The Database Program at MCC has embarked upon a ten year mission to develop the knowledgebase and database technology that will be crucial to the success of "next generation" computing. We start from the position that logic is the language of choice for programming knowledgebase applications, including data manipulation, and progress to a treatment of the underlying technology required to efficiently execute logic in a data-intensive environment (i.e. gigabytes of facts and hundreds or thousands of rules).

Much of the work has been devoted to advanced techniques for compiling logic. The special problems of dealing with recursion, safety, complex objects, sets, negation, updating, etc. are central to the effort as is the hard problem of optimization.

Below the level of compilation we have the execution system which is understood to be a highly parallel database machine whose instruction set is an intermediate level ("procedural") database language. We plan to model and build several such machines as proof-of-concept vehicles and as demonstrations of the potential of technology. Several illustrative applications are under development.

The talk will cover technical strategy, providing an overview of objectives and progress, but not get into technical detail.