Utilising Networked Workstations to Accelerate Database Queries

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The rapid growth in the size of databases and the advances made in Query Languages has resulted in increased SQL query complexity submitted by users, which in turn slows down the speed of information retrieval from the database. The future of high performance database systems lies in parallelism. Commercial vendors´ database systems have introduced solutions but these have proved to be extremely expensive.

The main research in this project considers how network resources such as workstations can be utilised by using Parallel Virtual Machine (PVM) to Optimise Database Query Execution. An investigation and experiments of the scalability of the PVM are conducted. PVM is used to implement parallelism in two separate ways: (i) Remove the work load for deriving and maintaining rules from the data server for Semantic Query Optimisation, therefore clears the way for more widespread use of SQO in databases [1,2]. (ii) Answer users queries by a proposed Parallel Query Algorithm PQA which works over a network of workstations, coupled with a sequential Database Management System DBMS called PostgreSql on the prototype called Expandable Server Architecture ESA [3,4].

Experiments have been conducted to tackle the problems of Parallel and Distributed systems such as task scheduling and load balance.

References

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