Abstract

Database Management Systems deliver higher performance only when they are properly tuned. Database tuning is complicated due to the fact that several conflicting tuning parameters have to be adjusted simultaneously for a variety of workload types and the highly unpredictable traffic patterns. The Database Administrator (DBA) has to be an expert and using his experience and expertise must judiciously decide the extent of tuning of the most important tuning factors so as to ensure the required level of performance in terms of response time and throughput. The process of tuning being complex and to keep the cost of ownership low, it is desirable to build self-tuning database systems. In this paper, a new tuning architecture based on fuzzy logic is presented, where in, the control action is expressed in linguistic terms. In this system the key performance indicators are fuzzified, appropriate fuzzy rules are employed to estimate the extent of tuning required for a few important tuning parameters. After defuzzification, a control action is initiated to scale up the system performance. The experimental results obtained for different workload types and the user load, indicate that it is possible to significantly improve the query response time using this technique.
References

- Wiese, David; Rabinovitch, Gennadi, “Knowledge Management in Autonomic Database Performance Tuning”, 20-25 April 2009.

Index Terms
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Buffer Hit Ratio  Workload  Fuzzy Rules  Tuning  Database Administrator