AN EFFECTIVE SPATIAL QUERY INTEGRITY USING MERKLE HASH TREE

R. G. SAKTHIVELAN & ASHIBA SUNDARAM

Department of Computer Science, Anna University, Mahendra Engineering College, Namakkal, Tamil Nadu, India

ABSTRACT

In Database outsourcing paradigm, the authentication of the query results at the client remains a challenging problem. Existing system focuses on the Outsourced Spatial Database (OSDB) model and propose an efficient scheme, called VN-Auth, which allows a client to verify the correctness and completeness of the result set. This approach is based on neighborhood information derived from the Voronoi diagram of the underlying spatial data set and can handle fundamental spatial query types, such as k nearest neighbor and range queries, as well as more advanced query types like reverse k nearest neighbor, aggregate nearest neighbor, and spatial skyline. In VN-authentication framework system the authentication of the mobile clients usually have low selectivity (i.e., the user is interested in very few results) but require less time to response. If the query selectivity is high it requires more time for a response and it becomes the major difficult in VN-auth.

Hence proposed Merkle Hash Tree (MHT)-based approaches with VN-auth to reduce the time complexity when query selectivity is high. Merkle Hash Tree (MHT)-based approaches with VN-auth is named as VMN-Authentication framework. The Merkle Hash Tree (MHT) tree is constructed and signed by the certification authority and then distributed to untrusted directory services. Entities wishing to verify the validity of a certificate can query such a directory service and have confidence in the correctness of a response by using the returned data to verify the certificate authority's signature. Also it reduces the complexity of the system. In the extreme case where the client retrieves the whole database, the MHT approach would only return the root signature, while VN-Auth would need to return 6.n neighbors, where n is the database cardinality.

KEYWORDS: Query Authentication, Spatial Queries, Outsourced Databases