

---

# Restructuring the SQL Framework for Spatial Queries

---

Bo Huang and Hui Lin

Department of Geography & Joint Laboratory for Geoinformation Science  
The Chinese University of Hong Kong  
Shatin, NT, Hong Kong

---

## Abstract

This paper presents an approach to designing a spatial query language, called GeoSQL, in terms of the conventional spatial query and implementation process. A critical factor to the design is how to accommodate spatial operators in an appropriate form, while being compatible with the Structured Query Language (SQL) standard. To achieve this, the FROM clause of SQL is restructured to contain spatial operators via a subquery so that the results of spatial operations can be easily fed into both the SELECT and WHERE clauses. The subquery in the FROM clause creates an intermediate relation, on which the selection in terms of certain criteria is conducted. This is a distinct characteristic of GeoSQL. The syntax and semantics of GeoSQL are described, and a set of examples for testing the expressiveness of the language is given. The interface of the language is also designed with the introduction of visual constructs (e.g., icons and ListBoxes) to aid the entry of query text. This distinguishes GeoSQL's interface from the previous extended SQLs, which only employ pure text for constructing a query. After this, an implementation of GeoSQL is discussed. This paper finally suggests further extending GeoSQL for temporal and fuzzy queries.

---