EFFICIENT TRAFFIC CRASH AND SNOW COMPLAINT GIS SYSTEM

by

ANTHONY B. NGO

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Anthony B. Ngo, M.S.

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Adviser: Peter Revesz

We describe the design and implementation of a traffic crash and snow complaint GIS system developed for the Lincoln Public Works department. We also describe a novel geocoding algorithm that was used to move data from the older Criminal Justice Information System, which is a relational database, to the new GIS system. In addition, we describe the implementation of several indexing algorithms that enable the system to efficiently answer rectangular range queries and queries about the relative locations of moving objects. Finally, in many applications (on-line analysis or mobile GIS), we need to execute spatial query efficiently (fast and small), and to scan through all the existing complex objects (non-zero extent) might be very slow. Thus, we introduce an approximated indexing method, called ApproximatedR-Tree, for improving performance and space over complex objects.

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