

## Re: Routing algorithm question

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JLB wrote:

> *Just curious.*

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> *Are there any web sites that explain the algorithm the various GPS auto*

> *routing programs use?*

no, this is considered intellectual property for the GPS company.

>

> *I assume it is some sort of least-cost routing algorithm, perhaps similar to*

> *the traveling salesman problem.*

>

> *My basic question is: How do they pick the quickest route*

The entire USA roads are divided into classifications and each classification is assigned a speed value. The number of classifications varies with the database but it isn't a big number, more like 6.

(or shortest)?

Shortest ignores speed classification.

> *Do they include a factor for the number of traffic lights on a route?*

Typically they don't know about traffic lights. There may be some exceptions.

How

> *about the 'normal' amount of traffic?*

Handled by road classifications.

Of course they can not know about

> *unusual traffic (unless you pay the extra \$200 and get a wireless PDA).*

> *What I am talking about is some routes may be quicker in theory, but other*

> *routes (taking a side road around a city instead of going straight through,*

> *for example) may be quicker.*

>

This is a new and very primitive routing application for most systems. Navteq and perhaps others provide some same algorithms but the better units have developed there own. They are not very sophisticated to date. The better ones take too long to compute a solution and most people don't mind recalculating.

One algorithm works similiar to: divide the route into 3 pieces.  
Piece one – Route to a freeway  
Piece two – follow the freeway to the closest point near the destination  
Piece three – route to the destination.

There is lots of room for improvement in the algorithms but the databases are pretty weak and the problem is complicated. Consider no left turns, no left turs from 3 to 6 pm, one way roads, gates across roads (not considered in most databases :-()), barriers in road surfaces blocking turns, right turn only, and many other things. Navteq claims upto 150 attributes are assigned to an intersection but very few programs can take advantage of this much data.

Dale

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