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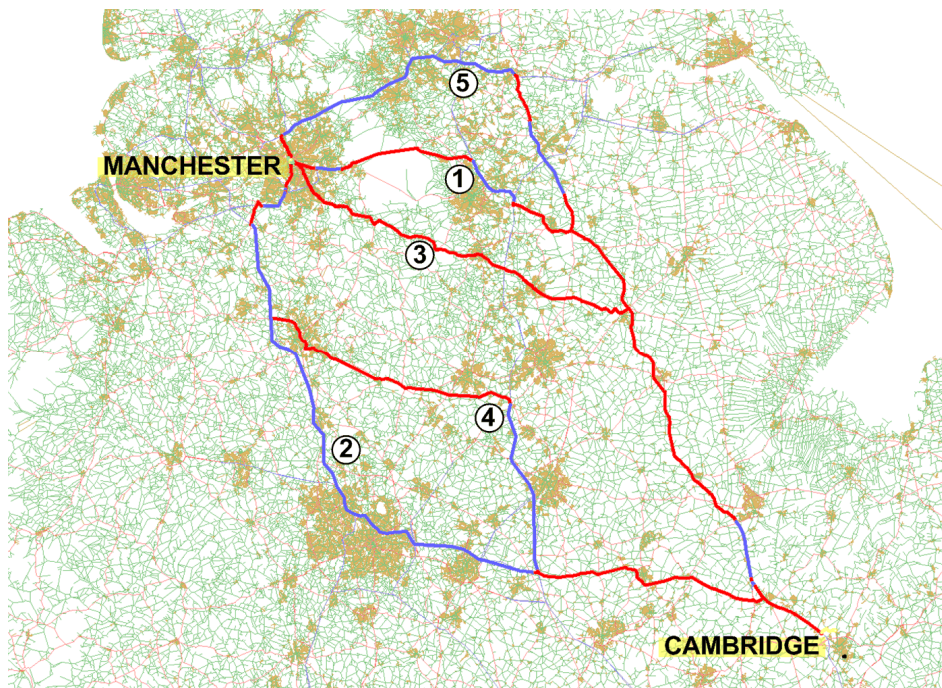
Cambridge Vehicle Information Technology Ltd.

Choice Routing

Abstract:

Camvit has discovered a new mathematical approach to route planning that delivers a set of good diverse routes, rather than just one of them. By presenting these diverse routes to the user of route planning or vehicle guidance software we give them full understanding and control over their final route choice.

The company is seeking partnerships (licensing, contract development and/or consultancy) with car manufacturers and developers of in-car navigation systems to bring the technology to market.



Diverse route choices between Cambridge and Manchester, UK

General Description:

Conventional routers present only the single optimal route to a destination. The confused user is often left wondering why other obviously good route choices (perhaps including the user's favourite) have been ignored. Camvit's Choice Routing can find all the best diverse alternative routes and rank them using a powerful measure of goodness. A well-informed route choice can now be made by the driver.

Cambridge Vehicle Information Technology Limited (www.camvit.com) have developed a technique that works by running a conventional routing engine twice, once for the source of the route, and once for the destination, and then combining the results to compare millions of routing options without significant further computation.

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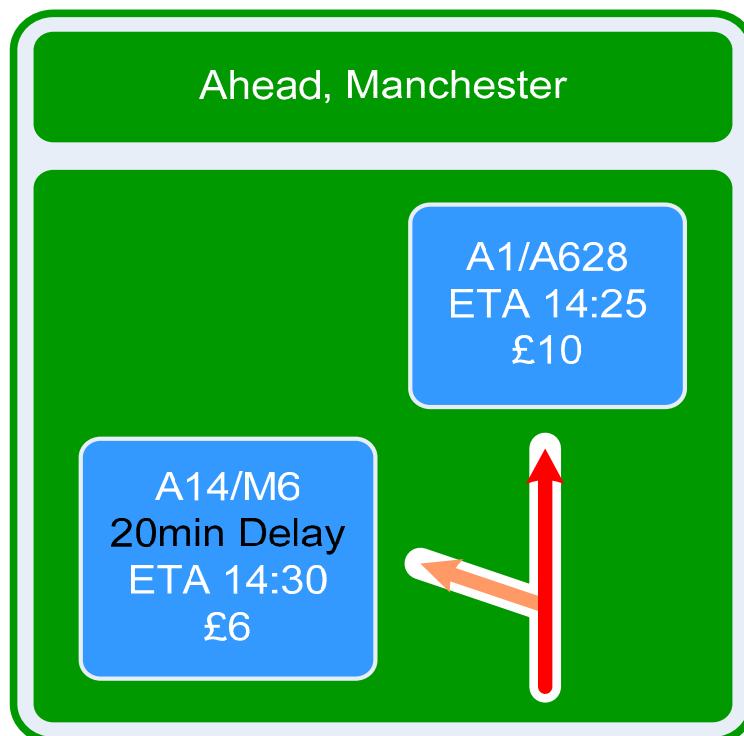
The techniques can utilise whatever roads database and clever routing methods are already in use, so existing investment in these areas is enhanced.

If Road Pricing becomes widespread, the trade-off between financial cost and journey time will become crucial. Only the user knows what expenses are tolerable, or the consequences of running late, so they need to be presented with the pros and cons of each route choice and make this trade-off for themselves.

Two example applications are radical improvements to 1) Route Planning and 2) In-vehicle Route Guidance:

1) **Route Planning** is the task of first recognizing and then comparing the merits of all the best possible routes in order to choose the most suitable one for a given occasion. Camvit's technique completely automates route recognition and comparison leaving the user to make an informed choice between the best possible diverse alternative routes.

2) **In-vehicle Route Guidance** can be improved with Choice Routing by offering a comparison of routes at the occasional "Choice Points" where good alternative routes diverge. A non-intrusive and simple comparison could show a representation of a road sign labeled with the alternative distances, timings, and when road pricing is common, the route costs. Only the driver knows whether he is early or late, and whether he can afford to make up some time by choosing a perhaps less interesting or possibly more expensive route. To make a route choice at a "Choice Point" it would only be necessary to make the required turning, no user interaction with the navigation system need be made.





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Innovative Aspects

To the best of the company's knowledge their technology is the first to automatically generate and compare diverse alternative routes in this way.

Main Advantages

To the Marketing Department: 'Which route do you want to drive today?'
To the Chief Executive: gives the user more control and understanding
To the Finance Director: this is a low cost major differentiator
To the Engineering Department: builds on existing software base
To the Production Department: there are no hardware changes required

Stage of Development:

Lab tested

Market Applications:

In addition to vehicle navigation systems the technology may be applicable to other types of optimisation problems.

Intellectual Property Rights:

GB patents applied for, option on worldwide protection will be kept open by PCT applications in due course.

Collaboration Sought:

License agreement
Technical collaboration
Manufacturing
Commercial

The company is seeking partnerships with Motor Vehicle Manufacturers or Navigation Software Developers for the integration of their patent protected 'technology' into current navigation and route planning systems.



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Company profile:

Cambridge Vehicle Information Technology is a private limited company formed by several research engineers from AT&T Laboratories Cambridge Limited (previously Olivetti Research Limited). Our past projects encompassed most areas of that Laboratory's work since its formation 18 years ago including networking, multimedia and tracking systems.

From this unique standpoint we have developed vehicle navigation technologies which will lead to a new generation of commercial systems. We are keen to pursue some of these ideas in partnership with established companies. Camvit has a long-standing close relationship with Cambridge University Computer Laboratory where both Directors are Visiting Fellows. Recent joint research work includes a Wireless Broadband WAN and consultancy for research into Traffic Flows.

Cambridge Vehicle Information Technology Ltd. was formed from [Cotares Ltd.](#), a Cambridge-based Consulting and Research Company.

A summary of our ideas is found on our website <http://www.camvit.com>, where the pdf brochure can also be downloaded in English, German, French and Japanese.



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