

The eco-race to beat congestion

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Want to combat congestion? Then eco-race your way to the Cube.

QUT and Japan's National Institute of Informatics (NII) have launched an eco-friendly car racing game on QUT's award-winning interactive digital display space - and the competition results will inform real research projects.

In iCO₂, the winner is not the first over the line but the person who travels the furthest on a tank of fuel.

Welcome to eco-driving, where moderation rules.

"Eco-driving in non-congested situations is great for the environment because you use less fuel and therefore create less [carbon emissions](#)," said Dr Marc Miska, traffic engineer with the Smart Transport Research Centre based at QUT.

"It involves common-sense things like accelerating more slowly, avoiding hard breaking and timing your approach to traffic lights so that you can stay above 5 km/h as much as possible."

Researchers like Dr Miska predict more people will drive in an eco-friendly manner as oil becomes scarcer and fuel becomes more expensive.

iCO₂ is designed to test what active decisions people make to conserve more and more fuel.

The game is a sophisticated 3D model of part of Tokyo's road network, where drivers must interact with each other as well as the digital landscape.

Professor Helmut Prendinger, a 3D-internet expert with NII, built iCO2 using QUT's traffic expertise.

"Traditional driving simulators don't generally give accurate data about the cognitive decisions average people make because these environments can be intimidating and so users tend to be on their best behaviour," Professor Prendinger said.

"Creating a game environment and placing it in a public space like the Cube is far more relaxing for participants and they are far more likely to behave in a realistic manner.

"iCO2 is unique in that it allows multiple users to share the same space and be aware of each other, which encourages social behaviours such as competition and collaboration.

"So from the user's perspective it's fun - and from the researcher's perspective it generates accurate data."

QUT transport researchers will use the data to design traffic infrastructure geared for a population of eco-drivers.

Dr Miska said wide-spread eco-driving would cause major congestion on our existing road infrastructure because the traffic would take longer to pass through the road network.

But once researchers understand exactly how people behave as eco-drivers they can design new or adapt existing traffic infrastructure to cater for this new driving style.

"For example, a vehicle is at its most inefficient at traffic lights when it slows to an idle or speeds up from an idle," he said.

"Many existing traffic lights only trigger when a vehicle stops on a sensor plate in the road - not a particularly eco-friendly practice.

"But if there are too many drivers on the road conserving their fuel by creeping up to each set of traffic lights, the lights won't allow an optimal amount of vehicles to pass through the intersection and traffic will bank up.

"It is important we collect data on eco-driving behaviour now so that we can design and deliver the infrastructure that best eliminates potential future congestion issues."

Science, technology, engineering and mathematics (STEM) student groups visiting the Cube will also use iCO2 to enhance their statistics studies, playing the game and analysing their driving data.

"By detecting patterns and comparing data on things like distance, speed, RPM, fuel usage and gas emissions, the students won't just be tackling advanced statistics - they'll also better understand their own driver behaviours," Professor Prendinger said.

"We're raising the next generation of eco-safe drivers."

iCO2 is a long-term addition to the Cube's rolling schedule of programs.

Researchers are seeking players of all ages, whether they have a driver licence or not.

More information: www.thecube.qut.edu.au/projects/ico2.php

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