Electric bikes that also plug you in socially

A bicycle isn't exactly the most glamorous form of transport, but run a low-profile associate professor Ian McLooughlin, and he is soon living large.

As pictures of different models go flashing across his laptop, he tells off their names - Sonny Stellop, Voltaire and so on - like an affectionate father.

He steps on the pedals. "This is the Strompor, a folding bicycle. We can take it on the bus or the MRT and we've fitted it with a tiny 150-watt motor on the front wheel."

The researcher at the School of Computer Engineering at Nanyang Technological University (NTU) continues: "With this, you can go up any 'mountain' on this campus."

Prof McLooughlin, 42, is spearheading a research team of five students that has spent the past six months working on the best ways to "electric" normal bicycles.

The project has the support of the Energy Research Institute at NTU (ERI@N). Started last year, ERI@N's research areas include wind and marine renewable energy, fuel cells, energy storage, green and smart buildings, and electric-mobility.

"The idea is to get people out of cars and shuttle buses. There are probably 2,000 people who live on campus and drive on campus. I want to get a proportion of them on bicycles," says Prof McLooughlin.

"I like to get the idea of personal transport across: to get people off petrol and diesel-driven vehicles to clean electric ones."

The research team has tested products from five battery companies, seven bike manufacturers, four motor producers, and four firms that make motor controllers.

"I don't think there is any outfit that has tried such a great variety of combinations of things, from using different pedal sensors and controllers, to putting motors in the front, back and middle," he says, adding that the team hopes to fit each bike with a specially designed Android touch-screen computer with GPS, wireless and other features.

"We used foldable and non-foldable bikes, those with big wheels and small wheels, and different types of battery technologies."

Their project kicks off in earnest this month when the team unleash 20 of the bikes on campus. Two groups - environmental outfit Karklink and the Institute of Engineering Technology - have volunteered their members to test ride the bikes.

The bikes will be pooled at charging stations on campus. Once a student is registered, he can tap his ez-link card against a bike's touch screen to release it.

The team hopes to have two such stations in NTU by the end of the year, and Prof McLooughlin adds that the team is working on a website where people can reserve a bike.

The bikes can be tracked through wireless links to a central computer, while the GPS feature on the handlebars will tell students exactly where they are on campus.

"When you are going to a lecture, the system will also tell you where to go, how fast you need to pedal if you are late, where to park, where the car parks are, and if your friend is in the car park."

He hopes that the addition of social networking features will make the bikes cool with the students.

"I've been told by my colleagues that I was cut out to use the modem student. So we found out what students like and tried to deliver a bike which looks good, is cool to ride, affordable social interaction and other possibilities like playing games."

He and his team are also exploring other ways to make the bicycles safer and more intelligent.

"Instead of flashing a warning when turning a blind corner, we could have the bike reduce its speed. If you wanted a weaving, you could press a button and the bicycle would tell you how much harder you need to pedal and how many kilocycles you have left."

There are several objectives to the exercise. One is to deliver a moderate-to-Singapore solution.

"A patent in computer technology is something we can do and nobody else has done. You can buy an electric bike from China but you can't get a smart computer on it."

The other is to offer a viable option for electric-mobility in Singapore.

"In Singapore, owning a car is expensive: your COE, insurance, tax, driving licence and parking cost so much money. And electric cars are expensive too," notes Prof McLooughlin.

An electric bike is a lot more affordable. "We can have a lot of electric bikes on the road, especially with the Government building so many bicycle lanes."

WONG KEN HONG