

The Technology Transformers

January 29 2008

A revolutionary new technology developed by engineers at the University of Leicester after over 12 years research promises to make safety a sure thing in equipment as diverse as cars, aircraft and medical equipment.

The new patented technology invented by the researchers has led to the development of a new product family called “RapidiTty”. A company – TTE Systems Ltd - has been spun out from the University of Leicester to develop and market this product.

TTE Systems Ltd aims to transform the way engineers develop systems which contain “embedded processors”. Aircraft, cars, medical equipment and industrial robots are all examples of modern systems which contain such processors. Many of these embedded systems are safety related.

The company believes its new technology can make all the difference between life and death in some scenarios.

Dr. Devaraj Ayavoo, Technical Manager, TTE Systems Ltd, said: “If you are surfing the Web and it takes a few seconds longer than normal to access a particular page, this won’t usually matter at all. However, if you put your foot on the brakes in your car, you can’t afford to wait – you need to be sure that the brakes will work immediately. At TTE Systems, our job is to ensure that complex embedded systems always work correctly.”

Dr. Michael Pont, CEO of TTE Systems Ltd and Head of the Embedded

Systems Laboratory at the University of Leicester, added: “Clearly there are many systems currently in use that are perfectly safe.

“However what is not easy at present is making systems safe and proving that they are safe. Our technology makes it easier to develop systems with predictable behaviour - a key requirement for safe systems.

“In an industry that is geared at developing new systems very quickly, the development of predicable systems has often been ignored and it is in this area that we have specialised.

“Our work involves what are known as “time triggered” – or TT - designs. The goal with this technology can be stated very simply: In a TT design, we know in advance exactly what the embedded system will be doing at every moment of time during its execution.

“This is a highly innovative approach to system development.

“Our techniques can be applied in a very wide range of systems - even where safety is not a key requirement. For example, in many consumer appliances – like washing machines, dishwashers, even DVD players – customers would welcome improved reliability.”

TTE Systems Ltd, created with support from the Lachesis Fund (the University Challenge Fund for the East Midlands), has launched the first products in the RapidITTy family. The RapidITTy family provides a complete, cost-effective, suite of software tools which support the rapid development and testing of a wide range of reliable embedded systems. The RapidITTy tools build on a solid technical foundation (“time-triggered architectures”). These were developed in the Embedded Systems Laboratory at the University of Leicester over a period of more than 12 years. Staff in the Laboratory have an international reputation for their work in this area. To date, seven patent applications have been

filed in connection with this new technology.

Dr Pont said there was real potential for the systems developed at Leicester to make an international impact: “Our tools make it very easy to incorporate our technology in "standard" development processes.

“Using time-triggered technology allows us to create low-cost tools which facilitate the rapid development of reliable embedded systems. Our goal is to make reliability a cornerstone of mainstream development tools.”

Dr. Ayavoo added: “The design of embedded systems is often an extremely complicated process. Our users have been amazed how easy RapidITTy is to use.”

Source: University of Leicester

Citation: The Technology Transformers (2008, January 29) retrieved 2 May 2024 from <https://phys.org/news/2008-01-technology.html>

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