

PRESS RELEASE

Belgian researchers from University of Antwerp develop new mini supercomputer

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Is it possible to build a supercomputer within the case of a single PC? Researchers of the University of Antwerp in Belgium have developed a unique PC that performs their scientific calculations as fast as a cluster composed of hundreds of PC's. With a processing capacity of 12 trillion operations per second, the FASTRA II is currently the most powerful desktop supercomputer worldwide.

In their quest for innovative three-dimensional image reconstruction techniques, the researchers of the Antwerp research group IBBT-VisionLab-UA often struggled with the required computation capacity. For their extensive scientific computations, each researcher should have a supercomputer at his disposal; by no means feasible, realizing that each supercomputer costs millions of euros.

But why exactly do they need so much computer power? The Vision Lab is specialized in the development of novel processing methods for tomography. Tomography is a technique that is used in medical scanners to compute three-dimensional images of the patient, based on a large number of X-ray photos acquired from a range of angles. Since such images can be huge, advanced image reconstruction techniques require several weeks of computation time on a normal PC. The computations, however, can be executed in parallel, for example on a cluster of hundreds of PCs.

In the past years, researchers in various fields have moved to graphics cards to program their scientific computations, cards that were originally developed for 3D games. Because a graphics processor (GPU) can execute many computations simultaneously, the total computation time can be reduced significantly compared to traditional processors (CPUs).

In 2008, the Antwerp scientists built a "desktop supercomputer", the FASTRA. That PC contained eight GPUs, which resulted in a computation power of four trillion operations per second (TFLOPS). This system has been copied by various prestigious research institutes and has been used for a wide range of computation tasks. The new system, the FASTRA II, significantly improves upon the FASTRA I. With no less than 13 GPUs and a computation capacity of 12 TFLOPS, this new system is by far the most powerful desktop PC worldwide.

With the FASTRA II, which was developed in collaboration with the Belgian computer shop Tones and hardware manufacturer ASUS, images can be constructed in the same time as the FASTRA I, but with much higher resolution. Compared to traditional supercomputer clusters, this system requires 100x less energy, it can be transported under your arm, and it costs less than 6000 euro.

Interested to know more about the FASTRA II desktop supercomputer? See <http://fastra2.ua.ac.be> for more information.

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About IBBT-Vision Lab-UA

The Vision Lab is a research lab that is part of the department of Physics of the University of Antwerp in Belgium. The research domain of Vision Lab is digital image processing and pattern recognition, with a strong emphasis on biomedical imaging, statistical techniques, and multiresolution techniques. In particular, Vision Lab has strong expertise in MRI/CT and remote sensing image processing.

More information: <http://visielab.ua.ac.be/>**Contact IBBT**

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IBBT (Interdisciplinary Institute for Broadband Technology) is an independent research institute founded by the Flemish government to stimulate ICT innovation. The IBBT team offers companies and organizations active support in research and development. It brings together companies, authorities, and non-profit organizations to join forces on research projects. Both technical and non-technical issues are addressed within each of these projects.