VUB - 2 million euros for building blocks holographic television

Vrije Universiteit Brussel

EU grant for top research VUB professor

Prof. Dr. Peter Schelkens of the Vrije Universiteit Brussel has received substantial funding from the European Research Council for his research on holographic imaging. Peter Schelkens wants to develop new digital signal representations for holographic television with this funding. This starting grant is provided by the European Research Council (ERC) of the European Union.

The image processing research at the IRIS research team, belonging to the Department of Electronics and Informatics Department (ETRO), has a solid reputation in the domain of image and video compression algorithms. Several technologies developed by IRIS were incorporated into the international JPEG and MPEG standards. IRIS is now focusing its research on holographic imaging.

Since the invention of holography in 1948, researchers are attempting to realize realistic 3D projections. Recent developments in photonics, microelectronics and computer engineering offer the prospect that this will soon be feasible. Probably holographic television with acceptable visual quality will be possible within the next decade.

But in order to generate and process these 3D images we require massive supercomputers given current technologies. Moreover, this data will have to be distributed over networks.

In order to reduce these bottlenecks, Peter Schelkens wants to develop a formula that will reduce the amount of data to be handled. For this purpose efficient data representations will be examined which originate from the wavelet theory formulated by world-renowned mathematician and VUB alumnus Ingrid Daubechies. Wavelets are incredibly powerful mathematical tools for analyzing and compactly describing signals. Because they operate similarly to the way our brains processes visual signals, wavelets are hugely popular in digital image processing.

Moreover, holographic coding architectures will be designed that will address the bandwidth issues in this project. Additionally, improved models of the human visual system will be developed which will allow to minimize the impact of reconstruction errors during the visualization of the holographic content.
Schelkens' research should not only have a significant impact on the further developments in holographic television, but also seeding new applications in the fields of medical imaging, biophotonics, life sciences and telecommunications.

The European Research Council (ERC)

The European Research Council (ERC) of the European Union is the first pan-European funding organization for frontier research. Its goal is to stimulate scientific excellence in Europe and to support the very best and most creative researchers. In addition to the ERC Consolidator Grant for independent and outstanding scientists, which was awarded to Peter Schelkens, it also allocates two other types of financing. One for young promising researchers ("ERC Starting Grants"), and one for senior research leaders ("ERC Advanced Grants"). ■