AUTOMATION & CONTROL INSTITUTE
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Einladung zum Vortrag

Biologically-inspired Dynamic Vision for Real-time 360° Panoramic Views

von

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ABSTRACT

State-of-the-art computer vision is narrowed into processing sequences of digital intensity images, which are synchronously produced by conventional cameras, leading to highly redundant image data and inefficient processing. Biology taught us that biological visual sensing is only sensitive to photometric changes and is asynchronously producing events in continuous time. With high spatial and temporal redundancy reduction, the biologically information processing system is very efficient. There exists a set of event-driven vision sensors duplicating the biological visual sensing like e.g. the dynamic vision sensor, which asynchronously and sparsely generates visual data in a spatiotemporal representation. These sensors have three main key strengths: ultra high temporal resolution, wide dynamic range and compressed data volume. Several works were originated from AIT dealing with design and application of several sensor prototypes. In this talk, I will present several results from my own research and will be divided into two parts. In the first part of my talk, I will show the event-driven stereo vision concept and applications as well as the high-speed computer vision based on two dynamic sensor prototypes. In the second part, I will show my on-going research in tackling real-time 360° panoramic vision using a rotating dual line dynamic vision sensor at high speed as well as its impact on future applications.

BIOGRAPHICAL INFORMATION

Ahmed Nabil Belbachir, Senior Scientist at AIT Austrian Institute of Technology was awarded a Ph.D. in computer science from Vienna University of Technology in 2005. His specialized professional competence includes biologically-inspired event-driven vision, 3D vision and smart cameras with a special focus on system and method design. Previously, he was involved in the ESA-Herschel project, where he was responsible for the Austrian contribution in the development of the compression software to PACS instrument from the European Space Agency. He is also coordinating the European project “CARE” on Ambient Assisted Living and activing as principal investigator in two other European projects. His research interests include computer vision, signal/image processing, computational intelligence and compression and where he has published more than 70 scientific publications including two books: smart cameras as editor (in English 2009, in Chinese 2011) and on-board processing for infrared observatories as author in 2008. He is member of the IEEE, IAPR and EURASIP and the general chair of the IEEE Embedded Computer Vision Workshop of 2010, 2011 and 2012. He holds 4 patents

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