Real-Time Imaging **4,** 1 (1998)

Guest Editorial: Special Issue on Computer Vision Motion Analysis

Computer vision motion analysis is becoming relevant for a growing number of applications. Most of these applications require real-time performance: video compression, autonomous navigation of vehicles, hand gesture analysis, human body analysis, etc. Thus, motion analysis can be considered as a transversal technique adopted in building multimedia, industrial, and virtual reality applications. Moreover, motion analysis is a general term which also includes low-level techniques for motion estimation, moving object detection, object tracking, etc. Always, motion analysis means acting in aspatio-temporal domain and, thus, on image sequences with the corresponding amount of information to be processed. This fact, and real-time constraints imposed by applications, frequently leads to the need to build specific hardware architectures.

This special issue presents an interesting mixture of papers proposing low-level techniques, applications and some experiences on dedicated hardware and architectures. It is comprised of two parts: the first part, published in *Real-Time Imaging*, Volume 3, Number 2, mainly focussed on motion estimation techniques. This second part presents a collection of applications and theoretical results, and includes the following:

Daniilidis *et al*. report their experience in designing and implementing a system for tracking moving objects by means of a controlled image acquisition platform.

In '*ASSET-2: Real-Time Motion Segmentation and Object Tracking*', Smith presents a system for detecting, segmenting and tracking moving objects in real time. The approach proposed is particularly suitable when a moving background is present, such as on autonomous vehicles.

Caplier *et al*. present some hardware solutions for a Markov Random Field-based algorithm for motion detection – i.e. an SIMD machine, a DSP-based board and a resistive network.

Sanchiz *et al*. propose an application consisting of an automatic vehicle for travelling up fields in which small plants must be treated by spraying products.

Accame *et al*. propose a motion estimation technique for video coding which produces an adaptive density of velocity vectors.

Jung addresses the problem of simulation of hierarchically articulated bodies in real-time, interesting for real-time applications of virtual reality and animation in general.

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1077-2014/98/010001 + 01 $25.00/ri970121