Cooperative Design Space Exploration and Run-Time Resource Management for Application Adaptivity on Multi-Core Platforms: A Networked Video Surveillance Use Case

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Abstract

The use case implements a networked system for video surveillance. The system receives encoded video streams from network cameras and intelligently reconfigures itself to preserve QoS under workload fluctuations. It combines two parallel SVC (Scalable Video Coding, an extension of the H.264 standard) decoders, for decoding the input video streams, and an OpenCL image stereo-matching application, for estimation of object distance.

The proposed approach enables the design of a system capable of adapting itself according to application-specific QoS requirements and runtime resource availability, in the presence of unpredictable workloads or hardware critical events, such as thermal hotspots and failures.
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