From AVC Decoder to SVC: Minor Impact on a Dataflow Graph Description

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Abstract : The Joint Video Team (JVT) of the ITU–T Video Coding Experts Group (VCEG) and the ISO/IEC Moving Picture Experts Group (MPEG) has standardized a scalable video coding (SVC) extension of the H.264/AVC standard. Thanks to SVC, it is possible to partially transmit or decode a video bitstream resulting in various video qualities (spatial, temporal or reduced fidelity). Within our lab, the aim is to develop an SVC decoder that is easily reconfigurable for different computing architectures such as mono or multiprocessors. Our dataflow methodology enables such rapid prototyping and facilitates the extension from AVC to SVC. The MPEG Reconfigurable Video Coding (RVC) project uses the same kind of dataflow description to unify MPEG codecs in a single reconfigurable decoder. In this paper, ways to reuse AVC dataflow blocks are investigated while developing an SVC decoder such as in RVC. Necessary memory extensions and enhancement layer decoding optimisations are described as well as experimental results. Rapid prototyping on several architectures shows that the impacts of SVC extension are quite limited. Furthermore, both processing time and memory consumption remain reasonable.