Rate Control for Spatial Scalable Coding in SVC

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Abstract: In this paper, we present a new rate control scheme for spatial and coarse–grain–SNR (CGS) scalable coding in SVC. Firstly, a rate–distortion (R–D) model is provided for I/P/B frames according to mode analysis. Secondly, an efficient hierarchical bit allocation and two–pass refinement of quantization parameter (QP) are proposed. Thirdly, a standard deviation prediction between inter layers is presented. The experiments show that the proposed rate control scheme can achieve an average PSNR improvement of 0.3–0.7dB on average in terms of PSNR against the anchor scheme using hierarchical B frame coding with fixed QP. Meanwhile, the mismatch between target bit rate and real coded bit rate does not exceed 2%.