FAST LONG–TERM MOTION ESTIMATION FOR HIGH DEFINITION VIDEO SEQUENCES BASED ON SPATIO–TEMPORAL TUBES AND USING THE NELDER–MEAD SIMPLEX ALGORITHM

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Abstract : Multi–frame motion estimation is a new specificity of the video coding standard H.264/MPEG–4 Advanced Video Coding (AVC) to improve compression performances. These reference frames can be short or long–term. However, a long–term motion estimation needs to have a good initial search point to be effective. In this paper, we propose a new method for a fast long–term motion estimation with high definition (HD) sequences. We use an implicit motion model. First we describe the multi–resolution motion estimation based on spatio–temporal tubes. These tubes permits to obtain a good initial search point for the long–term motion estimation that follows. Then, the search is refined using the Nelder–Mead Simplex method. The global approach allows to reduce computational cost and improves the accuracy of motion estimation.