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ABSTRACT

A system and methods for processing a stream of video image data so as to create a video representation that multiplexes data corresponding to resolution or bitstream scales. This representation is such that the identity of the basic MacroBlock (MB) structure of the MPEG-1 ISO standard is preserved across all resolution and bitstream scales, e.g., by scaling across four levels of resolution. An MB is associated with a series of attributes which contribute to the amount of overhead data incorporated in an MPEG-1 compressed data stream, so that by preserving the MB identity across multiple resolutions and bitstream scales, these scales can share this overhead, thus requiring it to be included only once in the data stream. Preserving the MB identity also simplifies significantly the derivation of motion estimation vector data for all resolution scales other than the highest resolution. Essentially the motion vector data corresponding to any resolution scale can be derived from the highest resolution motion vector data by appropriately scaling it down.

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