that a user has to wait when trying to access an arbitrary point is currently in strict trade off with compression efficiency. An example of this phenomenon is the GOP constraint in MPEG family methods: in order to allow for minimum time delay and for random access along time, a GOP of one sample (i.e., intra-only encoding) must be used.

Lastly, current methods are unsuitable for very high sample rates (e.g., very high frame rates for video signals), due to the amount of computational power and bandwidth that would be required. Several studies, for instance, demonstrated that all humans can easily appreciate quality differences of video signals up to 300 frames per second, but computational and bandwidth constraints currently make it extremely expensive to encode and transmit high quality video signals at more than 25-60 frames per second.

BRIEF DESCRIPTION

According to a first aspect of the present invention, there is provided a method comprising: receiving image data specifying element settings for each image of multiple original images in a sequence; analyzing the element settings across the multiple original images; and utilizing the element settings of the multiple original images in the sequence to produce first encoded image data specifying a set of common image element settings, the set of common image element settings being a baseline to substantially reproduce each of the original images in the sequence.

According to a second aspect of the present invention, there is provided a method of encoding image data comprising: receiving a sequence of images; obtaining settings for each of the images; blending the settings across the sequence of images to produce a single image ("predictor image") that is representative of the sequence of images; and for each given image in the sequence of images, producing data corresponding to image processing operations and adjustments ("residuals") specifying how to reconstruct, based on the predictor image, a rendition of the given image.

According to a third aspect of the present invention, there is provided a method to substantially reproduce a sequence of multiple original images, the method comprising: receiving first encoded image data derived from multiple original images in a sequence, the first encoded image data specifying a set of common image element settings to be used as a baseline for reproducing each of the multiple original images in the sequence; receiving second encoded image data specifying adjustments; and substantially reproducing the multiple original images in the sequence based on application of the adjustments to preliminary renditions of the original images reconstructed based at least in part on the set of common image elements.

According to a fourth aspect of the present invention, there is provided a method of decoding image data comprising: receiving first predictor image data derived from encoding a first grouping of images in a sequence; receiving second predictor image data derived from encoding

a second grouping of images in the sequence, the first grouping of image disposed adjacent to the second grouping of images in the sequence; and utilizing a combination of the first predictor image data and the second predictor image data to reconstruct a rendition of the first grouping of images in the sequence.

According to a fifth aspect of the present invention, there is provided computer-readable storage hardware having instructions stored thereon, the instructions, when carried out by a processing device, causing the processing device to perform operations of: receiving first encoded image data, the first encoded image data specifying a set of common image element settings to be used as a baseline for reproducing each of multiple original images in a sequence; receiving second encoded image data specifying adjustments; and substantially reproducing the multiple original images in the sequence based on application of the adjustments to preliminary renditions of the original images reconstructed based at least in part on the set of common image elements.

According to a sixth aspect of the present invention, there is provided computer-readable storage hardware having instructions stored thereon, the instructions, when carried out by a processing device, causing the processing device to perform operations of: receiving first predictor image data derived from encoding a first grouping of images in a sequence; receiving second predictor image data derived from encoding a second grouping of images in the sequence, the first grouping of image disposed adjacent to the second grouping of images in the sequence; and utilizing a combination of the first predictor image data and the second predictor image data to reconstruct a rendition of the first grouping of images in the sequence.

According to a seventh aspect of the present invention, there is provided a device comprising: a processor; a memory unit that stores instructions associated with an application executed by the processor; and an interconnect coupling the processor and the memory unit, enabling the device to execute the application and perform operations of: receiving first encoded image data, the first encoded image data specifying a set of common image element settings to be used as a baseline for reproducing each of multiple original images in a sequence; receiving second encoded image data specifying adjustments; and substantially reproducing the multiple original images in the sequence based on application of the adjustments to preliminary renditions of the original images reconstructed based at least in part on the set of common image elements.

According to an eighth aspect of the present invention, there is provided a device comprising: a processor; a memory unit that stores instructions associated with an application executed by the processor; and an interconnect coupling the processor and the memory unit, enabling the device to execute the application and perform operations of: receiving first image data derived from encoding a first grouping of images in a sequence; receiving second image data derived from encoding a second grouping of images in the sequence, the first grouping of image disposed adjacent to the second grouping of images in the sequence; and utilizing a combination of the first image data and the second image data to reconstruct a rendition of the first grouping of images in the sequence.

Certain embodiments herein focus on improvements in techniques for encoding, transmitting and decoding residual data related to multiple samples of a signal, especially along dimensions of significant correlation for the signal.

According to one non-limiting example embodiment, a method includes encoding and reconstructing multiple sets of residual data based on a so-called support buffer (e.g., without limitation, a set of support elements). Some non-limiting embodiments also implement the method by generating a tiered hierarchy of support buffers. This method comprises an encoding step - during which sets of residual data are processed, generating support element information and relative residual data - and a decoding step, during which support element information is processed to generate predictions for residual data, which, combined with relative residual data, allow reconstruction of residual data.

Particular attention will be given to non-limiting embodiments in which said methods are used within the encoding and decoding loop of tiered hierarchical encoding methods, wherein a signal is encoded in a tiered hierarchy of samples that comprises two or more tiers, and wherein each of the tiers has a distinct level of quality (e.g., corresponding to the level of fidelity of the signal rendition). Such methods comprise a decoding step during which samples at a given level of quality are computed through reconstruction operations by starting from the samples of the tier that has the lowest level of quality. Embodiments