

# Abstract

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## **A quadtree-based image encoding scheme for real-time communication**

We introduce a new scalable image encoding technique which is geared to support image communication over unreliable channels. The new technique is based on the quadtree representation of images and vector quantization. We use a mean-removal technique to separate the means image and the difference image. The difference image is then encoded as a breadth first traversal of the quadtree corresponding to the image. Vector quantization is then used to compress the quadtree nodes based on the spatial locality of the quadtree data. The number of bits allocated to each node varies in each level according to its priority. We prove that this encoding is time-efficient to generate. We also show its ability to tolerate error and to conceal it. Moreover, we test our encoding technique according to its ability to scale down gracefully. The new encoding technique proved to perform well in all aspects