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A Unified Framework for Image Set Compression

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Abstract - while the compression of individual images have been studied extensively, there have been fewer studies on the problem of compressing image sets. A number of schemes have been proposed to compress an image set by taking advantage of the inter-image redundancy between pairs of images. In this paper, we present a unified graph-theoretic framework that includes all such previous schemes. A minimum spanning tree gives the optimal compression method for lossless compression. We also show that while this framework does not necessarily give the optimal compression scheme for loss compression, We can provide performance guarantees relative to the optimal scheme. Our experiments show that the new minimum spanning tree method performs better than the previous schemes, especially when the image sets are not well suited for any of the previously proposed schemes.