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Review on Medical Image Compression

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Abstract: *In today's digital era, the demand for digital medical images is rapidly increasing. Hospitals are transitioning to filmless imaging systems, emphasizing the need for efficient storage and seamless transmission of medical images. To meet these requirements, medical image compression becomes essential. However, medical image compression typically necessitates lossless compression techniques to preserve the diagnostic quality and integrity of the images. There are several challenges associated with medical image compression and management. Firstly, medical image management and image data mining involve organizing and accessing large volumes of medical images efficiently for clinical and research purposes. Secondly, bioimaging, which encompasses various imaging modalities like microscopy and molecular imaging, presents specific requirements and challenges for compression algorithms. Thirdly, virtual reality technologies are increasingly utilized in medical visualizations, demanding efficient compression methods to handle the high resolution and immersive nature of VR medical imaging data. Lastly, neuro imaging deals with complex brain imaging data, requiring specialized compression techniques tailored to the unique characteristics of these images. As the amount of medical image data continues to grow, image processing and visualization algorithms have to be adapted to handle the increased workload. Researchers and developers have been working on various compression algorithms to address these challenges and optimize medical image compression. This review paper compares different compression algorithms that would provide valuable insights into the strengths, limitations, and performance metrics of various techniques. It would assist researchers, clinicians, and imaging professionals in selecting the most suitable compression algorithm for their specific needs, considering factors such as compression ratio, computational complexity, and image quality preservation. By comprehensively comparing compression algorithms, this review paper contributes to advancing the field of medical image compression, facilitating efficient image storage, transmission, and analysis in healthcare settings.*

Keywords: Medical image compression, lossy compression, lossless compression, hybrid compression, ROI

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