Machine Learning-Driven Advances in Video Encoding and Compression

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Abstract

Machine learning-powered video encoders are redefining the way video data is compressed and transmitted by using sophisticated algorithms that surpass the efficiency of conventional techniques. This study delves into the contributions of machine learning models, including convolutional neural networks (CNNs), recurrent neural networks (RNNs), and transformers, in analyzing spatial and temporal features of video frames. These models enable highly efficient compression methods while maintaining superior visual quality. Through a comprehensive review of literature from prominent databases such as Springer Link, ScienceDirect, Scopus, IEEE Digital Library, and Web of Science, this paper identifies significant advancements and trends within this field.

Keywords - Machine learning-powered video encoders, Video transmission, Convolutional neural networks (CNNs), Video compression, Recurrent neural networks (RNNs)

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