

Enhancing HEVC spatial prediction by context-based learning

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Abstract :

Deep generative models have been recently employed to compress images, image residuals or to predict image regions. Based on the observation that state-of-the-art spatial prediction is highly optimized from a rate-distortion point of view, in this work we study how learning-based approaches might be used to further enhance this prediction. To this end, we propose an encoder-decoder convolutional network able to reduce the energy of the residuals of HEVC intra prediction, by leveraging the available context of previously decoded neighboring blocks. The proposed context-based prediction enhancement (CBPE) scheme enables to reduce the mean square error of HEVC prediction by 25% on average, without any additional signalling cost in the bitstream.

Mini Bio :

Li WANG received the Bachelor's degree in opto-electronique from Huazhong University of Science and Technology, China, in 2012, the Master's degree in Automatique, Traitement of Signal and Image from University Paris Sud, France, in 2014, and the PhD degree in 3D X-ray CT reconstruction by Bayesian method from University Paris Sud, 2017. She is currently a post-doc working on video compression by neural networks. Her main research interests are video compression, image processing, deep neural network and Bayesian method.