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Adaptive Wiener-turbo systems with JPEG & bit plane compressions in image transmission

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Abstract: In recent years, for transmission of 2D colored images over the fading channels, a new scheme has been denoted as ``adaptive Wiener-turbo systems with JPEG & bit plane compressions'' (AW-TSwJBC). In this paper, the performance of AW-TSwJBC is introduced over Rician and Rayleigh fading channels. We benefited from the neighborhood relation of pixels for each color plane by using a new iterative block, the ``adaptive Wiener-turbo'' scheme, which employs a turbo decoder, JPEG encoder/decoders, and adaptive Wiener filtering. In our approach, we could also alter compression ratios due to the importance of the image to be transferred. Based on the simulation results obtained in this study, AW-TSwJBC can recover high quality JPEG and bit plane compression images from the corresponding corrupted JPEG images at high SNR values for Rician ($K = 10$ dB) and Rayleigh channels. This shows the feasibility of the AW-TSwJBC approach.

Key Words: Color and bit plane slicing, fading channels, JPEG, image compression, image transmission, turbo coding

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