Abstract

In recent days, the introduction of third component in conventional turbo codes proved to be effective in improving the code performance. In such third component enabled turbo codes, the parameters such as permeability and permittivity rates seems to be very static and so such codes cannot perform under different noisy environments. In this paper, an adaptive third component turbo code (A3D-TC) is proposed to solve the aforesaid drawbacks. In A3D-TC, the third component parameters are made adaptive. This is accomplished by generating a GA-based knowledge source and feeding it to feed forward neural network. The network outputs third component parameters according to the noise and signal strengths so that bit error rate at decoding section can be minimized in an effective way. Extensive experimental results prove the performance of A3D-TC over the conventional 3D-TC under various noisy environments.

References

- Farhan Aadil, Shahzada Khayyam Nisar, Wajahat Abbas and Asim Shahzad, "Reusable IP core for Forward Error Correcting Codes", International Journal of
The A3D-TC: An Adaptive Approach for Selecting Third Component Parameters to Generate Robust Turbo Codes

- Chih-Heng Ke, Rung-Shiang Cheng, Chen-Da Tsai and Ming-Fong Tsai, &quot;Bandwidth Aggregation with Path Interleaving Forward Error Correction Mechanism for Delay-Sensitive Video Streaming in Wireless Multipath Environments&quot;, Tamkang Journal of Science and Engineering, Vol. 13, No. 1, pp. 1-9, 2010
The A3D-TC: An Adaptive Approach for Selecting Third Component Parameters to Generate Robust Turbo Codes

454-465, 2011.
- C. Berrou, A. Graell I. Amat, Y. Ould Cheikh Mouhamedou, C. Douillard, Y. Saouter, "Adding a Rate-1 Third Dimension to Turbo Codes", IEEE Information Theory Workshop, Pages: 156-161, 2007

Index Terms

Computer Science
Communication
**Keywords**

A3D-TC  knowledge feeding  GA-based knowledge source  adaptive  permeability rate  permittivity rate  third component