**Non Iterative Algorithm for Multi-user Detection in DSCDMA System: An Enhanced Harmony Search Algorithm**

**ABSTRACT**

In this paper, a non iterative algorithm for MUD in DS-CDMA system is proposed. The proposed multiuser algorithm is performed based on harmony search algorithm. In the proposed algorithm, a new harmony memory updating is based on the random and mean operation. So, the proposed harmony search algorithm is reduced the complexity and the user information interference. Hence, the bit error rate of the transmitted code reduced. In the enhanced harmony search algorithm, the marginal distribution for each observed and unobserved node are calculated. The proposed multiuser detection algorithm is applicable in run time user identification process, so the MUD complexity and the required time are concentrated. Also, the iteration can be predefined based on the number of users, signal interference and signal to noise ratio. This improves the multiuser efficiency, reduce the information losses and power corruption in CDMA channel. The proposed technique is implemented in MATLAB and the performance is evaluated.

***Keywords*** DS-CDMA system, multiuser detection, enhanced harmony search algorithm, bit error rate.