

I.E. Livieris and P. Pintelas, [A new class of nonmonotone conjugate gradient training algorithms](#). Applied Mathematics and Computation, Volume 266, pp. 404-413, 2015.

Abstract - In this paper, we propose a new class of conjugate gradient algorithms for training neural networks which is based on a new modified nonmonotone scheme proposed by Shi and Wang. The utilization of a nonmonotone strategy enables the training algorithm to overcome the case where the sequence of iterates runs into the bottom of a curved narrow valley, a common occurrence in neural network training process. Our proposed class of methods ensures sufficient descent, avoiding thereby the usual inefficient restarts and it is globally convergent under mild conditions. Our experimental results provide evidence that the proposed nonmonotone conjugate gradient training methods are efficient, outperforming classical methods, proving more stable, efficient and reliable learning.