I.E. Livieris and P. Pintelas, An Improved Spectral Conjugate Gradient Neural Network Training Algorithm , *International Journal on Artificial Intelligence and Tools* , 20(1), 2012.

Abstract - Conjugate gradient methods constitute excellent neural network training methods which are characterized by their simplicity and low memory requirements. In this paper, we propose a new spectral conjugate gradient method which guarantees the sufficient descent property using any line search. Moreover, we establish that our proposed method is globally convergent under the standard
Wolfe-Powell line search conditions. Experimental results provide evidence that our proposed method is preferable and in general
superior to the classical conjugate gradient methods in terms of efficiency and robustness.