I.E. Livieris and P. Pintelas. An improved weight-constrained neural network training algorithm .

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Abstract - In this work, we propose an improved weight-constrained neural network training algorithm, named iWCNN. The proposed algorithm exploits the numerical efficiency of the L-BFGS matrices together with a gradient-projection strategy for handling the bounds on the weights. Additionally, an attractive property of iWCNN is that it utilizes a new scaling factor for defining the initial Hessian approximation used in the L-BFGS formula. Since the L-BFGS Hessian approximation is defined utilizing a small number of correction vector pairs our motivation is to further exploit them in order to increase the efficiency of the training algorithm and the convergence rate of the minimization process. The preliminary numerical experiments provide empirical evidence that the proposed training algorithm accelerates the training process.