Abstract

This paper proposes a new version of the standard particle swarm optimization (SPSO) algorithm to train a neural network (NN). The improved PSO, called the wPSOd_CV algorithm, is the improved version of the PSOd_CV algorithm presented in a previous study. The wPSOd_CV algorithm is introduced to solve the issue of premature convergence of the SPSO algorithm. The proposed wPSOd_CV algorithm is used in a co-design architecture. Experimental results confirmed the effectiveness of the NN trained by the wPSOd_CV algorithm when compared with the NN trained by the SPSO algorithm and the PSOd_CV algorithm concerning the minimum learning error and the recognition rates.

References

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Index Terms

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Keywords

Neural network, Particle swarm optimization, FPGA, ARM, codesign architecture