

Hybrid PSO

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Majhi and Panda (2011) propose PSO to optimize the weights of a neural network used for system identification.

Questions

1. Explain why and how system identification can be formulated as an optimization problem. What methods have been used for identification? Describe at least two methods and explain the associated optimization problem. In general, which optimization methods are used?
2. Choose two nonlinear dynamic systems and implement the PSO for identification using neural networks. Explain the results. What are the advantages and shortcomings of this approach? How does it compare to other NN-based identification methods?

References

Majhi, B. and Panda, G. (2011). Robust identification of nonlinear complex systems using low complexity ANN and particle swarm optimization technique. *Expert Systems with Applications*, 38:321–333.