

PSO with linearly decreasing weights

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Leung et al. (2012) propose a hybrid PSO with linearly decreasing inertia weights.

Questions

1. Explain the classic PSO. For what problems has it been used? Describe at least three real-world problems and explain the obtained results. Based on these, what are the advantages and shortcomings of PSO? What other methods can be used for the problems you described? Why? Describe at least two of these methods.
2. Implement the classic PSO and the one proposed by Leung et al. (2012). Compare them on at least two benchmark functions. Explain the results. What are the advantages and shortcomings of the method based on the obtained results?

References

Leung, S., Tang, Y., and Wong, W. (2012). A hybrid particle swarm optimization and its application in neural networks. *Expert Systems with Applications*, 39(1):395–405.