PSO for clustering

Tsai and Kao (2011) propose a PSO algorithm with particle regeneration.

Questions

1. Why is clustering important? What is optimized? What methods have been developed for clustering? Explain at least one beside PSO. What are the advantages and shortcomings of the PSO proposed by Tsai and Kao (2011)?

2. Explain and implement the algorithm proposed by Tsai and Kao (2011). Compare the results obtained for an artificial example to those obtained by another known method.

References

Tsai, C.-Y. and Kao, I.-W. (2011). Particle swarm optimization with selective particle regeneration for data clustering. *Expert Systems with Applications*, 38:6565–6576.