

PSO in Generator Maintenance and Unit-Commitment Scheduling

In [1], the application of PSO to generator maintenance scheduling has been introduced. Results are obtained for a practical scheduling and optimization problem for which evolutionary computation (EC)-based approaches have previously been applied and found to be effective. It has been shown that PSO-based approaches produce superior performance compared with GA or ES. The paper also presents a hybrid spawning PSO and ES; in this approach, valuable features from both PSO and ES are combined to provide a simple hybrid model that could be readily used in other applications. For the unit-commitment scheduling problem, Miranda and Win-Oo [2] have presented the application of differential evolutionary particle swarm optimization to the unit commitment-generator scheduling power system problem. In this case, given a set of generators and their generation cost curves, it is determined which generators should operate or not and at which generation level, thus minimizing the overall cost which include startup and operational costs for a particular set of system operating conditions. The used algorithm is an improved version of the EPSO that incorporates an improvement in the movement rule by adjusting the memory element. The PSO-based algorithm is compared with other GA-based algorithms and produces better results [2].

[CPLEX applications](#)

References

- [1] C. Koay and D. Srinivasan, "Particle swarm optimization-based approach for generator maintenance scheduling," in *Proc. IEEE Swarm Intell. Symp.*, Apr. 2003, pp. 167–173.
- [2] M. Miranda and N. Win-Oo, "New experiments with EPSO—Evolutionary particle swarm optimization," in *Proc. IEEE Swarm Intell. Symp.*, May 2006, pp. 162–169.

Contributor:

Dr. Željko Kanovi, University of Novi Sad