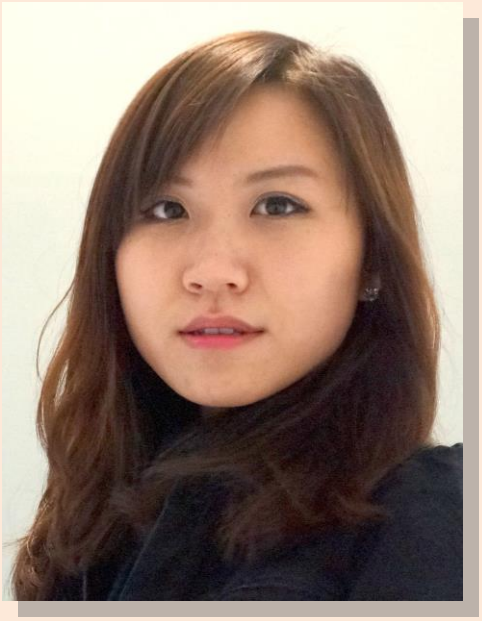
CoCo Seminar Series
Fall 2014

Hierarchical Heterogeneous Particle Swarm Optimization



Xinpei Ma
Biomedical Engineering, Binghamton University

Wednesday September 24th, 2014
8:30-9:30am
Biotechnology Building BI 2221
(ITC Conference Room)

Particle swarm optimization (PSO) has recently been modified to several versions. Heterogeneous PSO is a recent extension which includes behavioral heterogeneity of particles. Here we propose a further developed version that has hierarchical interaction patterns among heterogeneous particles, which we call hierarchical heterogeneous PSO (HHPSO). Two algorithm designs that have been developed and tested are multi-layer HHPSO (ml-HHPSO) and multi-group HHPSO (mg-HHPSO). The performances of these algorithms were measured on a set of benchmark functions and compared with standard PSO and heterogeneous PSO. The results showed that the performances of both HHPSO algorithms were significantly improved from standard PSO and heterogeneous PSO, with higher quality of optimal solutions and faster convergence speed.

Xinpei Ma is a PhD student in Biomedical Engineering at Binghamton University. Her research interests include mathematical modeling, statistical analysis, machine learning, network analysis, and their applications to biomedical problems.

For more information, contact Hiroki Sayama (sayama@binghamton.edu)
http://coco.binghamton.edu/