

30/11/09

The University of Birmingham
School of Computer Science

**Introduction to Evolutionary Computation (22753) and
Evolutionary Computation (02411) Module**

Exercise 9

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1. Could you explain what is Particle Swarm Optimization?
2. Comment with your own words what is Differential Evolution? And explain how is applied the selection, recombination and mutation operators in this approach.
3. The concept of “Local search” was used in previous lectures as well in paper *Differential Evolution - A Simple and Efficient Heuristic for global Optimization over Continuous Spaces* given in the lectures. Could you explain what is “Local search”? How it works? And comment another related concept with “Local search” called “greedy criterion”.
4. There is another related algorithm used to alter the parameter vector (individuals) called *Simulated Annealing* (SA). Can you give an explanation of how it works?
5. From the point of view of learning, we can have two main ways to pass the knowledge acquired from parents to offspring, which is Lamarkian evolution and Baldwin effect. Could you explain both? and say if there is any drawback in any of them?
6. After all the information you have learn about EAs, could you comment with your own words some drawbacks/limitations of EAs?

Submission: Please, send your answers to v.landassuri-moreno@cs.bham.ac.uk by 7/12/09 before 11am.