SYLLABUS DEL CORSO

Population-Based Optimisation Methods

2122-87R-05

Title

Population-Based Optimisation Methods

Teacher(s)

- Luca Manzoni
- Yuri Pirola

Language

English

Short description

Program:

1. Introduction to optimisation methods
2. Brief recall of single-state methods: local search, simulated annealing
3. Genetic Algorithm: traditional and real-valued
4. Genetic Programming: tree-based, Cartesian, linear, grammatical evolution
5. Differential Evolution
6. Particle Swarm Optimisation and Swarm Intelligence
7. Representations for particular problems: graphs, lists, rules

8. Distributed models: islands, master/slave, etc.
9. Evolving multiple populations together: coevolution
10. Multiobjective optimisation
11. Hybrid algorithms: neuro-evolution
12. Runtime analysis: the theory of population-based methods
13. Implementation on HPC: advantages and common pitfalls
14. Practical Applications

CFU / Hours

2.5 CFU / 62 hours

Teaching period

April-June 2022