COURSE DETAIL

NATURAL COMPUTING
Country United Kingdom - Scotland
Host Institution University of Edinburgh
Program(s) University of Edinburgh
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Computer Science
UCEAP Course Number 120
UCEAP Course Suffix
UCEAP Official Title NATURAL COMPUTING
UCEAP Transcript Title NATURAL COMPUTING
UCEAP Quarter Units 4.00
UCEAP Semester Units 2.70

Course Description

This course teaches about bio-inspired algorithms for optimization and search problems. The algorithms are based on simulated evolution (including Genetic algorithms and Genetic programming), particle swarm optimization, ant colony optimization as well as systems made of membranes or biochemical reactions among molecules. These techniques are useful for searching very large spaces. For example, they can be used to search large parameter spaces in engineering design and spaces of possible schedules in scheduling. However, they can also be used to search for rules and rule sets, for data mining, for good feed-forward, or recurrent neural nets and so on. The idea of evolving, rather than designing, algorithms and controllers is especially appealing in AI. In a similar way it is tempting to use the intrinsic dynamics of real systems consisting e.g. of quadrillions of molecules to perform computations for us. The course includes technical discussions about the applicability and a number of practical applications of the algorithms.

Language(s) of Instruction
English

Host Institution Course Number
INFR11161

Host Institution Course Title
NATURAL COMPUTING

Host Institution Campus
University of Edinburgh

Host Institution Faculty

Host Institution Degree

Host Institution Department
School of Informatics

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