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Fiche de proposition d'un projet de Mastère

Filière :

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Titre du sujet : Novel Bi-objective Evolutionary Programming for Artificial Neural Network learning.

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Description:

In Artificial Intelligence (AI), Evolutionary Programming is an evolutionary Computation applied where the space of solutions consists of computer programs. Depending on the problem, the computer program may be Boolean-valued, real-valued, vector-valued, complex-valued (for example a tree), symbolic-valued (S-expression), etc.

Evolutionary programming process begins with an initial population of randomly generated hierarchical structured programs formed of functions and terminals suitable to the problem field. The functions may be standard mathematical functions, standard programming operations, or domain-specific functions.

After that each individual computer program is executed and evaluated according a fitness measure which varies with the problem. A new population is created based on the current population by means of using operators (depending to the chosen Evolutionary Computation) probabilistically.

The best-so-far computer program that founded in any generation is considered as the result of evolutionary programming. This result designs a solution (or a near solution) to the problem.

In this context, we propose in this subject to implement the Bi-objective Evolutionary Programming for designing and learning Artificial Neural Network structure and parameters.

The performance of the proposed method must be evaluated for benchmark problems drawn from control system and time series prediction area and is compared with those of related methods.

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