

A Fuzzy Approach to Control Genetic Algorithm Parameters

Felipe Houat de
Brito¹

Artur Noura
Teixeira¹

Otávio Noura
Teixeira^{1,2}

Roberto C. L.
Oliveira¹

¹ Programa de Pós-Graduação em Engenharia Elétrica – PPGEE, Departamento de Engenharia Elétrica e Computação – DEEC, Universidade Federal do Pará – UFPA, Caixa Postal 8619 – 66.075-900, Belém – Pará – Brasil.

e-mail: {felipebr, anoura, onoura}@gmail.com, limao@ufpa.br
<http://www.deec.ufpa.br/ppgee>

² Núcleo de Tecnologia da Informação – NTI, Laboratório de Computacional Natural – LCN, Centro Universitário do Pará – CESUPA, Av. Governador José Malcher, 1963 – São Brás – 66.060-230, Belém – Pará – Brasil.

<http://www.cesupa.br>

Abstract

Genetic Algorithms have been successful in several practical appliances and obtained great prominence among the techniques of Evolutionary Computation. A large portion of methods and parameters adopted in its use are heuristic or random choices, which remain unchanged throughout the execution once they are set. This can lead to a certain lack of exploration of the search surface and also compromise the variability of the population. For that matter, this work introduces the implementation of an intelligent agent based on fuzzy logic, which dynamically monitors and regulates six GA parameters. The results obtained surpass the GA traditional implementation in many aspects, and open a wide new space for research and study.

Keywords: Evolutionary Computation, Genetic Algorithms, Fuzzy Systems