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A project with the following properties has been registered...
Title (Danish): Trait-based Diversity Measurement in Genetic Algorithms using Artificial Neural Networks
Title (English): Trækbaseret Diversitetsmåling i Genetiske Algoritmer ved brug af Kunstige Neurale Netværk
Abstract (Danish): Controlling diversity in a genetic algorithm's population is crucial for finding the global optimum. When diversity is overlooked, premature convergence is the consequence, which possibly only leads to local optima. We propose a trait-based diversity measurement for genetic algorithms using artificial neural networks, which we call Neural Network Trait Diversity (NNTD).

Experiments are conducted to compare NNTD to the genotypic diversity measure of Hamming distance, and a phenotypic fitness-based diversity measure. We argue that both of these measures have weaknesses that NNTD overcomes. Our experiments show that NNTD consistently mirrors the intuition of trait diversity in populations, better than Hamming distance and fitness-based diversity measurement methods, which seem less predictable. Interestingly, the experiments also show that there might be a connection between the diversities returned by Hamming distance and NNTD among neural networks.
Documents:

article (article.pdf)
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Type: Bachelor Project
Number of pages: 12
Publication date: 28 May 2014
Created: 28/05/2014 11:27
Confidential: Non-confidential
Language: English
Education: 6. term, Computer Science, Bachelor (Bachelor Programme)
Keywords: (artificial, intelligence, AI, artificial intelligence, neural networks, neural, networks, diversity, computer science, computer, science, genetic algorithms, genetic, algorithms)
UUID: 6a6bf464-0b42-476c-a693-677e05695cae