

Accepted Manuscript

Title: Generation of Particle Swarm Optimization algorithms:
An experimental study using Grammar-Guided Genetic
Programming

Author: Péricles B.C. Miranda Ricardo B.C. Prudêncio



PII: S1568-4946(17)30383-6
DOI: <http://dx.doi.org/doi:10.1016/j.asoc.2017.06.040>
Reference: ASOC 4309

To appear in: *Applied Soft Computing*

Received date: 20-12-2016
Revised date: 11-5-2017
Accepted date: 19-6-2017

Please cite this article as: Péricles B.C. Miranda, Ricardo B.C. Prudêncio, Generation of Particle Swarm Optimization algorithms: An experimental study using Grammar-Guided Genetic Programming, *Applied Soft Computing Journal* (2017), <http://dx.doi.org/10.1016/j.asoc.2017.06.040>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Generation of Particle Swarm Optimization algorithms: An experimental study using Grammar-Guided Genetic Programming

Péricles B. C. Miranda^{a,b}, Ricardo B. C. Prudêncio^b

^a*Department of Statistics and Informatics, Rural Federal University of Pernambuco, Brazil*

^b*Center of Informatics, Federal University of Pernambuco, Brazil*

Abstract

Particle Swarm Optimization (PSO) is largely used to solve optimization problems effectively. Nonetheless, the PSO performance depends on the fine tuning of different parameters. To make the algorithm design process more independent from human intervention, some researchers have treated this task as an optimization problem. Grammar-Guided Genetic Programming (GGGP) algorithms, in particular, have been widely studied and applied in the context of algorithm optimization. GGGP algorithms produce customized designs based on a set of production rules defined in the grammar, differently from methods that simply select designs in a pre-defined limited search space. Although GGGP algorithms have been largely used in other contexts, they have not been deeply investigated in the generation of PSO algorithms. Thus, this work applies GGGP algorithms in the context of PSO algorithm design problem. Herein, we performed an experimental study comparing different GGGP approaches for the generation of PSO algorithms. The main goal is to perform a deep investigation aiming to identify pros and cons of each approach in the current task. In the experiments, a comparison between a tree-based GGGP approach and commonly used linear GGGP approaches for the generation of PSO algorithms was performed. The results showed that the tree-based GGGP produced better algorithms than the counterparts. We also compared the algorithms generated by the tree-based technique to state-of-the-art optimization algorithms, and it achieved competitive results.

Keywords: generation hyper-heuristics, grammar-guided genetic programming, algorithm design, particle swarm optimization

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات