HyGLEAM - An Approach to Generally Applicable Hybridization of Evolutionary Algorithms

Wilfried Jakob

Forschungszentrum Karlsruhe, Institute for Applied Computer Science,
P.O. Box 3640, 76021 Karlsruhe, Germany
jakob@iai.fzk.de

Abstract. Most successful applications of Evolutionary Algorithms to real world problems employ some sort of hybridization, thus speeding up the optimization process but turning the general applicable Evolutionary Algorithm into a problem-specific tool. This paper proposes to combine Evolutionary Algorithms and generally applicable local searchers to get the best of both approaches: A fast, but robust tool for global optimization. The approach consists of four different kinds of hybridization and combinations thereof, which are tested and compared using five commonly used benchmark functions and three real world applications. The results show the superiority of two hybridization types, with which reductions in the number evaluations of up to a factor of 100 could be achieved.