



Amirkabir University of Technology
(Tehran Polytechnic)

Department of Computer Engineering and Information Technology

Bachelor of Science in Computer Engineering

Title:

Population Variation in Genetic Programming

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Abstract

Genetic Programming is an evolutionary algorithm which has been successful in solving optimization problems and automatically producing computer programs. Evolutionary algorithms and Genetic Programming give a significant computational load to the system. Therefore, different approaches have been presented to reduce the computational effort of the Genetic Programming. In the Standard Genetic Programming the population size is constant. Some of these approaches modify the population size during the optimization. The aim of this project is to analyze the reduction in the computational effort of Genetic programming by applying changes to the population size. In this project, a new approach in population variation using learning automata is proposed. In this approach, Learning Automata controls the changes made in population size to reduce the computational effort. In this project, experiments on three different problems are conducted and the proposed Learning Automata scheme is compared with the standard Genetic Programming scheme and other population variation schemes. It is shown that the Learning Automata scheme provides solutions at a lower computational cost compared with the SGP and other PV schemes.