Variable neighborhood programming - a new automatic programming method in artificial intelligence

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Abstract. Automatic programming is an efficient technique that has contributed an important development in the field of artificial intelligence. Genetic programming (GP), inspired by genetic algorithm, is among the few evolutionary algorithms used to evolve population of programs. To the best of our knowledge, there are no many techniques in the literature, after the appearance of GP, whose solutions are represented as programs. In this paper we present a new technique of that type, called Variable neighborhood Programming (VNP) that was inspired by GP and Variable Neighborhood Search (VNS) metaheuristics. VNS is based on systematic change of neighborhood structures within a local search. VNP starts with a single solution presented by a program, and the search for the good quality global solution continues by exploring different neighborhoods. To show the effectiveness of our method, we tested it on benchmark problems drawn from time series prediction and classification areas, and we compared it with the related techniques.