Hyper-heuristic based Strategy for Pairwise Test Case Generation

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Pairwise testing significantly reduces testing efforts of contemporary software systems by efficiently sampling their exorbitant number of parameter configurations. Meta-heuristic based pairwise test generation strategies appeared effective in the recent literature for pairwise testing. However, meta-heuristics require substantial information of the problem domain before producing optimal results. As alternative to meta-heuristics, hyper-heuristics have been introduced. Hyper-heuristics promote generality by using a high-level heuristic as chief selector from a set of low-level heuristics. The suitability of hyper-heuristics for optimization problems motivated us to adopt the Exponential Monte Carlo hyper-heuristic as a basis for our proposed pairwise test case generation strategy called Pairwise_HHH. Based on the published benchmarking results, Pairwise_HHH gives competitive results in many of the parameter configurations considered. Pairwise_HHH serves as our research vehicle to investigate the effective use of hyper-heuristic based algorithm for pairwise test case generation.

Keywords: Pairwise Testing, Hyper-heuristic, Exponential Monte Carlo.Hyper-heuristic