Sequence t-way test generation using the barnacles mating optimizer algorithm

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ABSTRACT
Software testing relates to the process of finding errors/defects and/of ensuring that a particular software of interest meets its specification. Although desirable, exhaustive testing is often practically impossible, given many constraints such as time to market deadline as well as unavailability of resources. Many sampling strategies have been designed to ensure sufficient and good enough testing including equivalence partitioning, boundary value analysis, cause and effect graphing, interaction-based sampling and many more. This paper presents a new test generation strategy based on sequence-based t-way testing (where t indicates the interaction strength), called BSS (Barnacle Sequence Strategy). More precisely, we focus on the generation of test cases due to the ordering of inputs (or sequence) using the newly developed Barnacles Mating Optimizer (BMO) Algorithm. Our experience with BSS is encouraging as we manage to match some of existing best test suite size for small interaction strength (t<5) with small number of event sequences (≤10). However, BSS performs poorly with large event sequences owing to the concatenation and scaling problem of its exploitation search operator.