عنوان مقاله:

Fault-Propagation Analysis: Unveiling Equivalence in Software Mutation Testing

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خلاصه مقاله:

Efficiently unraveling equivalent mutants in software mutation testing is a critical endeavor forenhancing testing efficacy and resource utilization. This paper presents a pioneering approach thatintegrating advanced optimization methods into the fault-propagation analysis framework. Theobjective is to augment the precision and computational efficiency of identifying equivalentmutants, a pivotal aspect of robust software testing.Our methodology incorporates optimizationtechniques into the fault-propagation analysis of program instructions, enabling a more streamlinedand targeted exploration of the mutation space. By strategically optimizing the analysis process, weaim to accelerate the identification of equivalent mutants while maintaining a high level ofaccuracy. The proposed approach is substantiated through rigorous experimentation across diversesoftware systems, showcasing its ability to outperform traditional methods in terms of both speedand precision. This paper contributes a novel perspective to the realm of mutation testing,emphasizing the integration of optimization methods to refine fault-propagation analysis. Theresults not only validate the effectiveness of the optimized approach but also underscore its potentialto revolutionize mutation testing practices. The insights gained from this research pave the way fora more efficient and sophisticated approach to software mutation testing, emphasizing the crucialrole of optimization in enhancing the identification of equivalent mutants.

کلمات کلیدی:

code analysing, fault-propagation , equivalent mutants , Machine learning