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Title: Regression Test Selection Techniques for Test-Driven Development

Abstract:

Test-Driven Development (TDD) is characterized by repeated execution of a test suite, enabling developers to change code with confidence. However, running an entire test suite after every small code change is not always cost effective. Therefore, \emph{regression test selection} (RTS) techniques are important for TDD. Particularly challenging for TDD is the task of selecting a small subset of tests that are most likely to detect a regression fault in a given small and localized code change.

We present cost-bounded RTS techniques based on both dynamic program analysis and natural-language analysis. We implemented our techniques in a tool called TestRank, and evaluated its effectiveness on two open-source projects. We show that using these techniques, developers can accelerate their development cycle, while maintaining a high bug detection rate, whether actually following TDD, or in any methodology that combines testing during development.

This is a dry run for the presentation at Regression 2011