TUM

Speed up Testing by Reusing Code Coverage

Regression testing is a software development process in which test cases are rerun after changes to ensure no new bugs were introduced. To speed up this process, regression test selection (RTS) reruns tests only if they might be affected by recent code changes, i.e. if the code coverage of the test contains modified code [1]. However, recording the coverage of a long-running test suite can become very expensive, especially for tests with a large scope, such as UI tests or manual tests. The objective of this topic is to find out whether we can reuse old coverage reports for our test selection, without decreasing the selection safety (i.e., without missing any affected tests). This would enable us to reduce analysis time while still maintaining a good test selection.

Your main tasks will be:

▪ Record the code coverage for several test suites on multiple commits.

▪ Analyze how many affected tests are missed when reusing old coverage reports.

▪ Measure how much time is saved compared to recording the coverage every commit.

[1] M. Gligoric, L. Eloussi and D. Marinov, "Ekstazi: Lightweight Test Selection," 2015 IEEE/ACM 37th IEEE International Conference on Software Engineering, Florence, Italy, 2015, pp. 713-716, doi: 10.1109/ICSE.2015.230.

Feel free to contact me directly if you are interested in this topic!
Please include your current **CV** and **grade report**, as well as a short **motivation letter** and **when** you intend to start your thesis.

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