Increasing Test Selection Precision

“When are tests (not) affected by changes?”

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 test executes modified code. However, certain kinds of code changes are very unlikely to affect the outcome of a test, such as adding new classes or methods, or reordering members of a class [1]. By finding and excluding these code changes from the test selection, it may be possible to select relevant tests much more precisely, with very little additional cost.

Your main tasks will be:

- Study the literature on state-of-the-art test selection techniques.
- Identify code changes which do not affect the test result.
- Develop an RTS approach based on your findings, and evaluate its performance.