

Measuring Technical Debt Concerning Test Smells Inducing Test Flakiness

What is Flaky Test:

The quality of the product is uncertain if the test cases change their outcome (i.e., from pass to fail or vice versa) without modifications in the codebase. Tests that change their outcome without any modification in the codebase are called flaky tests. Luo et al. [1] concluded that different types of test smells induce test flakiness. These test smells were categorized as IO, Async wait, Randomness, etc. Other researchers [2], [3].

Technical Debt:

The term technical debt is what happens when a development team speeds up the delivery of a project or functionality that will require refactoring later on. A quicker development process becomes the priority instead of high-quality code.

The project proposal:

We assume that developers write test smells that induce test flakiness and later, it creates a problem for them when they introduce changes or resolve test flakiness. This is an exploratory study to find a relationship between test smells that induce test flakiness and technical debt. We will look into ways to measure the technical debt of these types of test smells. The research questions might be:

- Is there any relationship between technical debt and test smells inducing test flakiness?
- How can we measure technical debt concerning test smells inducing test flakiness?

References:

- [1] Q. Luo, F. Hariri, L. Eloussi, and D. Marinov, 'An empirical analysis of flaky tests', 2014, pp. 643–653, doi: 10.1145/2635868.2635920.
- [2] A. Ahmad, O. Leifler, and K. Sandahl, 'Empirical Analysis of Factors and their Effect on Test Flakiness - Practitioners' Perceptions', *ArXiv190600673 Cs*, Jun. 2019, Accessed: Jan. 20, 2020. [Online]. Available: <http://arxiv.org/abs/1906.00673>.
- [3] M. Eck, F. Palomba, M. Castelluccio, and A. Bacchelli, 'Understanding Flaky Tests: The Developer's Perspective', *Proc. 2019 27th ACM Jt. Meet. Eur. Softw. Eng. Conf. Symp. Found. Softw. Eng. - ESECFSE 2019*, pp. 830–840, 2019, doi: 10.1145/3338906.3338945.