

**Master 2016**

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**Database related Approach using Python for Software Integration Test Statistics with User Friendly GUI.**

***ABSTRACT - Masterthesis***

The aim of this thesis is to set a Data Base related approach using Python for Software Integration Test Statistics with user friendly GUI to the Keymile test environment, thus providing a full functional testing.

Keymile GmbH, a company in Hannover has established a number of means to improve software quality. It does a review process which makes use of Gerrit review server (GIT) and review board server i.e. subversion repository (SVN) once a software modification is ready to be committed. The company has a number of tests for the concerned software change which run in parallel to the review process on a Jenkins server thus performing static code analysis. However, these tests do not do a full functional testing (i.e. does not cover regression testing and smoke testing)

The thesis identifies a more exhaustive testing method, thus performing a full functional testing of the product. A means shall be installed on the Jenkins server that allows for scheduling and triggering tests which shall be run on a periodic basis due to their longer execution time. The scheduled tests takes into account all the software changes that were committed since the last test run. This way there will be an early feedback about quality of software changes with the review results. A database shall be added to store all the build and test results, such that these configurations can be retrieved by the developer at a later point of time. A user friendly GUI is created for the tester to get an overview of the software integration test statistics.

In conclusion, the thesis investigates and integrates the work procedure to a Jenkins tool which runs on a PC (Linux) and controls and configures test environment in Keymile. The different tasks that needs to be accomplished in the thesis work are

- Test setup, test sequence and configurations for the same are done on the source level.
- Implementation of test start in Jenkins server.
- Execution of the software build.
- Preparation of test automation framework (TAF) test environment, execution of built software on target device and running dedicated tests.

- Implementation of the first version of the Database (PostgreSQL) integrating it with continuous integration testing (CIT) tool chain thus providing a full functional testing.
- The test results are generated in a presentable form (graphs, formatted tables, test report document).
- Multiple test runs demonstrating an improvement in the test statistics output.
- A user friendly GUI is provided to interact with the database and Jenkins server.