Master-Thesis

- To Assign -

SOFTWARE
SE
ENGINEERING

Implementing a New Clone Detection Tool

Background

Code clones are separate fragments of code that are similar in their structures or semantics. Code clones can occur frequently in an application under development with different developers or various versions. Since the code clones can be propagated in various parts of software products, attending new changes such as security updates or a defect repair should be considered in all of the source code. For solving the problem of clone detection, there are various clone detection tools implemented by academic and commercial organizations (e.g .NiCad [1], CCFinder [2]). In order to evaluate the performance and accuracy of existing and new clone detection tools, various clone benchmarking tools are developed (e.g. [3]). The benchmarking tools contain a repository of clone references to test the functionality and accuracy of clone detection tools. The main limitations of existing clone benchmarks are their dependency on the creators as well as the limited types of their clone references.

Task

The goal of this thesis is to implement a novel clone detection method to find the similarities between code clones within a clone detection benchmarking tool. As a part of this thesis, a literature review of the existing clone detection tool has to be performed.

Evaluation of the proposed approach consist of testing the functionality of proposed approach using some well know clone detection benchmarking frameworks. Furthermore, the results of the evaluation should provide an overview of strengths and weaknesses of proposed approach towards existing clone detection techniques.

The development of the solution idea can be supported the supervisor.

A report of about 70-90 pages in English or German which contains the concepts, strategies and results is mandatory.

References

[1]   Cordy, James R., and Chanchal K. Roy. "The NiCad clone detector." Program Comprehension (ICPC), 2011 IEEE 19th International Conference on. IEEE, 2011.

[2]   Kamiya, Toshihiro, Shinji Kusumoto, and Katsuro Inoue. "CCFinder: a multilinguistic token-based code clone detection system for large scale source code." IEEE Transactions on Software Engineering 28.7 (2002): 654-670.

[3]   Svajlenko, Jeffrey, et al. "Towards a Big Data Curated Benchmark of Inter-Project Code Clones." Software Maintenance and Evolution (ICSME), 2014 IEEE International Conference on. IEEE, 2014

Organisatorisches

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