

A Multiple Phases Approach for Design Patterns Recovery Based on Structural and Method Signature Features.

MG Al-Obeidallah, M Petridis, S Kapetanakis

Design patterns describe both structure, behavior of classes and their relationships. They can improve software documentation, speed up the development process and enable large-scale reuse of software architectures. This article presents a multiple levels detection approach (MLDA) to recover design pattern instances from Java source code. MLDA is able to recover design pattern instances based on a generated class level representation of a subject system. Specifically, MLDA presents what is the so-called Structural Search Model (SSM) which incrementally builds the structure of each design pattern based on the generated source code model. Moreover, MLDA uses a rule-based approach to match the method signatures of the candidate design instances to that of the subject system. As the experiment results illustrate, MLDA is able to recover 23 design patterns with reasonable detection accuracy.

Al-Obeidallah, MG., Petridis, M., Kapetanakis, S., (2018), A Multiple Phases Approach for Design Patterns Recovery Based on Structural and Method Signature Features, International Journal of Software Innovation (IJSI), IGI Global, USA.