

A Structural Rule-Based Approach for Design Patterns Recovery

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Design patterns have a key role in the software development process. They describe both structure, behavior of classes and their relationships. Design patterns can improve software documentation, speed up the development process and enable large-scale reuse of software architectures. This paper presents a Multiple Levels Detection Approach (MLDA) to recover design pattern instances from Java source code. MLDA is able to extract design pattern instances based on a generated class level representation of an investigated 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 extract 23 design patterns with reasonable detection accuracy.

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