

# **MLDA: A Multiple Levels Detection Approach for Design Patterns Recovery**

**MG Al-Obeidallah, M Petridis, S Kapetanakis**

Design patterns have a key role in the software development process. They describe both structure, behavior of classes and their relationships. During the maintenance phase, architects can benefit from knowing the underlying software design choices made during the implementation. Moreover, 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. The novelty behind MLDA is its ability 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. As the experiment results illustrate, MLDA is able to extract 22 design patterns with reasonable detection accuracy.

**Al-Obeidallah, MG.**, Petridis, M., Kapetanakis, S., (2017), MLDA: A Multiple Levels Detection Approach for Design Patterns Recovery, Proceedings of the International Conference on Compute and Data Analysis, ACM.