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TOOLS SUPPORT FOR DESIGN PATTERN

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CHANDANA PUSHPA KUMARA WIJEKOON

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C.P.K Wijekoon

Sri Lanka Institute of Advanced Technical Education

Advanced Technical Institute

Kandy

Sri Lanka

The selection and implementation of suitable patterns is of great importance in software development. The limitations of conventional pattern descriptions and are widely recognized, in particular, the informal nature of descriptions. In this work, we propose a method for description of object-oriented design patterns that can be used for real applications, such as automatic code generation for patterns, automatic pattern detection in software and organization of patterns according to their relationships.

We specify patterns in terms of mathematical entities, rather than natural language narratives, class diagrams and source code fragments. Sets and relations are used to specify patterns' participants, associations and collaborations. A salient feature of this description is its ability to capture essential properties of patterns. In particular, this approach facilitates the description of static and dynamic properties of patterns, and the analysis and comparison of patterns. We describe how mathematical entities can be used to specify static and dynamic properties of design patterns. Applicability of the methodology for describing object oriented design patterns is also demonstrated. A tool developed for automatic code generation and experimental results are presented. Our results show that the proposed technique is suitable for automatic code generation.