Abstract

For measuring software quality, majority of approaches focus on metric calculation based on code, which comes very late in the software development life cycle. The proposed approach presents a forward as well as reverse engineering approach that will detect software design patterns in UML model for forward engineering and from Java source code as a part of reverse engineering. Our approach uses structural, behavioral and semantic analysis. We introduce behavioral and semantic analysis that removes false positives from our structural analysis results. We are interested in assessing the quality of the software design by checking whether it conforms to design pattern and calculating package software metrics. Based on these two
parameters the quality of the software system can be analyzed. We provide a tool that implements our approach. An XML schema of design pattern(s) which further facilitates to automate the process of design pattern identification given a class diagram with the help of a tool base. Design patterns are a proven way to build high-quality software.

References

- Sergiu Dascalu, Ning Hao, Narayan Debnath &quot;Design Patterns Automation with Template Library&quot; 2005 IEEE International Symposium on Signal Processing
- Gennaro Costagliola, Andrea De Lucia, Vincenzo Deufemia, Carmine Gravino, Michele Risi&quot;Design Pattern Recovery by Visual Language Parsing&quot; Proceedings of the Ninth European Conference on Software Maintenance and Reengineering (CSMR&amp;apos;05)1534-5351/05 $20. 00 © 2005 IEEE
- G. Antoniol, R. Fiutem and L. Cristofoletti&quot;Design Pattern Recovery in Object-Oriented Software&quot; Istituto per la Ricerca Scientifica e Tecnologica Povo (Trento), Italy I-38050
- Francesca Arcelli, Stefano Masiero, Claudia Raibulet&quot;Elemental Design Patterns Recognition In Java&quot; Proceedings of the 13th IEEE International Workshop on Software Technology and Engineering Practice (STEP&amp;apos;05)0-7695-2639-X/05 $20. 00 © 2005T.
- Kim and W. Shen&quot;Using Role Based Modelling Language (RBML)to characterise Model Families&quot;2002
- Bayley and H. Zhu. Formalising design patterns in predicate logic. In Proc. of SEFM&amp;apos;07
- D. MapdlSden, J. Hosking, and J. Grundy, &quot;Design Pattern Modelling and Instantiation Using DPML,&quot; Proc. 40th Int&amp;apos;Conf. Object-Oriented Languages and Systems (TOOLS Pacific&amp;apos;02), 2002
- W. P. Stevens, G. J. Myers, and L. L. Constantine, &quot;Structured design,&quot;
Visualization of Graphical Modeling Framework as Recovery Process for Reverse Engineering in Object O

- Jing Dong, Senior Member, IEEE, Yajing Zhao, and Yongtao Sun" A Matrix-Based Approach to Recovering Design Patterns"IEEE TRANSACTIONS ON SYSTEMS, MAN, AND CYBERNETICS—PART A: SYSTEMS AND HUMANS, VOL. 39, NO. 6, NOVEMBER 2009
- Chitra S. Atole and K. V. Kale," Assessment of Package Cohesion and Coupling Principles for Predicting the Quality of Object Oriented Design" 1-4244-0682-X/06/$20. 00 ©2006 IEEE

Index Terms

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Keywords

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