Implementing any big software system is a complex task. One of the major reasons for this is that, there one would like to modularize but for which the implementation would be spread out. Such concerns are more commonly known as Aspects. For example security aspect has to be taken care irrespective of the fact, whatever business logic is being implemented. These concerns cannot be modelled appropriately using traditional Object-oriented approach as these Aspects, manifest themselves as behaviours that are tangled and scattered across a system. Due to this fact, it affects the comprehension capabilities of modelling artefacts of the system also these issues lead to problems achieving traceability of aspects throughout the development lifecycle. Aspect-oriented Analysis and Design (AOAD) has been accepted as an alternative approach to tackle such concerns in an effective manner. This paper presents a comparative study of effectiveness of Aspect-oriented Analysis and Design versus Object-oriented Analysis and Design approach and analyses the results of both of these approaches on the comprehensibility of software systems' knowledge.
Analyzing the Comprehensibility of Aspect-Oriented Modelling and Design of Software System

- Silvia Abraha, Carmine Gravino, Emilio Insfran; Assessing the Effectiveness of Sequence Diagrams in the Comprehension of Functional Requirements: Results from a Family of Five Experiments; IEEE TRANSACTIONS ON SOFTWARE ENGINEERING, VOL. 39, NO. 3, MARCH 2013
- I. Jacobson, Pan-Wei-Nq; Aspect-Oriented software Development with Use Cases (Addison-Wesley Object Technology Series); 2004.
- Awais Rashid, Peter Sawyer, Ana Moreira, Joao Araujo; Early Aspects: a Model for Aspect-Oriented Requirements Engineering; Proceedings of the IEEE Joint International Conference on Requirements Engineering (RE); 2002, pp
- A. Rashid, A. Moriera and J. Araujo; Modularisation and composition of aspectual requirements; Proceedings of the International conference on Aspect-Oriented software development, pp 11-20, 2003
- www.wikipedia.org
- Marco A. Wehrmeister, Carlos Eduardo Pereira, and Franz J. Rammig; Aspect-Oriented Model-Driven Engineering for Embedded Systems Applied to Automation Systems; IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS, VOL. 9, NO. 4, NOVEMBER 2013, pp 2373-2386.
- Nada Albunni, and Miltos Petridis using UML for Modelling Cross-Cutting Concerns in Aspect Oriented Software Engineering;
- Gefei Zhang, Towards Aspect-Oriented Class Diagrams; Proceedings of the 12th Asia-Pacific Software Engineering Conference (APSEC); 0-7695-246-quot; 5-6/05, 2005
- J. Zhang, Yuejuan Chen Guangyuan Liu, Hui Li; Using Sequence Diagram to support Aspect-Oriented Programming in MDA; 2009 International Conference on Intelligent Human, pp 359-362.
- SU Yang QIN Jun; Approach on Modeling Crosscutting Features in Concurrent System;
- Interaction Analysis in Aspect-Oriented Models Katharina Mehner Mattia Monga, Gabriele Taentzer, 14th IEEE International Requirements Engineering Conference (RE); 0-7695-2555-5/06 2006.
- ZHANG Ping, SU Yang, Understanding The Aspects From Various Perspectives in Aspects-Oriented Software Reverse Engineering; 2010 International Conference on Computer Application and System Modeling (ICCASM 2010).
Analyzing the Comprehensibility of Aspect-Oriented Modelling and Design of Software System


- Dianxiang Xu, Weifeng Xu, W. Eric Wong, "Testing Aspect-Oriented Programs with UML Design Models".

Index Terms

Computer Science
Software Design

Keywords

Aspect Oriented  Aspect-Oriented UML  Object-Oriented Analysis and Design
Aspect Oriented Software Development  Unified Modelling Language