

Title	メトリクスの測定によるリファクタリング支援の自動化
Author(s)	田畑, 敦史
Citation	
Issue Date	2008-03
Type	Thesis or Dissertation
Text version	author
URL	http://hdl.handle.net/10119/4347
Rights	
Description	Supervisor:鈴木正人, 情報科学研究科, 修士

Automation of Refactoring Support by Using Software Metrics

Atsushi Tabata (610057)

School of Information Science,
Japan Advanced Institute of Science and Technology

February 7, 2008

Keywords: Software maintainance, Refactoring, Bad smell, Software metrics, Supporting environment.

1 Background and Purpose

There is a problem about software source code is complicated and maintenance and enhancing become difficult as repeatedly changing when we are developing software.

We must to do maintain maintenance and the extendibility of software by doing the "refactoring" that means improving complicated code. But there is difficult to search for complex part in software all source code.

We propose searching for complex part and improving complicated code for automating support refactoring by using some software metrics.

2 Automation of support by using software metrics technique

At early research on refactoring support. Fowler proposed start and end judgment at refactoring and support by definition of operation for code improvement. And Goshima proposed to estimation at refactoring by using software metrics.

The support that Fowler proposed defines "Bad Smell" that is complex part of source code. If these source code are including Bad Smell, it is necessary to do the refactoring. And there are defined action for source code by erasing Bad Smell.

Using software metrics support is compare before refactoring metrics value with after refactoring metrics value for measure improving complicated code.

This research achieves the automation of support by proposing to find Bad Smell that Fowler defines by using software metrics. And there is supporting to start and end judgment at refactoring, find complex part of source code and support by definition of operation for code improvement.

3 Design and mounting

Automation of support refactoring by using software metrics technique are repeating those actoins while erase Bad Smell by source code.

1. search for Bad Smell by using software metrics
2. find refactoring operation candidates to erase Bad Smell
3. do refactoring operation for erase Bad Smell

It is necessary to automate these actions to mount.

- calculate metrics to find Bad Smell
- find Bad Smell by metrics value
- find refactring operation candidates by Bad Smell

The refactoring support is mounted as an Eclipse plug-in. Because, Eclipse has integrated development environment and using this environment by refactoring support.

BadSmell of the source code in the software project by using metrics, and registering in Problem View that is the warning of the source code list and support that tells the user start and end judgment at refactoring, find complex part of source code and support by definition of operation for code improvement.

4 Application experiment of support environment

There is a experiment of automatic refactoring support by Eclipse plug-in to confirm utility by the automated support.

5 Evaluation of support

There is searching for Bad Smell by using software metrics skillful for searching Bad Smell by large value metrics. But not skillful for searching Bad Smell by small value metrics.

Bad Smell by large value metrics are immediately improving but by large value metrics are not immediately improving.

6 Conclusion

Automation Refactoring by using software metrics skillful for searching complex part should be improved at once in source code.

I expend this refactoring support reduce the cost where do refactoring by the process of the software development.