

A Visualization Tool Recording Historical Data of Program Comprehension Tasks

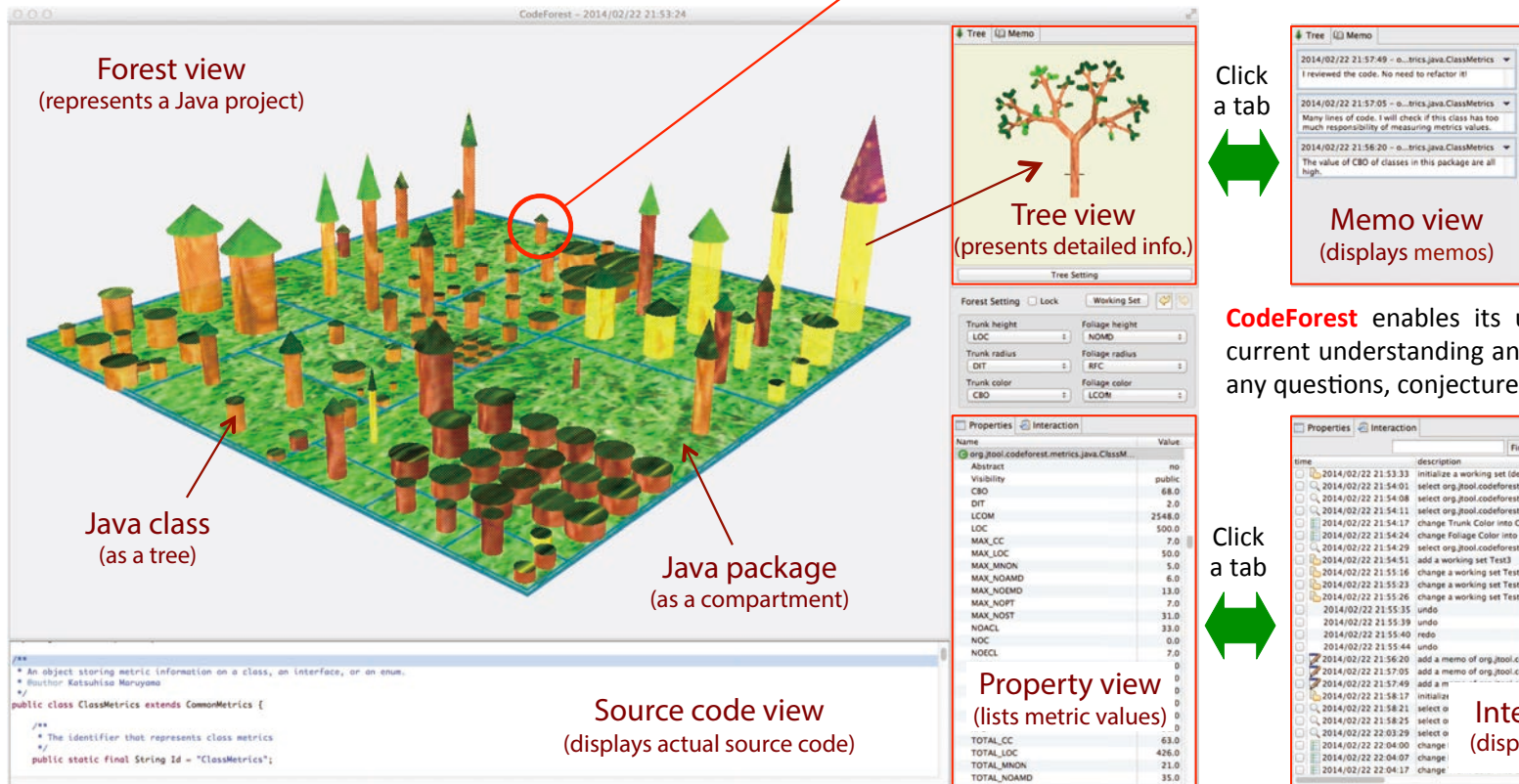


Motivation

Conventional visualization tools for program comprehension limit their functionality to visualization of the structure, behavior, and evolution of a program. Unfortunately, they have no concern with how a tool user has understood a program and what he/she has left through his/her program comprehension task.

We emphasize a visualization tool should keep track of a user's actions and their visualization results. The historical data helps retrospective of past activities in a user's task of understanding a program. It will be also hints for his/her future understanding or understanding done by others.

CodeForest uses a forest metaphor to depict source code of Java programs and shows possibility of promoting the usefulness of visualization tools by leveraging historical data of program comprehension tasks.



Forest view
(represents a Java project)

Tree view
(presents detailed info.)

Memo view
(displays memos)

Property view
(lists metric values)

Interaction view
(displays past actions)

Java class
(as a tree)

Java package
(as a compartment)

Source code view
(displays actual source code)

CodeForest supports 14 software metrics for classes and free visual mapping of them on 6 visual parameters.

Click a tab

Click a tab

Abbr.	Metrics for classes
LOC	Number of lines of code
NOST	Number of statements
NOMD	Number of methods
NOFD	Number of fields
NOMF	Number of methods and fields
NOPM	Number of public methods
NOACL	Number of afferent classes
NOECL	Number of efferent classes
CBO	Coupling between objects
DIT	Depth of inheritance
NOC	Number of children
RFC	Response for classes
WMC	Weighted methods per class
LCOM	Lack of cohesion methods

CodeForest enables its user to write notes that memorize his/her current understanding and insight along with a specific tree whenever any questions, conjectures, and answers come into his/her mind.

CodeForest automatically records various kinds of user's actions such as a change of the setting of visual parameters, addition and removal of a working set of visual settings, a change of the focus of visual objects, actions related to annotation, and undo/redo operations.

Contact Information

Katsuhisa Maruyama (maru@cs.ritsumei.ac.jp)
<http://www.fse.cs.ritsumei.ac.jp/codeforest/>

This work was partially sponsored by the Grant-in-Aid for Scientific Research from the Japan Society for the Promotion of Science (JSPS).

22nd International Conference on Program Comprehension
June 2-3, 2014 Hyderabad, India