

Visualisation of Code Changes for Code Review

Evaluation Survey

Welcome to this survey on the evaluation of my master's research project.

My name is Lorenzo Gasparini and I am a MSc student in Computer Science at TU Delft. For my master's thesis, supervised by Prof. Alberto Bacchelli (ZEST, University of Zurich) and M. Eng. Tobias Baum (Leibniz Universität Hannover), we are researching the usage of visualisation techniques to improve cognitive supports in the code review process.

We developed a code review tool that enhances the classic GitHub pull-request diff-view enabling an intuitive navigation of the context of the changed code. As understanding the context of the changes is often one of the first steps in code review, we hope to enable a more effective and quicker overall process.

The goal of this survey is to evaluate the effectiveness of the tool that we built in real-world usage scenarios. Your help is appreciated.

1 General questions

Please start by answering the following questions:

1. What is your main role?

- Programmer / Software Developer
- Tester
- Analyst
- Software Architect
- IT Operations
- Manager
- Researcher / Professor / PhD Student
- Student
- Other

2. How many years ago did you start professional software development?

- I have no experience in professional software development
- 1 year or less
- 2 years
- 3 - 5 years

- 6 - 10 years
 - 11 years or more
3. How many years ago did you start programming in Java?
- I have never programmed in Java so far
 - 1 year or less
 - 2 years
 - 3 - 5 years
 - 6 - 10 years
 - 11 years or more
4. How often do you currently do programming?
- Not at all
 - About once a year
 - About once a month
 - About once a week
 - About once a day or more often
5. How often do you currently perform code reviews?
- Not at all
 - About once a year
 - About once a month
 - About once a week
 - About once a day or more often

2 Tool introduction

Next, you are allowed to explore our code review tool and familiarise yourself with its features. You have a maximum of **5 minutes** to complete this part.

Click on the following link to open an example pull-request in our tool:

<http://changeviz.tk/?url=https://github.com/square/retrofit/pull/2789>

3 Code review

Finally, you are assigned two code review tasks. They consist in the review of two pull-requests to the JabRef project, a bibliography manager written in Java. Both of them introduce a new feature in the software, and they both contain a (different) bug. The bugs have a functional nature (i.e., they affect the usage of the program from a user's perspective), therefore we ask you not to focus on code style and implementation details.

Note: you have to perform the review within the specific environment you have been assigned to. It is not allowed to download the code base locally, run the program, use an IDE or other code review environments.

Task 1

The pull-request that you will be reviewing in the first task has the following description, as given by its author:

JabRef allows to rank each of the references in the library with a rank from 1 to 5 stars. This pull-requests introduces a new rank, rank 0, which corresponds to 0 stars.

Your goal is to find the functional bug in this pull-request. There is a time limit of **10 minutes**. You can start the task clicking on the following link:

<http://changeviz.tk/?url=https://github.com/joined/jabref/pull/3>

Task 2

The second pull-request has the following description:

JabRef has a feature to export selected references from the database to a HTML document. The user can choose whether to export all the references in the database or only the selected ones. Currently there is no default file name for the exported HTML document, the user has to provide one. This change introduces the following feature: when a single reference is being exported, the default name of the exported HTML document is the citation key of the reference (e.g. Bacchelli2018.html). When multiple references are exported, the default filename is ExportedReferences.html.

Your goal is to find the functional bug in this pull-request. There is no time limit. You can start the task clicking on the following link:

<http://changeviz.tk/?url=https://github.com/joined/jabref/pull/2>