

Towards End-User Web Software Visualization

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Abstract

Software visualization has always been expensive, special purpose, and hard to program. Most of the existing software visualization tools require too much time for end-user developers to learn and make effective use of. We are currently building a web software visualization application that allows end-user to create, view, save, and share visualizations. In this abstract we introduce our software corpus visualization project and summarize our results thus far.

1. Introduction

We are interested in understanding what software looks like to help with software reuse, software maintenance, and software re-engineering. We believe creating software visualizations will help to assist end-user developers to understand the structure and behaviour of software. We want to create visualizations of object-oriented programs over the web cheap, portable, easy, and usable for end-user software developers. We have a corpus of Java software¹ that contains 94 open-source Java applications, 22 applications with multiple versions, with 233 versions total. The corpus is used for conducting empirical studies to help understand how software engineers create code and the relationship between the code structure and quality attributes such as modifiability, reusability, maintainability, and testability. Our project requires tools for visualizing the software.

Software visualization has always been expensive, special purpose, and hard to program. Our previous work in developing a web-based software visualization architecture [5] has explored creating visualizations with Scalable Vector Graphics (SVG) [3] and Extensible 3D Graphics (X3D) [1]. We are building a web software visualization application that makes uses of these technologies, and allows end-users to upload Java files and then create different

visualizations. The rest of this abstract looks at existing software visualization tools, characterizes web information visualization tools, and discusses implications for our research.

2. Web Software Visualization

In a recent survey [4] based on questionnaires completed by 111 researchers from software maintenance, re-engineering and reverse engineering, 40% found software visualisation absolutely necessary for their work and another 42% found it important but not critical. The majority of the researchers are primarily using or integrating existing software visualizations tools developed by others (33%). The survey did not ask what kind of software visualization tools were used.

We want software visualization to be an easy task for end-users without the need for downloading and installing separate applications. However, it is not clear what a good software visualization system looks like. We believe the web is an excellent platform for creating a software visualization application. Web based software visualization allows end-users to independently create, view, save, and share visualizations with others.

We have explored the 43 software visualization tools listed by Diehl [2] and found that only one of the tools was web-based, the SHriMP² application for visualizing dependencies in hierarchically structured data as nested graphs. The rest of the applications require a separate download, plug-in to an IDE such as Eclipse, or are proprietary software. Since there is a lack of freely available web software visualization tools we have decided to explore existing information visualization web tools. We want to see if any of these tools have useful features that we could incorporate into our software corpus visualization project.

Many Eyes³ is a web site that provides collaborative vi-

¹<http://www.cs.auckland.ac.nz/~ewan/corpus/>

²<http://www.thechiselgroup.org/shrimp>

³<http://www.many-eyes.com>

