Visual Software Analytics for Assessing the Maintainability of Object-Oriented Software Systems
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Abstract

Assessing the maintainability of software systems is an essential component of modern software development. Traditionally, this activity is performed by extracting source code metrics using data mining techniques. When the analyzed system is little known, maintainability assessment must go hand in hand with software understanding. We advocate for this task software visual analytics, a new combination of interactive visualization and data mining focused at software code. We present an instance of software visual analytics for the understanding and maintainability assessment of object-oriented software. Our contributions are twofold. First, the metric lens visualizes method-level code metrics atop of traditional UML class diagrams, which supports metric-metric and metric-structure correlations. Second, the metric legend allows to interactively specify a spectrum of analyses involving different metrics, value ranges, and visual mappings. The metric legend is interactively correlated with the metric lens. We present an implementation in a full-fledged system and describe several analyses starting with real-world C++ code and ending with combined diagrammetrics visualizations.

Key-words: Visual analytics, software visualization, software maintenance