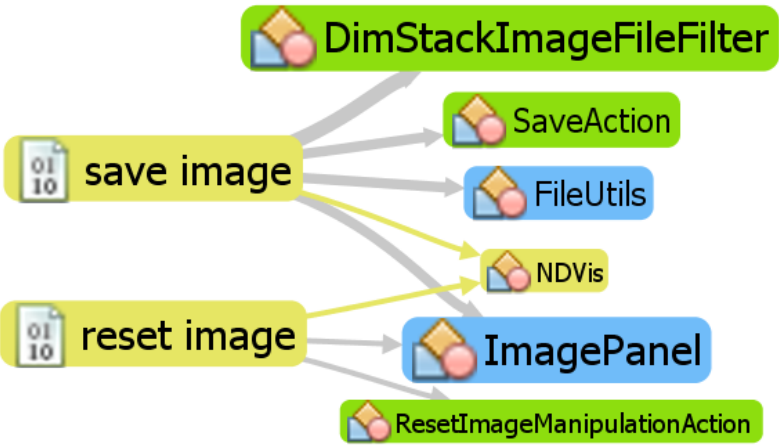

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FEATUREOUS – an integrated approach to location, analysis and modularization of features in Java applications

The Featureous project addresses the analysis and reduction of software applications' complexity through feature-oriented analysis and re-modularization. Featureous is presently implemented as a tool plug-in for the NetBeans IDE. The Featureous tool provides developers with multiple static and dynamic views, which relate an applications source code with its user-identifiable features. To establish these views Featureous traces and interprets the interactions between a user and a running application. This way Featureous captures traceability links between features and units of source code, such as method, classes, and packages.

The traceability links are used as a basis for several analytical views that summarize the distribution of individual features over source code units.

The available views focus on different perspectives, granularities, and abstraction levels of investigating the mappings between features and code. To this end they employ several visualization types, e.g. metric-based plots, dynamically re-lay outing graphs, and code-editor annotations. This holistic approach allows developers to investigate features in a systematic fashion. Furthermore this new perspective on source code allows developers to monitor the complexity of their applications' features. If this complexity is found to increase over subsequent releases, the Remodularization workbench view of Featureous can be used to reorganize the applications' package structure. Re-organization of the package structure uses a multi-objective grouping genetic algorithm, that allows developers to automatically re-allocate classes among packages according to a chosen set of object-oriented design principles and feature-oriented metrics.

After a new package structure is proposed, a programmer can manually adjust the structure, before Featureous applies it to the source code. This makes Featureous essential during modularization of existing applications in terms of technologies such as OSGi or the NetBeans Module System.

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