Critics: An Interactive Code Review Tool for Searching and Inspecting Systematic Changes

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Problem Statement

Peer code reviews are widely-used quality assurance activities in software development. When using existing code review tools, it is difficult for developers to inspect systematic changes — similar but not identical edits scattered across different files. Developers may find it difficult to ensure that all locations are updated correctly and that there are no missing updates.

Solution: Critics, An Interactive Code Review Tool

- “What other code locations changed similar to this change?”
- “Are there any other locations that are similar to this code but are not updated?”

- Combine program differencing with pattern-based interactive code search.
- Allow a reviewer to customize an abstract diff template by selecting a sub region of a diff patch and by generalizing the AST edits and surrounding context.
- Template matching and search using a Robust Tree Edit Distance algorithm

Critics Eclipse Plug-in Features

- A user can select code in an Eclipse Compare View and provide it as an input.
- A user can visualize and customize a template in a side-by-side Diff Template View.
- A user can examine similar changes and locates anomalies in the Matching Result View.
- A user can see a corresponding patch content using Diff Details View.
- A user can generalize type, method, and identifier names or exclude certain nodes for Template Refinement.

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