

Automating Merge Conflict Resolution



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Vision

- Goal: automatically resolve merge conflicts
 - We want to minimize the work needed by the programmers

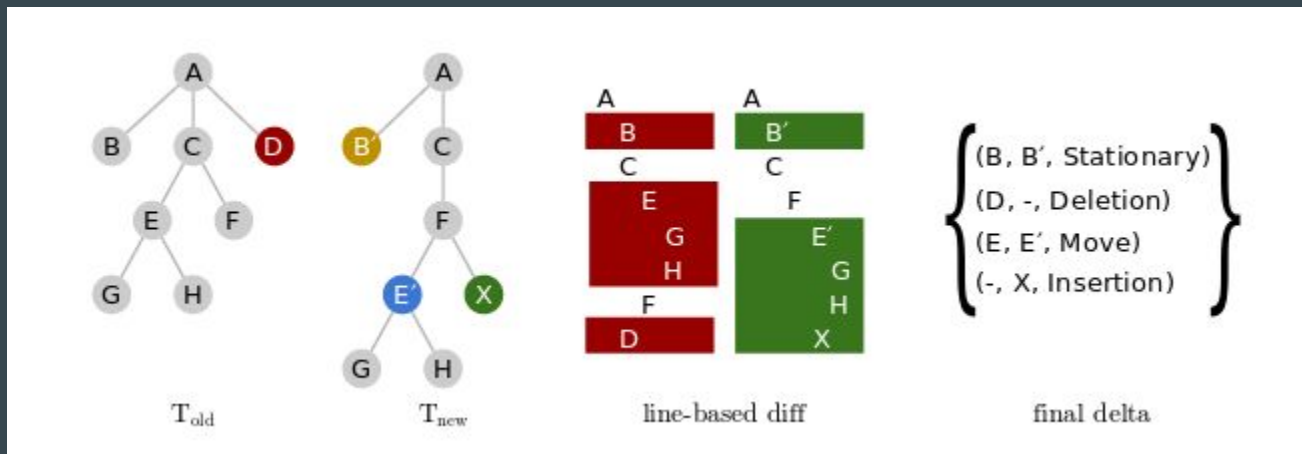


Image taken from [“Precise Version Control of Trees with Line-based Version Control Systems.”](#)

Approach

- Determine if all changes can be kept
 - Convert code into abstract syntax trees (ASTs)
- If all changes can be kept, merge the changes together
 - Define an algorithm that combines ASTs
 - Generalize both sets of changes to operations to be performed on the entire file together
- Otherwise, decide which changes to keep
 - Branch ordering; keep only changes from the branch with the higher priority
 - Deletion vs. Insertion; keep all insertions, ignore all deletions?

Risks

- Automatically merging conflicts may produce non-preferable code to the user
 - In this case, we have created more work for the programmer