

Version Editor [45], where the history of a file is displayed in a code compare view with two panels, and users can move through the history using the vertical timeline located between those two panels. The local history feature of some IDEs keeps snapshots of each file automatically upon file save (Eclipse [46]) or as the code changes (NetBeans [47]). The local history shows a linear list of saved snapshots of each file, but only with their timestamps without any human-readable descriptions. These approaches are limited in that the history can only be seen at file level, and it can be hard to find the desired snapshots.

VIII. CONCLUSION

Despite the recent trends to exploit more fine-grained code editing histories, their use in existing tools has mostly been limited to replaying the history, or analyzing the data for research purposes. We demonstrate in this paper that these fine-grained histories can also be useful for developers with proper visualizations and several editor commands which tightly integrate with the history. We believe that providing more refined editor commands with more history search options would make developers more comfortable in code editing, fostering more exploration and more reliable backtracking. This approach might also be applied to regular text editors, and possibly even to graphical editors.

AZURITE is an open-source Eclipse plug-in. More information about AZURITE can be found, and the plug-in can be downloaded, at: <http://www.cs.cmu.edu/~azurite/>.

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