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Traceability in the Wild: Automatically Augmenting Incomplete Trace Links

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Abstract: This paper was published at the 40th International Conference on Software Engineering (ICSE) in May 2018. The authors propose a novel approach to establish trace links among software development artifacts. In particular, it allows to automatically link commits made in a projects' version control systems (such as git) to respective issues in the projects' issue tracker (e. g. Atlassian Jira). Besides augmenting an existing code base with additional trace links, the approach enables active recommendation of issues to the developer while performing a new commit to the version control system. This simplifies the overall development workflow. The proposed method is based on state-of-the-art machine learning techniques and serves as a basic building block in establishing project wide traceability. It's feasibility, completeness, and usefulness was successfully evaluated through six empirical studies as well as one human study. The work was honored with an ACM SIGSOFT Distinguished Paper Award.

Keywords: Traceability, Link Recovery, Machine Learning, Open Source

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