



February 17, 2023

KTH Royal Institute of Technology
Lindstedtsvägen 3, Building D, Room 1548
Stockholm, Sweden

Dear Mauro Pezzè,
Editor-in-Chief of *ACM Transactions on Software Engineering and Methodology*

We wish to submit the journal-first research manuscript entitled “*Coverage-Based Debloating for Java Bytecode*”, by César Soto-Valero, Thomas Durieux, Nicolas Harrand, and Benoit Baudry. We certify that all the authors participated in the preparation of this manuscript and agree with its submission. This manuscript has not been published elsewhere and is not under consideration by another journal.

This work contributes significantly to the state-of-the-art of software debloating. We propose a novel approach to debloat Java projects based on the collection of coverage information. We evaluate our approach on the largest set of programs ever analyzed in the software debloating literature: 220 open-source Java libraries and their third-party dependencies. We provide the first quantitative investigation of the impact of debloating on the client projects that use the debloated libraries.

In summary, our contributions are the following:

- A practical bytecode debloating approach for Java artifacts based on the collection of complete coverage information from multiple sources.
- An open-source tool, JDBL, which executes throughout the Maven build pipeline and automatically generates debloated versions of Java artifacts.
- The largest empirical study on software debloating performed on 395 libraries, concerning code reduction at three granularity levels and using four different validation layers.
- A novel assessment of the impact of debloating for library clients, which exercises 1,001 clients of the 220 libraries that JDBL successfully debloats.

There are at least three members of the editorial board who have a great expertise in our paper’s topic:

- Paolo Tonella, for his strong knowledge in testing, oracle and dynamic analysis.
- Shin Yoo, for his expertise in code analysis, software testing and empirical software engineering.
- Bogdan Vasilescu, for his expertise in empirical software engineering.

Please, do not hesitate to contact us in case of requiring any further information regarding this manuscript.

Sincerely yours,

César Soto-Valero

On behalf of Thomas Durieux, Nicolas Harrand, and Benoit Baudry
