



Software Engineering Seminar (SoSe 2019)

Performance Bug Detection

Description

Detecting and fixing performance bugs is a challenging task for developers, due to the difficulty of obtaining relevant performance data and identifying root causes [1]. Recent studies on performance bugs aimed to tackle this problem from different aspects: Jovic et al. [2] proposed an approach to produce performance bug issues by gathering runtime information in the field; Nistor et al.'s approach – CAMEL [3] – focused on generating fixes for performance bugs with buggy loops; Wei et al.'s tool – Singularity [4] – identified performance bugs by determining worst-case complexity through pattern fuzzing and genetic programming.

The goal of this seminar topic is to examine and discuss the current state of the art in performance bug detection.

References

- [1] Alexandra Fedorova, Craig Mustard, Ivan Beschastnikh, Julia Rubin, Augustine Wong, Svetozar Miucin, and Louis Ye. Performance comprehension at wiredtiger. In *Proceedings of the 2018 26th ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering, ESEC/FSE 2018*, pages 83–94, New York, NY, USA, 2018. ACM.
- [2] Milan Jovic, Andrea Adamoli, and Matthias Hauswirth. Catch me if you can: Performance bug detection in the wild. In *Proceedings of the 2011 ACM International Conference on Object Oriented Programming Systems Languages and Applications, OOPSLA '11*, pages 155–170, New York, NY, USA, 2011. ACM.
- [3] Adrian Nistor, Po-Chun Chang, Cosmin Radoi, and Shan Lu. Caramel: Detecting and fixing performance problems that have non-intrusive fixes. In *Proceedings of the 37th International Conference on Software Engineering - Volume 1, ICSE '15*, pages 902–912, Piscataway, NJ, USA, 2015. IEEE Press.
- [4] Jiayi Wei, Jia Chen, Yu Feng, Kostas Ferles, and Isil Dillig. Singularity: Pattern fuzzing for worst case complexity. In *Proceedings of the 2018 26th ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering, ESEC/FSE 2018*, pages 213–223, New York, NY, USA, 2018. ACM.

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