

Software complexity metrics in general and in the context of ISO 26262 software verification requirements

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Abstract

The introduction of the ISO 26262 standard (Road vehicles – functional safety) formalized the requirements on software verification processes in automotive software development. Compared to the previous state-of-the-art the standard introduces requirements of calculations of test coverage metrics and also introduces the requirements on methods used to test, verify and validate software.

In this talk we present the requirements of ISO 26262 for the verification processes for automotive software development to establish the baseline for what needs to be tested and how. Based on these requirements we also present the metrics used to assess the quality of the automotive software and show the limitations of these methods and metrics. We also review the state-of-the-art of software complexity and coverage metrics in software engineering and propose which metrics could be used in order to increase the confidence of the testers that the software is essentially safe.

The talk is based on our previous research on software reliability (Rana, Staron et al. 2013, Rana, Staron et al. 2013), use of technical metrics in decisions in software engineering (Staron 2012), challenges in increasing speed of software development (Staron, Meding et al. 2012) and complexity monitoring (Durisic, Staron et al. 2013).

References

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