

Software Testing Effort Estimation and Related Problems: A Systematic Literature Review

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Although testing effort estimation is a very important task in software project management, it is rarely described in the literature. There are many difficulties in finding any useful methods or tools for this purpose. Solutions to many other problems related to testing effort calculation are published much more often. There is also no research focusing on both testing effort estimation and all related areas of software engineering. To fill this gap, we performed a systematic literature review on both questions. Although our primary objective was to find some tools or implementable methods for test effort estimation, we have quickly discovered many other interesting topics related to the main one. The main contribution of this work is the presentation of the testing effort estimation task in a very wide context, indicating the relations with other research fields. This systematic literature review presents a detailed overview of testing effort estimation task, including challenges and approaches to automating it and the solutions proposed in the literature. It also exhaustively investigates related research topics, classifying publications that can be found in connection to the testing effort according to seven criteria formulated on the basis of our research questions. We present here both synthesis of our finding and the deep analysis of the stated research problems.

CCS Concepts: • **Software and its engineering** → **Software testing and debugging**; • **General and reference** → **Surveys and overviews**; • **Software and its engineering** → *Software reliability*;

Additional Key Words and Phrases: Testing effort, testing effort estimation, testing effort estimation-related problems, systematic literature review

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