

## 1. ANCHOR: locating android framework-specific crashing faults (Open Access)

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**Abstract:** Android framework-specific app crashes are hard to debug. Indeed, the callback-based event-driven mechanism of Android challenges crash localization techniques that are developed for traditional Java programs. The key challenge stems from the fact that the buggy code location may not even be listed within the stack trace. For example, our empirical study on 500 framework-specific crashes from an open benchmark has revealed that 37 percent of the crash types are related to bugs that are outside the stack traces. Moreover, Android programs are a mixture of code and extra-code artifacts such as the Manifest file. The fact that any artifact can lead to failures in the app execution creates the need to position the localization target beyond the code realm. In this paper, we propose Anchor, a two-phase suspicious bug location suggestion tool. Anchor specializes in finding crash-inducing bugs outside the stack trace. Anchor is lightweight and source code independent since it only requires the crash message and the apk file to locate the fault. Experimental results, collected via cross-validation and in-the-wild dataset evaluation, show that Anchor is effective in locating Android framework-specific crashing faults. Finally, we put our empirical study results openly accessible at <https://github.com/anchor-locator/anchor>. © 2021, The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature. (62 refs)

**Main heading:** Android (operating system)

**Controlled terms:** Location

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