Dear Editor and Reviewers,

This paper is an extension of the conference paper “Android Multitasking Mechanism: Formal Semantics and Static Analysis of Apps “ (APLAS 2019).

This paper extends the conference paper in the following four aspects.

1. Fragments, a crucial feature of Android multitasking which was ignored in the APLAS paper, is fully addressed in the current paper, including the formal semantics and static analysis.
2. The semantics of the multitasking mechanism between activities and fragments for Android 6.0-13.0 are defined in this paper, while only the semantics for Android 7.0 and 8.0 were defined in the APLAS paper.
3. For the semantics validation, this paper extends the previous work in two ways: the relevant parts of the source code of Android OS are audited; 20 opens-source F-Droid apps are included in addition to the app that is specially designed for the empirical validation.
4. The models are extracted both statically and dynamically in this paper, while only static model extraction was used in the APLAS paper.
5. The experiments are considerably more thoroughly done with, in particular, more benchmarks.

We also confirm that you have expanded your paper to adhere to the ACM policy of adding at least 40% new material.

Finally, since this is a revision of the previous submission, the comparison with the APLAS paper has been checked by the reviewers of the previous submission.