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Professional Android Phone Benchmarker

When buying a new phone, many people want to make sure that their money is well spent. One part of this is to check out results of artificial benchmark tests like AnTuTu, Geekbench and PCMark. While these benchmarks are able to rank phones based on their scores, it is unclear what those scores actually mean in terms of real-world performance, which is what we are actually interested in when making our buying decision.

In a first attempt to do automated real-world benchmarking for Android, we developed an App (DiscoMark Benchmark) that uses high-level Android libraries to automatically measure the launch-times of Apps. DiscoMark is now used by many people around the world and seems to accurately measure a device's real-world performance. Recently, review sites such as XDA and Anandtech started using DiscoMark as part of their testing-routines. While DiscoMark is convenient, since anyone can run it on their phone and it does not require root, it is also subject to Android's security- and permission restrictions. It would be great to have a tool for professionals (e.g. reviewers) that is much more powerful than DiscoMark.



The goal of this thesis is to develop an external benchmarking system that uses ADB (Android Debugging Bridge) to instrument phones connected via USB and measure their performance. We are particularly interested in real-world performance measurements (such as the launch-times of apps, animation smoothness, etc.). Once you have a working benchmarking system, we can use (learning) models for performance-prediction and classification, do anomaly detection, create cool visualizations, set up different benchmarking suites, and so on. If this sounds interesting to you, do not hesitate to contact us so we can have a chat!

You will: Learn more about Android development and its debugging/monitoring/instrumentation tools. Implement a tool for performance monitoring. Come up with new ways of measuring real-world performance. Improve your data visualization and analysis skills, and so on. In addition, you will meet with your supervisors on a weekly basis to discuss progress and open problems.

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