Software to efficiently and effectively detect mobile app bugs

Technology #cu13368

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Mobile app development has experienced vast growth in recent history due to the widespread adoption of smart, internet-connected phones in conjunction with the accessibility of mobile app marketplaces, such as Google Play Store and Apple App Store. In order to quickly release a successful application to the public, developers need an effective and convenient way to test the product for bugs. Current methods of testing are time intensive and inefficient, leading to incomplete testing and missed bugs. Buggy apps diminish user convenience, cause negative consumer reviews, and result in a diminished reputation of the app and the producer. This technology establishes a system to quickly and effectively detect and diagnose software bugs within mobile apps. By incorporating methods to reduce false positives and expediently verify bugs, this technology greatly diminishes manual inspection effort.

Simplified bug diagnosis expedites the time required to bring tested apps to market, reducing production costs

This technology quickly exposes potential bugs using approximate execution, which runs faster than real execution. This technology also successfully prunes out false positives and verifies bugs, eliminating the need for tedious manual inspection. Additionally, action slicing is incorporated to increase the speed of bug detection.

The working software was implemented on Android platform and evaluated on 53 of the 100 most popular apps on Google Play and 11 of the most popular open-source apps. AppDoctor effectively detects 72 bugs—including two bugs that affect all Android apps—13.3 times faster than current bug detecting software.

Lead Inventor:

Junfeng Yang, Ph.D.,
Applications:

- Tool for mobile application developers to quickly diagnose bugs
- Testing and diagnosing bugs on diverse software formats, such as desktop applications, enterprise servers, industrial packages, etc.
- Screening method for mobile applications market providers to ensure high quality, secure apps

Advantages:

- Uses approximate execution to quickly debug screen code
- Incorporates detailed screen after approximate execution step to eliminate false positives
- Allows for customization, so developers can individually specify testing parameters
- Uses action slicing for increased speed of bug detection and diagnosis

Patent information:

Patent Pending

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Inventors

Junfeng Yang