UiDroid: Towards Real-time Fidelity Checking between User Interfaces and App Behavior

***Abstract*—The exponential growth of mobile devices has raised security concerns. When users interact with an app, users directly read the content of user interfaces, which gives an intuitive idea of the functionality including the security-related information of the app. To best assist the end users, the user interface should explicitly reflect the underline behaviors of the app. In this paper, we present a system UIDroid to detect unintended stealthy behaviors by identifying inconsistence between UI and program behaviors. UIDroid outperforms previous work AsDroid in the following aspects:**

- **Unlike AsDroid limits itself to four types of sensitive communication, UIDroid considers all sensitive API calls, which reflects more behaviors;**
- **AsDroid only cares about certain buttons and treat them independently, we extend the target by introducing window layout.**
- **UIDroid takes temporal relationships into consideration. In specific, a sensitive behaviors may triggered by a sequences of interactions (DroidSIFT) and a widget may lead to different behaviors under distinguish contexts (PEG);**
- **Single event handler may conceal multiple sensitive API calls;**
- **The static analysis results help to build models used to monitor dynamic runtime behaviors.**

I. Conclusion

In this paper, we develop UIDroid, a proof-of-concept system that . Compared to AsDoird, our We have built our Our approach achieves about XX% accuracy in distinguishing between .