

Abstract

The usage of smartphones has been increased lately and the most popular operating systems for these handheld devices are iOS and Android. The mobile applications do provide functionalities regarding different aspects but also cause some security concerns regarding the user data. There are some malwares that effect the security of devices exploiting the privacy of sensitive data. We aim to provide a research methodology to detect malwares in iOS mobile devices. Different approaches regarding malware detection of iOS devices have been presented by research communities in order to provide security for user's private data and sensitive information. Most of the techniques among them are based on machine learning that generate predictive models for the applications. In our research, we proposed a method for iOS malware detection using formal methods and process algebra techniques. Formal equivalence checking is implemented in order to detect the malicious behavoiur among different iOS applications that can be harmful for user data. The formal equivalence checking is novel technique that has not been implemented before for iOS malware detection. Process algebra is applied for the creation of CCS processes (Calculus of Communication Systems) and formal equivalence checking. This methodology is an effective one for the detection of malware for iOS devices and their family classification.