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Three Tier Indoor Localization System for Digital Forensics

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Abstract : Mobile localization has attracted a great deal of attention recently due to the introduction of wireless networks. Although several localization algorithms and systems have been implemented and discussed in the literature, very few researchers have exploited the gap that exists between indoor localization, tracking, external storage of location information and outdoor localization for the purpose of digital forensics during and after a disaster. The contribution of this paper lies in the implementation of a robust system that is capable of locating, tracking mobile device users and store location information for both indoor and partially outdoor the cloud. The system can be used during disaster to track and locate mobile phone users. The developed system is a mobile application built based on Android, Hypertext Preprocessor (PHP), Cascading Style Sheets (CSS), JavaScript and MATLAB for the Android mobile users. Using Waterfall model of software development, we have implemented a three level system that is able to track, locate and store mobile device information in secure database (cloud) on almost a real time basis. The outcome of the study showed that the developed system is efficient with regard to the tracking and locating mobile devices. The system is also flexible, i.e. can be used in any building with fewer adjustments. Finally, the system is accurate for both indoor and outdoor in terms of locating and tracking mobile devices.

Keywords : indoor localization, digital forensics, fingerprinting, tracking and cloud
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