Energy consumption patterns of mobile applications in android platform: a systematic literature review

ABSTRACT

Studies related to resource consumption of mobile devices and mobile applications have been brought to the fore lately as mobile applications depend largely on their resource consumption. The study aims to identify the key factors and holistic understanding of how a factor influences Consumption Pattern (CP) effectiveness for an android platform mobile application. The study presents a Systematic Literature Review (SLR) on existing studies that examined factors influencing the effectiveness of CP for android mobile application and measured the effectiveness of CP. Therefore, the current SLR is conducted to answer the following questions: (1) What is the evidence of CP factors that drain the battery of a mobile device? (2) What are the energy conservation techniques to overcome all the factors that drain battery life? and (3) How can developers measure the effectiveness of an energy conservation technique?. The SLR investigated factors affecting the effectiveness of CP for android platform mobile application. The analyses of forty papers were used in our synthesis of the evidence related to the research questions above. Therefore, the analyses showed 22 studies that investigated how to measure the energy conservation technique effectiveness while 18 studies focused on better understanding of how the resources of mobile devices are actually spent. In this sense, 2 studies show the effectiveness of early analysis of software application design. Additionally, five factors i.e., architecture, interface, behavior of the application, resources, and network technologies that affect CP effectiveness were identified. This study investigated a SLR targeting at studies of CP effectiveness in android platform. The total of 40 studies were identified and selected for result synthesis purpose in this work (SLR). The evidences show there are five factors affecting the CP's effectiveness. Three of them have received a little attention among developers regarding choosing the most suitable: software architecture, application interface and behavior of the application in terms of resource consumption.

Keyword: Energy consumption patterns; Energy conservation technique; Android mobile application; Systematic literature review