

Analysis of Mobile Energy Expenditure with Internet Usage Patterns for Efficient Mobile Internet Usage

07 Nov.
BE28

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Energy consumption of the internet and the study of its' effects are significant. Internet-related activities emit CO₂ that directly or indirectly cost for the carbon footprint of the internet. Mobile energy consumption has been heavily examined in recent years. But the relation between mobile energy consumption and usage patterns of the end-user has not been studied deeply. Therefore, we did a systematic review of the literature to find out frequent mobile internet usage patterns and a survey was conducted to recognize current usage patterns and the trend of users to follow best practices. To study the usage patterns and behaviors, we performed usage patterns using a control experiment by an android application followed by three test cases. In the control experiment, we compared the power consumption when mobile data and mobile phone notifications are on and off. Our experiments indicate that the power consumption of the mobile phone increases when the number of notification (on/off) transitions increases. At some point, it also helped to keep battery power. There is a direct connection between mobile energy consumption and usage patterns of the end-user. It can be concluded that turn on notifications for selected applications and keep it off for at least 2-3 times within the available time period will be an effective method for a 6-hour power plan.

Keywords: Internet, mobile power consumption, usage patterns, best practices