

Mobile battery life can be prolonged with system settings

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Mobile devices have a large number of different adjustable system settings whose energy impact can be difficult to understand for the average user, and even for the expert.

Some system settings have a direct and significant correlation with [energy consumption](#), for example screen brightness and network connectivity. The energy impact of system settings and their combinations, such as the combination of roaming, high operating [temperature](#), and bad [signal strength](#), are much more difficult to predict. The research article by the Finnish computer scientists demonstrates that the energy impact of these non-trivial system setting combinations can be significant, and presents a new learning based method for assessing this impact.

The effects of different settings need to be modeled as a whole.

The research is based on a large dataset that consists of device usage data gathered from over 150,000 smartphones and tablets. The dataset covers real life daily usage patterns and together with laboratory based specific high precision measurements serves as the empirical basis for the research work.

The energy model for system settings proposed in the research study makes it possible to give personalized, practical energy recommendations to the smartphone user. The research findings include the following:

- Wi-Fi signal strength dropping one bar can cause over 13% battery life loss
- High temperature can cause even 50% battery life loss, and high temperature is not always related to high CPU load
- Automatic screen brightness is in most cases better than the manual setting
- In addition to CPU, battery temperature and distance traveled together offer a good predictor of [battery](#) lifetime

More information: The research article "Energy Modeling of System Settings: A Crowdsourced Approach" is available in carat.cs.helsinki.fi/#Research

Provided by University of Helsinki

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