



Energy-efficient Mobile Browsing: Rethinking Energy-Performance Trade-Off in Mobile Web Page Loading

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Web browsing is a key application on mobile devices. However, mobile browsers are largely optimized for performance, imposing a significant burden on power-hungry mobile devices. In this work, we aim to reduce the energy consumed to load web pages on smartphones, preferably without increasing page load time and compromising user experience. We derive general design principles for energy-efficient web page loading, and apply these principles to the open-source Chromium browser and implement our techniques on commercial smartphones. Experimental results show that our techniques are able to achieve a 24.4% average system energy saving for Chromium on a latest-generation big.LITTLE smartphone using Wi-Fi, while not increasing average page load time. User study results indicate that such a small increase in page load time is hardly perceivable. This work was presented in MobiCom '15.

Insik Shin is an Associate Professor in the School of Computing Science at KAIST, which he joined in 2008. He obtained a Ph.D. from University of Pennsylvania in 2006, an M.S. from Stanford University in 1998, and a B.S. from Korea University in 1994, all in Computer Science. He was a post-doctoral research fellow at Malardalen University, Sweden, and a visiting scholar at University of Illinois, Urbana-Champaign until 2008. His research interests lie in mobile computing, real-time embedded systems, and cyber-physical systems. He served as co-chairs for various workshops and program committees in real-time embedded systems, including RTSS, RTAS, ECRTS, and EMSOFT. He received Best Paper Awards from RTSS in 2003 and 2012, Best Student Paper Award from RTAS in 2011, and Best Paper Award from CPSNA in 2014.