Karlsruher Institut für Technologie

Institut für Angewandte Informatik
und Formale Beschreibungsverfahren

Kolloquium Angewandte Informatik

Using smart meter data for automated energy efficiency services

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Abstract:

Utility companies are currently deploying smart electricity meters in millions of households to collect fine-grained electricity consumption data. At the Bits to Energy Lab at ETH Zurich and the University of Bamberg, we have developed several approaches to automatically analyze this data with the ultimate goal to enable personalized and scalable energy efficiency programs targeting private households. In particular, we have implemented and tested a system that uses supervised machine learning techniques to automatically estimate specific characteristics of a household from its electricity consumption. The characteristics are related to a household's socio-economic status, its dwelling, and its appliance stock. We evaluated our approach by analyzing smart meter data collected from 4232 households over a period of 1.5 years. Our analysis shows that revealing characteristics from smart meter data is feasible, as our method achieves an accuracy of more than 70% over all households for many of the characteristics and even exceeds 80% for some of the household properties. The findings are applicable to smart metering systems without making changes to the measurement infrastructure. The inferred knowledge paves the way for targeted energy efficiency programs and other services that benefit from improved customer insights. On the basis of these results, Thorsten Staake will detail the technical approach and outline the potential for utilities as well as the policy and privacy implications.

Reading material is available here: doi:10.1016/j.energy.2014.10.025

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Ort: Englerstraße 11, 76131 Karlsruhe
Kollegiengebäude am Ehrenhof (Geb. 11.40), 2. OG, Raum 231
(Hinweise für Besucher: www.aifb.kit.edu/web/Kontakt)

Veranstalter: Institut AIFB, Forschungsgruppe Effiziente Algorithmen

Zu diesem Vortrag lädt das Institut für Angewandte Informatik und Formale Beschreibungsverfahren alle Interessierten herzlich ein.

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