

Graduiertenkolloquium Angewandte Informatik

Generic User Interface for Energy Management in Smart Homes

M. Eng. (Comp. Sc.) Huiwen Xu

AIFB

Currently, the global power grid is continuously being challenged to gradually undergo a transition from fossil-based energy sources to renewable energy sources. This transition poses a threat to the stability of the power grid. On the other hand, the reduction of energy consumption has become a global concern, with particular attention being paid to the saving of non-renewable natural resources and the cutting down on environmental disruption. By being equipped with a building operating system, a smart home, which has potential of providing demand flexibilities, can contribute towards not only balancing the demand and supply in the grid but also increasing the energy efficiency.

The user interface of a building operating system in a smart home plays an essential role in realizing demand response, since it helps to increase the residents' energy-awareness and facilitates load shifting by allowing residents to configure degrees of freedom for their appliances. This talk will present a generic user interface for building operating systems from aspects of design, implementation and evaluation.

To ensure the user interface can be flexibly adapted to various types of buildings, a series of generic data models is designed which are independent of any building operating system. Besides, we introduce three roles with different permissions and several functional components of the user interface. Based on this design, a prototype of such a generic user interface named Building Operating System User Interface (BOS UI) has been implemented to operate the Energy Smart Home Lab (ESHL) at the Karlsruhe Institute of Technology (KIT). Finally, we evaluate the design, functionality, and usability of the BOS UI. The detailed functions that have been implemented in the BOS UI as well as the evaluation results about the user interface will be presented in this talk.

Termin: **Mittwoch, 27. Juni 2018, 15.45 Uhr**

Ort: Kaiserstr. 89, 76133 Karlsruhe
Kollegiengebäude am Kronenplatz (Geb. 05.20), 1. OG, Raum 1C-04
(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.

A. Oberweis, H. Sack, H. Schmeck (Org.), A. Sunyaev, Y. Sure-Vetter, M. Volkamer, J. M. Zöllner