

HiWi Project on Distributed Optimization of Energy Systems

Smart Grids are the future for electrical systems

The Advanced Control (AC) group in the Institute for Applied Informatics (IAI) is currently offering students the opportunity to learn about and conduct cutting edge research on this emergent technology. The proposed project would involve simulating large numbers of power loads and determining an optimal control strategy.

As renewable energy generation grows, the need for control schemes that can manage intermittent energy availability becomes increasingly important. Such fluctuating energy supply may cause problems for power loads that are tasked with maintaining a given temperature threshold. Furthermore, smart control of these thermostatically controlled loads is critical after an extended power failure to avoid the case when they all activate simultaneously and create a large drain in power.

Currently, only control of heterogeneous thermostatically controlled loads have been studied. However, by using state of the art optimization algorithms it may be possible to obtain solutions to more general models. Such optimization algorithms could allow for the effective coordination of a large group of thermostatically controlled loads and increase grid reliability and efficiency.

Duration:	3 - 6 months, 20 - 40 hours/month
Start:	Immediate start possible
Preferable Background:	Mathematics/ Electrical Eng./ Comp. Sci.
Required:	At least one course on optimization and control Some familiarity with concepts of Electrical Engineering and Energy Systems
Estimated Work Load:	Study of literature: 10% Theory: 40% Implementation: 50%

If you are interested, do not hesitate to inquire by email, including a cover letter, current transcripts of grades and a resume/CV.

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