



14.12.2010

Einladung

Am Mittwoch, dem 5. Januar 2010, Hörsaal M 5

spricht

PD Dr.-Ing. Falko Dressler (Universität Erlangen)

15:00 Uhr Lehrvortrag: CPU-Aufbau und Befehlsausführung

15:30 Uhr Forschungsvortrag: Sensor Networks: From Theory to Practice

Zusammenfassung:

With the development of new generations of micro controllers, the advances in miniaturization, and the increasing use of networked embedded systems, new research challenges emerged in several domains of computer science. This especially includes the coordination of massively distributed systems with inherent restrictions of available resources. Well-known concepts for management and control can only be used with noticeable restrictions or even not at all due to short-living batteries, unreliable radio communications, and bandwidth-limited transmission channels. Wireless sensor and actor networks imply challenging properties such as high system dynamics w.r.t. changing application demands, node mobility, and real-time constraints. Self-organization as a paradigm for coordination and control is envisioned to solve at least some of the issues.

In my presentation, I will start with an overview of ongoing research activities in the field of "adaptive wireless networking" research. In the main part of the talk, I will first present a novel routing and data management protocol. The so called virtual cord protocol (VCP) uses the principles of distributed hash tables for data management in combination with underlay routing techniques. The innovative advantages of this protocol are its robustness in various scenarios and the completely distributed/self-organized operation. Besides routing, VCP supports push and pull strategies for data storage and lookup, as well as the challenging issue of dynamic service discovery. Secondly, I will focus on the applicability of sensor networking technology in industrial environments. We thoroughly evaluated the standardized IEEE 802.15.4 protocol suite in collaboration with industry partners. We identified several systematic limitations of the protocol that prevent its use in industry automation environments requiring robust real-time communication. Our protocol extensions, which are the basis for the forthcoming industry standard IEEE 802.15.4e, alleviate these shortcomings.

Auf diese Vorträge wird besonders hingewiesen

Matthias Löwe, Dekan