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Einladung zum Vortrag

von Herrn Syed Eqbal Alam (Concordia University, Montreal, Kanada) zum Thema

Distributed Algorithms for Internet-of-Things-enabled Prosumer Markets

am Mittwoch, 27.11.2019, um 13:00 Uhr, in Raum (ITZ) SR 002

Abstract

Internet-of-Things (IoT) enables the development of sharing economy applications. In many sharing economy scenarios, agents both produce as well as consume a resource; we call them prosumers. A community of prosumers agrees to sell excess resource to another community in a prosumer market. In this talk, I will present a control theoretic approach to regulate the number of prosumers in a prosumer community, where each prosumer has a cost function that is coupled through its time-averaged production and consumption of the resource. Furthermore, each prosumer runs its distributed algorithm and takes only binary decisions in a probabilistic way, whether to produce one unit of the resource or not and to consume one unit of the resource or not. In the proposed approach, prosumers do not explicitly exchange information with each other due to privacy reasons, but little exchange of information is required for feedback signals, broadcast by a central agency. Furthermore, prosumers achieve optimal values asymptotically. Also, the proposed approach is suitable to implement in an IoT context with minimal demands on infrastructure. We will also talk about a few use cases; community-based car sharing and collaborative energy storage for prosumer markets.