ACM Transactions on Embedded Computing Systems
Special Issue on Autonomous Battery-Free Sensing and Communication

Recently, energy harvesting technologies have emerged as a solution to the challenges posed by energy constraints in many mobile applications. Environmental energy, from sources such as solar, wind, radio frequency, and temperature gradient can be harvested and stored for sustainable operation, thereby enabling battery-free nodes. Such nodes can be applicable in scenarios where small device volume and perpetual operation are desirable. Moreover, they have the potential to enable autonomous sensing and communications tasks without human intervention following the deployment. However, challenges are posed by the need to coordinate the sensing and communications among battery-free nodes while guaranteeing the system performance. Since the harvesting of energy is typically hard to predict, some preliminary works designed efficient energy management schemes. Yet, designing new architectures that enable autonomous battery-free sensing and communications is an open problem.

The objective of this special issue is to capture the state-of-the-art advances in this area, and foster new avenues for research. The potential topics of interest include, but are not limited to:

--New energy harvesting technologies for battery-free systems;
--Energy management for perpetual operation;
--New architectures for battery-free sensing and communications;
--Resource management for autonomous operations;
--Operating systems for battery-free devices;
--Security issues in battery-free systems;
--Emerging applications by battery-free systems;
--Future directions for battery-free systems;

Tentative Schedule
--Manuscript Due: June 1st, 2016
--First Notification: Sept. 1st, 2016
--Revised version: Nov. 1st, 2016
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SUBMISSION GUIDELINES:

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Previously published conference papers may only be submitted, if the paper is substantially extended with at least 30% new material. In such a case, authors are required to include with their submission a letter in which they identify all prior publications on which their submission may be based, provide pointers to publicly available versions of those publications, and articulate any changes made to improve and/or expand on those conference publications.

Papers should be submitted via the Manuscript Central website and should adhere to standard ACM TECS formatting requirements (where the page count limit is 25, including figures and references). The authors should indicate that they are submitting to the Special issue on "Autonomous Battery-Free Sensing and Communications" on the first page and in the field "Author's Cover Letter" in Manuscript Central. Any questions on this special issue should be addressed to Jiming Chen jmchen@iipc.zju.edu.cn.