

Adaptive Power Management Circuits for Selfpowered Systems Henrik Zessin, Fraunhofer IIS Fort Worth, 08.03.2011 ... Selfpowered Systems 1. Challenges of Adaptive Power Management 2. Generic Approach 3. Circuit Examples 4. Summary ... generators powered by random vibrations, DTIP of MEMS& MOEMS, Stresa, Italy, April 2006. ...

In this paper, we address power management of, e.g., wireless sensor nodes which receive their energy from solar cells. Based on a prediction of the future available energy, we ...

In this paper, we address power management of, e.g., wireless sensor nodes which receive their energy from solar cells. Based on a prediction of the future available energy, we adapt parameters of the application in order to maximize the utility in a long-term perspective.

An integrated approach of energy assignment principles with adaptive duty cycling has been proposed to efficiently utilize the available energy and to maximize the node performance. ... C., Thiele, L., Brunelli, D., & Benini, L. (2010). Adaptive power management for environmentally powered systems. IEEE ... D. K., & Kang, K. (2011). Balanced ...

DOI: 10.1109/TC.2009.158 Corpus ID: 498364; Adaptive Power Management for Environmentally Powered Systems @article{Moser2010AdaptivePM, title={Adaptive Power Management for Environmentally Powered Systems}, author={Clemens Moser and Lothar Thiele and Davide Brunelli and Luca Benini}, journal={IEEE Transactions on Computers}, year={2010}, ...

A framework for energy management in energy harvesting embedded systems is presented and a set of algorithms and methods for different application scenarios, including real-time scheduling, application rate control as well as reward maximization are provided. In this paper a framework for energy management in energy harvesting embedded systems is presented. As a possible ...

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MP4 File - SC23 video presentation for "DPS: Adaptive Power Management for Overprovisioned Systems" SC23 video presentation for the main program paper "DPS: Adaptive Power Management for Overprovisioned Systems" by Jianru Ding and Henry Hoffmann ... Morris Jette, and Matthieu Hautreux. 2014. Energy Accounting and Control with SLURM Resource ...

The energy harvesting system achieved from one environmental energy channel is facing more and more challenges in meeting the power supply of electronic energy-consuming devices. ... Self-powered by this gathered power, an adaptive light intensity control of HP-LED is also realized using the established feedback path between ambient light and ...

Wireless sensor networks (WSNs) are mostly used for monitoring the environment; however, they are usually powered by non-rechargeable batteries with limited energy. Solar energy harvesting is an attractive solution to the limit by charging the sensor nodes; however, the harvested solar energy is easily affected by weather conditions. Based on the characteristics ...

Environmental energy is an attractive power source for low power wireless sensor networks. We present Prometheus, a system that intelligently manages energy transfer for perpetual operation without human intervention or servicing. Combining positive attributes of different energy storage elements and leveraging the intelligence of the microprocessor, we ...

Structurally, an MG control system is often implemented in a hierarchical manner, with three control layers: (1) the tertiary loop which manages the energy flow to/from the MG (typically referred to as Energy Management (EM)), (2) a secondary loop which corrects output voltage fluctuations and facilitates current sharing between power ...

The proposed triboelectric-electromagnetic hybridized nanogenerator (TEHG)-based self-powered system incorporates a dual-channel power management topology (DcPMT) with high energy ...

Power is a scarce and vital resource in the IoT ecosystem. Since LPWAN devices are required to perform their operations efficiently and effectively for long periods, harvesting (or scavenging) energy from the environment is an important strategy to design and develop self-powered IoT systems.

@article{Yong2022EnvironmentalSW, title={Environmental Self-Adaptive Wind Energy Harvesting Technology for Self-Powered System by Triboelectric-Electromagnetic Hybridized Nanogenerator with Dual-Channel Power Management Topology}, author={Shun Yong and Hanqing Wang and Zenan Lin and Xiaosa Li and Boyu Zhu and Lijun Yang and ...

DPS: Adaptive Power Management for Overprovisioned Systems SC '23, November 12-17, 2023, Denver, CO, USA 2 RELATED WORK Power and energy have become first-order concerns for computer system design. Therefore, power management has been proposed at both node and cluster-level. We first briefly cover node-level

Adaptive power management in energy harvesting systems. Authors: Clemens Moser, Lothar Thiele, Davide Brunelli, ... Adaptive power management in energy harvesting systems. Pages 773 - 778. ... Perpetual environmentally powered sensor networks. In Proceedings of the Fourth International Symposium on

Information Processing in Sensor Networks ...

This paper presents an adaptive power manager for solar energy harvesting sensor nodes that uses Reinforcement Learning (RL), specifically SARSA(1) learning, to train itself from historical data and achieves near perfect energy neutral operation (ENO) with less than 6% root mean square deviation from ENO. In this paper, we present an adaptive power ...

Energy harvesting technologies allow embedded systems to be powered up from the environment by converting surround energy sources into electrical energy increasing devices autonomy significantly ...

When this system was compared with the manual method, the result shows that the average time taken per student using an embedded fingerprint-based attendance management system using ...

of 16.5 mW with a power density of 41.05 W m⁻³, in which the TENG output power contribution is more than 70% at low wind speeds, and an energy conversion efficiency of 40-60% can be maintained. Furthermore, a self-powered system consists of the TEHG with the DcPMT and commercial environmental sen-

The configuration in Fig. 1 (a) is one of the most commonly used PHEV structures, whose power system consists of two types of energy sources: internal combustion engine and battery [8], [9], [10], [11]. The Integrated Starter Generator (ISG) is used to generate electricity and charge the battery to improve the efficiency of ICE.

The idea of harvesting energy to power electronic devices is not new, but it has gained a lot of attention recently. Especially in the domain of wireless sensor networks, tech-niques to ...

In this study, an adaptive power management method based on reinforcement learning is proposed to improve the energy utilization and battery endurance for resource-limited embedded systems. A simulator which traces battery endurance and device operations is developed...

OPTIMIZATION-BASED ADAPTIVE POWER MANAGEMENT Adaptive power management of a wireless base station is a challenging issue due to the uncertainty in the environment and the system. To address this issue, the stochastic optimization problem can be formulated and solved to obtain the best decision of the adaptive power management controller such ...

The results show that the developed power-adaptive systems can track the variable power supply better. The harvested solar energy utilization efficiency is 2.46 times better than the conventional static designs and the rule-based adaptation approaches. ... [2] Moser C., Thiele L., Brunelli D., and Benini L., " Adaptive power management for ...

The emerging embedded systems with the capability to harvest energy from the environment have recently



Adaptive power management for environmentally powered systems

triggered the revision of power management to improve the quality of service dynamically.

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Recently, there has been a substantial interest in the design of systems that receive their energy from regenerative sources such as solar cells. In contrast to approaches that minimize the ...

ACM Transactions on Embedded Computing Systems (TECS), 6(4):32, 2007. ... L. Thiele, D. Brunelli, and L. Benini. Adaptive power management for environmentally powered systems. Computers, IEEE Transactions on ... Analysis of supercapacitor energy loss for power management in environmentally powered wireless sensor nodes. IEEE transactions on ...

In general, self-powered sensor networks/Internet of Things (IoT) are equipped with a power management system and use a timer as a reference for the device"s actives time, both using an internal ...

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