ADAPTIVE ENERGY STORAGE MANAGEMENT IN GREEN WIRELESS NETWORKS

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ABSTRACT

Time-varying wireless channel as well as the variability of renewable energy supply and energy prices are practically unknown in advance. To address such dynamic statistics of wireless networks, this paper develops an adaptive strategy inspired by combinatorial multi-armed bandit model for energy storage management and cost-aware coordinated load control at the base stations. The proposed strategy makes online foresighted decisions on the amount of energy to be stored in storage to minimize the average energy cost over long time horizon. Simulation results validate the superiority of the proposed strategy over a recently proposed storage-free learning-based design.

INTRODUCTION:

Mobile computing is the discipline for creating an information management platform, which is free from spatial and temporal constraints. The freedom from these constraints allows its users to access and process desired information from anywhere in the space. The state of the user, static or mobile, does not affect the information management capability of the mobile platform. A user can continue to access and manipulate desired data while traveling on plane, in car, on ship, etc. Thus, the discipline creates an illusion that the desired data and sufficient processing power are available on the spot, where as in reality they may be located far away. Otherwise Mobile computing is a generic term used to refer to a variety of devices that allow people to access data and information from where ever they are.

Improve business productivity by streamlining interaction and taking advantage of immediate access. Reduce business operations costs by increasing supply chain visibility, optimizing logistics and accelerating processes Strengthen customer relationships by creating more opportunities to connect, providing information at their fingertips when they need it most. Gain competitive advantage by creating brand differentiation and expanding customer experience Increase work force effectiveness and capability by providing on-the-go access Improve business cycle processes by redesigning work flow to utilize mobile devices that interface with legacy applications.

RELATED WORK:

An adaptive algorithm is an algorithm that changes its behaviour based on information available at the time it is run. This might be information about computational resources available, or the history of data recently received. A distributed algorithm is an algorithm designed to run on computer hardware constructed from interconnected processors. Distributed algorithms are used in many varied application areas of distributed computing, such as telecommunications, scientific computing, distributed information processing, and real-time process control. Standard problems solved by distributed algorithms include leader election, consensus, distributed search, spanning tree generation, mutual exclusion, and resource allocation.

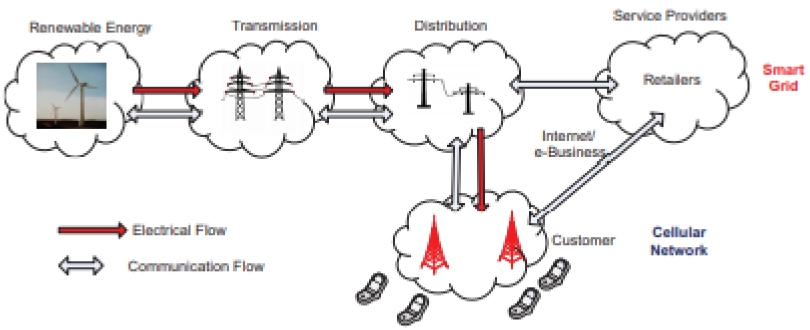
PROPOSED SYSTEM:

We propose a two-step approach. In the first step, we determine where the SenCar stops to collect data packets while guaranteeing that the total migration tour length is bounded by a threshold. These node positions are called anchors. In the second step, after the anchors have been selected, we formulate the optimization problem into a network utility maximization problem under the constraints of flow, energy balance, battery and link capacity. In particular, in our formulation, energy conservation captures the time-varying and spatial variations of energy harvesting rates.

ADVANTAGES:

- First, we propose a new framework by introducing mobile data collection for energy harvesting sensor networks.
- Second, we develop an adaptive anchor selection algorithm for the SenCar to achieve a balance between data collection amount and latency.
- Third, given the selected anchors, we propose distributed algorithms to find optimal data rates, link flows for sensors and sojourn time allocation for the SenCar.
- Finally, we provide extensive evaluations to demonstrate that the proposed scheme can converge to optimum, react to the dynamics of energy income effectively, maintain perpetual network operation
- improve network utility significantly compared to the network with a static data sink.

SYSTEM MODEL:



Cellular Network

CONCLUSION

In this paper, we have considered the problem of finding opti-mal mobile data gathering strategies for energy harvesting sensor networks. We first examine the impact of spatial-temporally varying energy distribution on the operation of the sensor network through an experimental study based on solar harvesting. To circumvent the negative effect of limited energy harvesting capability on some sensor nodes, a mobile collector is introduced for gathering data and balancing energy distribution in the network to improve performance. We then propose an adaptive anchor selection algorithm based on sensor's energy level which achieves a desirable balance between the amount of data gathered and data gathering latency. We then formulate the problem into a convex optimization problem in which the SenCar spends variable sojourn time at each anchor and each sensor tunes the data rate, scheduling and routing based on the individual energy harvesting rate such that the overall network utility can be maximized.

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