

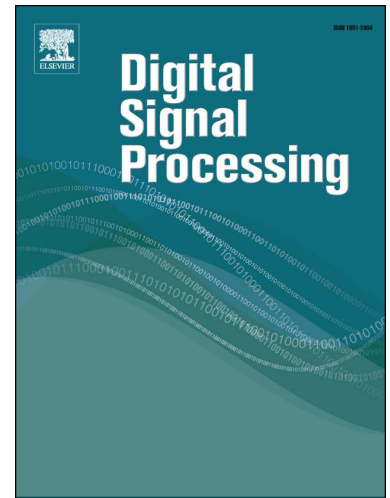
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Resource-Aware Event Triggered Distributed Estimation Over Adaptive Networks

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# Resource-Aware Event Triggered Distributed Estimation Over Adaptive Networks

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## Abstract

We propose a novel algorithm for distributed processing applications constrained by the available communication resources using diffusion strategies that achieves up to a  $10^3$  fold reduction in the communication load over the network, while delivering a comparable performance with respect to the state of the art. After computation of local estimates, the information is diffused among the processing elements (or nodes) non-uniformly in time by conditioning the information transfer on level-crossings of the diffused parameter, resulting in a greatly reduced communication requirement. We provide the mean and mean-square stability analyses of our algorithms, and illustrate the gain in communication efficiency compared to other reduced-communication distributed estimation schemes.

*Key words:* Distributed estimation, adaptive networks, event-triggered communication, level-crossing quantization.

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## 1 Introduction

In tandem with the increasing computational capabilities of processing units and the growing amount of generated data, the demand on distributed net-

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