

Distributed Time Synchronization In Communication
Networks

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Abstract

We will discuss distributed deterministic and probabilistic algorithms to be used for time synchronization in communication networks whose topologies may be time-varying. In the deterministic case, we derive the general conditions for synchronization and the existence of a common norm for an expanded set of row-stochastic matrices. We will then present a probabilistic synchronization algorithm and discuss its convergence properties. This probabilistic algorithm is particularly well suited for wireless sensor network applications, where connectivity is not guaranteed at all times, and energy efficiency is an important design consideration.