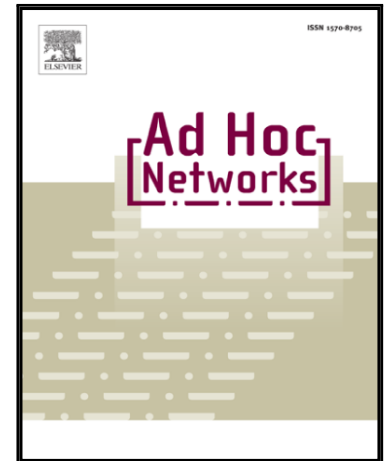


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Dynamic p -graphs for capturing the dynamics of distributed systems

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Abstract

The dynamics of a mobile dynamic distributed system depends on both the node mobility and the capacity of the underlying communication protocol. To qualify the dynamics of a distributed system, the *family of dynamic p -graphs* is introduced in this paper, constituting a finite set of dynamic graphs, each of them being a sequence of observed graphs, with the particularity that their edges allow transferring p messages. The family of dynamic p -graphs allows the characterization and the comparison of dynamic distributed systems of very different nature. It is also used to evaluate the ability of algorithms themselves to support a given dynamic distributed system.

Keywords: distributed algorithm, dynamic networks, routing, VANET

1. Introduction

Problem. A mobile dynamic distributed system is characterized by i) the moving nodes and ii) their communication means (generally implemented in a communicating device and composed of a low level protocol along with the underlying technology). Both are important to define the dynamics of the distributed dynamic systems from an algorithmic point of view.

Indeed when nodes move very fast, one may consider that the distributed system is highly dynamic. However, from an algorithmic point of view, in

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