

IF201 : Distributed algorithms

Shared by choice module(s) :

IF229 Single Choice module

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ECTS credits :

2.50

Evaluation :

S1: ET(1h,E,da:notes de cours et TD,sc) x1

Number of hours :

Combined lecture and tutorial classes : 30.00

Individual work : 15.00

Teacher(s) :

METIVIER Yves

Title :

Distributed algorithms

Abstract :

The aim of this course is to present fundamental aspects of distributed algorithms. Three major interaction models are considered : the message passing model, the shared memory model and the local computation model. Typical problems of distributed computing are studied : spanning tree construction, election, naming, termination detection, network topology recognition, snapshots, randomized algorithms, stabilization. For each of this problem our aim is to understand the implications of the initial knowledge and of synchronizations for the borderline between positive and negative results for distributed computations. Complexity considerations are also presented.

Plan :

1. Introduction, models
2. Spanning tree construction
3. Election
4. Recognition
5. Termination detection
6. randomized algorithms
7. Stabilization
8. Failure detection and fault tolerance

Prerequisite :

IF101, IF102, IF105, IF106

Document(s) :

C. Lavault "Evaluation des algorithmes distribués" 1995 Hermes /

G. Tel "Introduction to distributed algorithms" 2000 Cambridge University Press

Keyword(s) :

Distributed algorithms, spanning tree, election, recognition, termination, randomized algorithms, stabilization, fault