

Advanced Distributed Algorithms and Data Structures

SS 2019

Homework Assignment 6

Problem 1:

Finish the proof that the minimum rule converges in $O(\log n)$ rounds by showing that once $X_t \geq n/2$, the number of players i with $v_i \neq \min$ shrinks exponentially on expectation. (See slide 26 of Chapter 5.)

Problem 2:

Implement the median algorithm and test it in the NetSimLan environment by setting up a clique.

Problem 3:

Prove Lemma 5.9 on slide 44 of Chapter 5 for the case that we start in a setting where all honest players have the same value (but the adversarial players might have or propose arbitrary values).

Problem 4:

Why is it uncritical for the median rule if the adversary can only block up to some constant fraction of the players but it cannot inspect or change the numbers stored in the players? How should we relax the stability condition in this case? Informal arguments are fine here.