

Algorithmique Répartie

Jeremy Krebs - Guillaume Soulié

Université Paris Saclay

4 novembre 2017

- 1 Introduction
 - State of the Art
 - Motivations
 - Related work
 - Hypotheses
 - Problems
- 2 Weaker models
- 3 Gathering Problem
- 4 Orientation Problem
- 5 Set Formation Problem

Introduction

Weaker models
Gathering Problem
Orientation Problem
Set Formation Problem

State of the Art

Hypotheses
Problems

Introduction

Weaker models
Gathering Problem
Orientation Problem
Set Formation Problem

State of the Art

Hypotheses
Problems

There are a few hypotheses on the robots :

There are a few hypotheses on the robots :

- Robots are identical. No distinction, same algorithm,

There are a few hypotheses on the robots :

- Robots are identical. No distinction, same algorithm,
- Robots are oblivious. They have no memory of their moves,

There are a few hypotheses on the robots :

- Robots are identical. No distinction, same algorithm,
- Robots are oblivious. They have no memory of their moves,
- Robots cannot communicate directly.

There are a few hypotheses on the robots :

- Robots are identical. No distinction, same algorithm,
- Robots are oblivious. They have no memory of their moves,
- Robots cannot communicated directly.

However they can observe the positions of the other robots, and it is one of those two cases :

There are a few hypotheses on the robots :

- Robots are identical. No distinction, same algorithm,
- Robots are oblivious. They have no memory of their moves,
- Robots cannot communicated directly.

However they can observe the positions of the other robots, and it is one of those two cases :

- Global-Strong Multiplicity Detection

There are a few hypotheses on the robots :

- Robots are identical. No distinction, same algorithm,
- Robots are oblivious. They have no memory of their moves,
- Robots cannot communicated directly.

However they can observe the positions of the other robots, and it is one of those two cases :

- Global-Strong Multiplicity Detection
- Local-Strong and Global-Weak Multiplicity Detection

The scheduler can be of two types :

The scheduler can be of two types :

SSYNC Semi-Synchronous - For each round, a set of robots are activated/executed at the same time.

The scheduler can be of two types :

SSYNC Semi-Synchronous - For each round, a set of robots are activated/executed at the same time.

ASYNC Asynchronous - The robots are activated/executed asynchronously

Gathering Problem : The goal of the gathering problem is to group all the robots on the same node.

Gathering Problem : The goal of the gathering problem is to group all the robots on the same node.

Orientation Problem : The goal of the set formation problem is to make the robots gather in a configuration such that :

Gathering Problem : The goal of the gathering problem is to group all the robots on the same node.

Orientation Problem : The goal of the set formation problem is to make the robots gather in a configuration such that :

- There is exactly one tower node

Gathering Problem : The goal of the gathering problem is to group all the robots on the same node.

Orientation Problem : The goal of the set formation problem is to make the robots gather in a configuration such that :

- There is exactly one tower node
- There is a 1-robot block of size l

Gathering Problem : The goal of the gathering problem is to group all the robots on the same node.

Orientation Problem : The goal of the set formation problem is to make the robots gather in a configuration such that :

- There is exactly one tower node
- There is a 1-robot block of size l

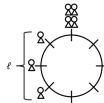


Figure 2: The goal of the orientation problem.

Gathering Problem : The goal of the gathering problem is to group all the robots on the same node.

Orientation Problem : The goal of the set formation problem is to make the robots gather in a configuration such that :

- There is exactly one tower node
- There is a 1-robot block of size l

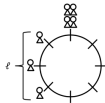


Figure 2: The goal of the orientation problem.

Set formation problem : The goal of the set formation problem is to gather the robots in a specific predefined configuration.

