Robotic Swarms:
Distributed Coordination Without Location

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Abstract

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1 Introduction

In order to emphasize the importance of the connection between the technology and its applications, a top-down approach is used for this survey. For each of the applications, an analysis is made of all the required services.

1.1 Region Covering

1.2 Dangers

1.2.1 Swarm Assisted Fire Fighting

"...the interactive use of autonomous robots in fire emergency settings. In particular, we consider a swarm of robots that are capable of supporting and enhancing fire fighting operations co-operatively..."[1]

- Navigation
  - Foraging
  - Low-visibility
  - Human in control of swarm
- Communication
  - Wireless(duh?)
    - Non-communicative behaviour
    - Communicative behaviour

1.3 Swarm Radiation Source Discovery

1.4 Scaling in time

1.5 Redundancy

Lorem ipsum...

1.6 ...

Give an overview of real-world applications possible with Robotic Swarms. A list of possible applications:

1. Cleaning
2. Space Exploration (swarm of Mars rovers)
3. Rescue Missions
4. Treacherous Radioactive Survey
5. Survey and cleanup of Toxic Spills
6. Surveillance

2 Definitions from Literature

2.1 Orientation

Location-based vs Range-based ...

2.2 Applications

List of applications.... idea for table: Orientation Table: LB RB LF RF

	Location-based	Location-free
Range-based	...	
Range-free	...	

2.2.1 Service Required

3 In-depth review of Services

... small introduction

3.1 Service 1

... Introduction to problem 1.

3.1.1 Comparison of Solutions

3.1.2 Remaining Problems

3.2 Service 2

... Introduction to problem 2.

3.2.1 Comparison of Solutions

3.2.2 Remaining Problems

3.3 Service 3

... Introduction to problem 3.

3.3.1 Comparison of Solutions

3.3.2 Remaining Problems

3.4 Service 4

... Introduction to problem 4.

3.4.1 Comparison of Solutions

3.4.2 Remaining Problems

3.5 Overview

... Overview of all Applications.

Application	Services	Algorithms	Problems
...	...	...	...
...	...	...	...
...	...	...	...

4 Unsolved Problems

... Summarize remaining problems.

5 Discussion

Make references in the running text with the `\cite` command [**?**]. Multiple referrences go like this [**?**, **?**].

References

[1] Amir M. Naghsh, Jeremi Gancet, Andry Tanoto, and Chris Roast. Analysis and design of human-robot swarm interaction in firefighting. *RO-MAN 2008 - The 17th IEEE International Symposium on Robot and Human Interactive Communication*, pages 255–260, August 2008.