UNIVERSITÀ DEGLI STUDI DI CAMERINO

SCHOOL OF ADVANCED STUDIES

DOTTORATO DI RICERCA IN SCIENZE E TECNOLOGIE
COMPUTER SCIENCE - XXXIV CICLO

Your title line 1
title line 2

Relatore
Dr.Your Advisor

Dottorando
Your name

Commissione Esaminatrice
Jury1 name
Jury2 name

A.A. 2021/2022

UNIVERSITY OF CAMERINO

SCHOOL OF ADVANCED STUDIES

DOCTOR OF PHILOSOPHY IN SCIENCES AND TECHNOLOGY
COMPUTER SCIENCE - XXXIV CYCLE

Your title line 1
title line 2

Supervisor
Dr.Your Advisor

PhD Candidate
Your name

Doctoral Examination Committee
Jury1 name
Jury2 name

A.A. 2021/2022

This is the Dedication.

Abstract

This is the abstract.

Acknowledgements

These are the acknowledgements.

Contents

List of Publications

The list of articles that are published on the thesis is given below:

- Pub1
- Pub2

List of Algorithms

List of Figures

List of Tables

1. Introduction

?⟨chap:intro⟩?

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How to cite:?

- Cite an article [7]
- Cite from a proceedings [8]
- Cite a book chapter [2]
- Cite a book [4]
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- Cite a manual [6]
- Cite an R package [1]
- Cite a PhD Thesis [5]
- Cite a MSc Thesis [3]

Example Fig. 1.0.1 shows the overall architecture of the proposed framework.

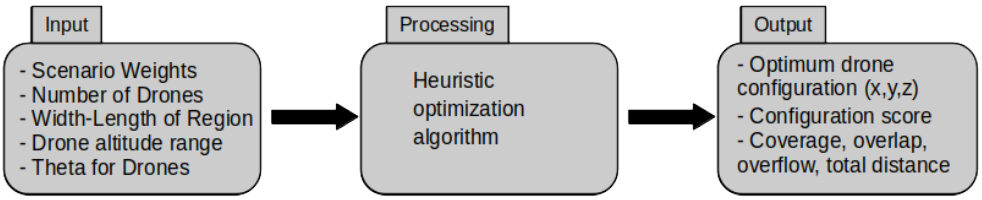

Figure 1.0.1: The architecture of the proposed framework.

⟨fig:arch1⟩

Example Table 1.0.1.

Table 1.0.1: Application cases and proposed set of weights.

⟨tab:app-type1⟩

Application type (Scenario)	W_c	W_l	W_f	W_d
S1: Max coverage with no compromise	+	0	0	0
S2: Max coverage with only overlap/overflow penalty	+	-	-	0
S3: Max coverage with overlap/overflow penalty and min total distance of drones from VBS	+	-	-	+
S4: Max coverage with only min total distance of drones from VBS	+	0	0	+

Example Algorithm 1.

Algorithm 1: The proposed "optimum region coverage" algorithm in pseudo code.

Input : Optimisation Parameters: User supplied
Input : Region Polygon: User selected on map
Input : BS Positions: User selected on map, out of the region polygon

Output: Drone positions and the tessellated region polygon

Estimation of VBS (special drones) positions:
The closest points on the region polygon edges to BS positions are chosen as VBS positions
VBSs are kept at "medium" altitude

Voronoi Tesselation:
The VBS points are chosen as "site" points for the tesselation
Weighted/Normal tesselation is carried out dividing region into sub-regions
Number of drones are distributed according to the area of each sub-regions

Initial Solution:
Drones are placed hexagonally in the sub-regions
"Extra" (out of hexagonal positions) drones are placed randomly
All drones in the same sub-region are at the same altitude
Initial solution is shown on the map

Optimum Solution:
Heuristic evolutionary optimisation tries to improve the supplied initial solution
Optimisation according to the "weights" is carried out for each sub-region
Optimal solution is shown on the map

return Optimum Drone positions and the tessellated region polygon

⟨coverage-algo2⟩

1.1 Motivation

1.2 Objectives

1.3 Contributions and Impacts of the Thesis

1.4 Structure of the Thesis

2. Ch1

2.1 Ch1Sec1

?⟨ch1s10⟩?

2.1.1 Ch1Sec1SSec1

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3. Conclusions

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