EPITA-École Pour l'Informatique et les Techniques Avancées CSI-Calcul Scientifique et Image LRDE-Laboratoire de Recherche et Développement de l'EPITA

Various contributions to ContextCapture: Scan Finder, Point Cloud Visibility and Point Cloud Compression

Alexandre Gbaguidi Aïsse

Supervised by Cyril Novel

Abstract

Text of the Abstract.

Acknowledgements

I would like to express (whatever feelings I have) to:

- My supervisor
- My second supervisor
- Other researchers
- My family and friends

Dedication

Dedication here.

Contents

A	bstra	ct		j
\mathbf{A}	cknov	wledge	ements	iii
1	Intr	oducti	ion	1
	1.1	Conte	xt	1
	1.2	The co	ompany: Acute 3D — Bentley Systems	1
	1.3	Conte	xtCapture	1
	1.4	Contri	ibutions	1
2	Bas	ic Con	acepts	2
	2.1	FIXM	Е	2
3	Sca	n Find	ler	3
	3.1	Specif	ications	4
		3.1.1	Problem being addressed	4
		3.1.2	Objective	4
		3.1.3	Scope	4
	3.2	Relate	ed Work	4
	3.3	The fa	aulty grid-pattern method	4
		3.3.1	Overview	4
		3.3.2	Grid-pattern matching	4
		3.3.3	Equation to solve	4
		3.3.4	Results and discussions	4

viii CONTENTS

	3.4	The w	rorking elliptic method	1
		3.4.1	Overview	4
		3.4.2	Clustering high-density area	4
		3.4.3	Fitting ellipse	4
		3.4.4	Equation to solve	4
		3.4.5	Results and discussions	1
4	Poi	nt Clou	ud Visibility	5
	4.1	Specifi	ications	6
		4.1.1	Problem being addressed	6
		4.1.2	Objective	6
		4.1.3	Scope	6
	4.2	Relate	ed work	6
	4.3	Direct	Visibility of Point Sets	õ
		4.3.1	Overview	ŝ
		4.3.2	Implementation	ĉ
		4.3.3	Results and discussions	6
	4.4	Visibil	lity of Noisy Point Cloud Data	ĵ
		4.4.1	Overview	ĉ
		4.4.2	Implementation	6
		4.4.3	Results and discussions	6
	4.5	A cust	com disk-based approach	6
		4.5.1	Overview	6
		4.5.2	Implementation	ô
		4.5.3	Results and discussions	6
5	Poir	nt Clou	ud Compression	7
	5.1	Specifi	ications	3
		5.1.1	Problem being addressed	3

Bi	bliog	raphy		9
	6.3	Future	e Work	9
	6.2	Applic	cations	9
	6.1	Summ	nary of Internship Achievements	9
6	Con	clusio	n	9
	5.4	Integra	ation	8
		5.3.3	Comparison with Brotli, 7Z and Zip	8
		5.3.2	Implementation	8
		5.3.1	Overview	8
	5.3	A cust	tom arithmetic approach	8
	5.2	Relate	ed work	8
		5.1.3	Scope	8
		5.1.2	Objective	8

List of Tables

List of Figures



Introduction

- 1.1 Context
- 1.2 The company: Acute 3D Bentley Systems

Yo [BAL15]

- 1.3 ContextCapture
- 1.4 Contributions

Contributions here.

Basic Concepts

2.1 FIXME

Text of the Background.

Scan Finder

3.1	Specifications
О.Т	Specifications

- 3.1.1 Problem being addressed
- 3.1.2 Objective
- 3.1.3 Scope
- 3.2 Related Work
- 3.3 The faulty grid-pattern method
- 3.3.1 Overview
- 3.3.2 Grid-pattern matching
- 3.3.3 Equation to solve
- 3.3.4 Results and discussions
- 3.4 The working elliptic method

Point Cloud Visibility

1 1	C:C1:
4.1	Specifications

- 4.1.1 Problem being addressed
- 4.1.2 Objective
- 4.1.3 Scope
- 4.2 Related work
- 4.3 Direct Visibility of Point Sets
- 4.3.1 Overview
- 4.3.2 Implementation
- 4.3.3 Results and discussions
- 4.4 Visibility of Noisy Point Cloud Data
- 111 Overview



Point Cloud Compression

5.1	Specifications
_	

- 5.1.1 Problem being addressed
- 5.1.2 Objective
- 5.1.3 Scope
- 5.2 Related work
- 5.3 A custom arithmetic approach
- 5.3.1 Overview
- 5.3.2 Implementation
- 5.3.3 Comparison with Brotli, 7Z and Zip

5.4 Integration

Conclusion

6.1 Summary of Internship Achievements

Summary.

6.2 Applications

Applications.

6.3 Future Work

Future Work.

Bibliography

[BAL15] Souheib Baarir and A.Duret-Lutz. Sat-based minimization of deterministic omegaautomata. 2015.