DEPARTMENT OF INFORMATICS

TECHNISCHE UNIVERSITÄT MÜNCHEN

Thesis type (Bachelor's Thesis in Informatics, Master's Thesis in Robotics, \dots)

Thesis title

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I confirm that this thesis type (bachelor's thesis in informatics, master's thesis in robotics,) is my own work and I have documented all sources and material used.						
Munich, Submission date		Aly Saleh				



Abstract

Contents

A	cknowledgments						
A l	Abstract List of Figures						
Li							
Li	List of Tables						
1	Intr	oductio	on	3			
	1.1	IoT &	Distributed Sensor Networks	3			
		1.1.1 1.1.2	Show how Iot is being currently used, its pros and cons Give an idea about the devices used to make a distributed sensor	3			
			network	3			
	1.2	Motiv	ation	3			
		1.2.1	Show the need to explore Pervasive Computing	3			
		1.2.2	Illustrate why it might be better to distribute the data in some				
			cases rather than accumulating it in a single server	3			
		1.2.3	Explain why Cloud Computing is not always the right solution				
			in some cases	3			
		1.2.4	Explain the need to find IoT devices capabilities and limitations when used for data computation	3			
2	Bac	kgroun	d & Related Work	4			
	2.1	Introd	luce Edge, Fog and Pervasive computing, how they are used in				
			ontext	4			
	2.2	_	in how sensor data data is modeled and distributed in the current				
		-	shed approaches	4			
	2.3		ate what are the ideas and possible network mechanisms and pro-				
			that could be used data transfer	4			
		2.3.1	Server To Server	4			
		2.3.2		4			
	2.4	2.3.3	Device To Device	4			
	74	Explai	in Opportunistic networks and SCAMPI architecture	4			

Contents

	2.5	Show	other approaches in the literature	4				
3	App	roach		5				
	3.1		ing of Input Sensor Data	6				
		3.1.1	Show how the different sensors have data been modeled to fit					
			our requirements for further use in computations	6				
	3.2	Data I	Distribution Mechanism Across Different Nodes	6				
		3.2.1	Explain data distribution among several nodes to apply perva-					
			sive computing	6				
	3.3	3 Moving Data Through the Network						
		3.3.1	Explain how the data travel around the network, which protocols					
			was used and why	6				
	3.4		ng the Computation to the Edges "Nodes"	6				
		3.4.1	Explain the data computation in the nodes, how it is designed to					
			fit our needs	6				
		3.4.2	Dealing with Dependencies	6				
		3.4.3	Dealing with Resources	6				
	3.5	Overall System Design						
4	Eval	Evaluation 7						
	4.1	Use Ca	ase Implementation	7				
		4.1.1	Explain why did we choose this specific use case in particular .	7				
		4.1.2	Explain the Implementation	7				
	4.2	1						
		4.2.1	Show that the implementation is a proof of concept that the ap-					
			proach is sound	7				
		4.2.2	Show why specific implementation details where chosen over	_				
		- 1	others	7 7				
	4.3							
	4.4	Limitations						
5	Con	clusion	l	8				
	5.1	Summ	ary	8				
	5.2	Future	e Work	8				
Bil	Bibliography 9							

List of Figures

List of Tables

1 Introduction

1.1 IoT & Distributed Sensor Networks

- 1.1.1 Show how Iot is being currently used, its pros and cons
- 1.1.2 Give an idea about the devices used to make a distributed sensor network

1.2 Motivation

- 1.2.1 Show the need to explore Pervasive Computing
- 1.2.2 Illustrate why it might be better to distribute the data in some cases rather than accumulating it in a single server
- 1.2.3 Explain why Cloud Computing is not always the right solution in some cases
- 1.2.4 Explain the need to find IoT devices capabilities and limitations when used for data computation

2 Background & Related Work

- 2.1 Introduce Edge, Fog and Pervasive computing, how they are used in this context
- 2.2 Explain how sensor data data is modeled and distributed in the current published approaches
- 2.3 Illustrate what are the ideas and possible network mechanisms and protocols that could be used data transfer
- 2.3.1 Server To Server
- 2.3.2 Server To Device
- 2.3.3 Device To Device
- 2.4 Explain Opportunistic networks and SCAMPI architecture
- 2.5 Show other approaches in the literature

3 Approach

- 3.1 Modeling of Input Sensor Data
- 3.1.1 Show how the different sensors have data been modeled to fit our requirements for further use in computations
- 3.2 Data Distribution Mechanism Across Different Nodes
- 3.2.1 Explain data distribution among several nodes to apply pervasive computing
- 3.3 Moving Data Through the Network
- 3.3.1 Explain how the data travel around the network, which protocols was used and why.
- 3.4 Pushing the Computation to the Edges "Nodes"
- 3.4.1 Explain the data computation in the nodes, how it is designed to fit our needs

Data Routing

3.4.2 Dealing with Dependencies

Shipping Dependencies

Configuring Dependencies

3.4.3 Dealing with Resources

Resource capability description

We cant make assumptions about resources

Decoupling Sensors

Resource Requirements "Computation Meta-data"

Maintainability

3.5 Overall System Design

4 Evaluation

- 4.1 Use Case Implementation
- 4.1.1 Explain why did we choose this specific use case in particular
- 4.1.2 Explain the Implementation
- 4.2 Implementation Evaluation
- 4.2.1 Show that the implementation is a proof of concept that the approach is sound
- 4.2.2 Show why specific implementation details where chosen over others
- 4.3 Performance Tests
- 4.4 Limitations

5 Conclusion

- 5.1 Summary
- 5.2 Future Work
- 5.2.1 Streaming API

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