



university of
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faculty of mathematics
and natural sciences

I HAVE TO GRADUATE ON-TIME

GUNTUR DHARMA PUTRA

a thesis on the topic of Computing Science
Department of Computing Science
Faculty of Mathematics and Natural Sciences
University of Groningen

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Guntur Dharma Putra: *I Have to Graduate On-Time*, a thesis on the topic of Computing Science, © January 2016

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To my beloved family.

ABSTRACT

Short summary of the contents in English...a great guide by Kent Beck how to write good abstracts can be found here:

<https://plg.uwaterloo.ca/~migod/research/beck00PSLA.html>

ACKNOWLEDGMENTS

Put your acknowledgments here.

Many thanks to everybody who already sent me a postcard!

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Regarding LyX: The LyX port was initially done by *Nicholas Mariette* in March 2009 and continued by *Ivo Pletikosić* in 2011. Thank you very much for your work and for the contributions to the original style.

¹ Members of GuIT (Gruppo Italiano Utilizzatori di T_EX e L^AT_EX)

CONTENTS

I	MASTER'S THESIS	1
1	INTRODUCTION	3
2	RELATED WORK	5
3	PROBLEM STATEMENT	7
4	ARCHITECTURE AND DESIGN	9
5	EXPERIMENTS AND EVALUATION	11
6	FUTURE WORK	13
7	CONCLUSION	15
II	APPENDIX	17
A	APPENDIX TEST	19
A.1	Appendix Section Test	19
A.2	Another Appendix Section Test	19
	BIBLIOGRAPHY	21

LIST OF FIGURES

LIST OF TABLES

Table 1	Autem usu id	19
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LISTINGS

Listing 1	A floating example (listings manual)	19
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ACRONYMS

Part I

MASTER'S THESIS

INTRODUCTION

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[What How Why] Research question Summary of proposal

RELATED WORK

Some researches have been done with regard to estimating social density, especially more are focused on crowd density.

Video processing has limitations such as weather conditions, illumination changes, limited viewing angle, and density and brightness problem.

GSM location has an issue with privacy[1].

MAC is only a proxy since it does not infer directly to personal information, such as name or contact.

A research from [6] proposes a way to detect crowds using Bluetooth. The crowd density is quantized into 7 groups, ranging from nearly empty to extremely high (crowded). Several features were also devised in this research, ranging from bla bla. The method was chosen due to bla bla. The experiments were set up for 3 times, with 4 hours of duration each. 10 students were recruited to carry out the experiments. The results show that bla bla.

Furthermore, [2] alleges that the existence of social relationships is possible to be uncovered by using WiFi probe signals.

Human queue is also possible to be monitored using WiFi, as demonstrated in [5]. It is based on RSSI that is measured by a single WiFi monitor.

WiFi and Bluetooth were also used to estimate crowd densities and pedestrian flows in [3].

A research [1] utilizes MAC address data to determine spatio-temporal movement of human in terms of space utilization.

Bluetooth data is also used to analyze spatio-temporal movements of visitors event in Belgium [4].

[Why How] Literature on Topic Literature on Method Theoretical Approach Find a Hole Look for debates

[Methodology] Research design Research procedures Kind of data collection procedures selection and access human subjects review ethics statement costs and funding

[Statement of Limitations] Alternatives weaknesses what your research will do

[Conclusion] Contributions Importance

PROBLEM STATEMENT

FUTURE WORK

CONCLUSION

Part II

APPENDIX

APPENDIX TEST

Lorem ipsum at nusquam appellantur his, ut eos erant homero concludaturque. Albucius appellantur deterruisset id eam, vivendum partiendo dissentiet ei ius. Vis melius facilisis ea, sea id convenire referrentur, takimata adolescens ex duo. Ei harum argumentum per. Eam vidit exerci appetere ad, ut vel zzril intellegam interpretaris.

More dummy text.

A.1 APPENDIX SECTION TEST

Test: [Table 1](#) (This reference should have a lowercase, small caps A if the option `floatperchapter` is activated, just as in the table itself → however, this does not work at the moment.)

LABITUR BONORUM PRI NO	QUE VISTA	HUMAN
fastidii ea ius	germano	demonstratea
suscipit instructor	titulo	personas
quaestio philosophia	facto	demonstrated

Table 1: Autem usu id.

A.2 ANOTHER APPENDIX SECTION TEST

Equidem detraxit cu nam, vix eu delenit periculis. Eos ut vero constituto, no vidit propriae complectitur sea. Diceret nonummy in has, no qui eligendi recteque consetetur. Mel eu dictas suscipiantur, et sed placerat oporteat. At ipsum electram mei, ad aequae atomorum mea. There is also a useless Pascal listing below: [Listing 1](#).

Listing 1: A floating example (listings manual)

```
for i:=maxint downto 0 do
begin
{ do nothing }
end;
```


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