SOCIAL DENSITY ESTIMATION: CORRELATION OF UNIQUE DEVICE AND NUMBER OF AVAILABLE ACCESS POINTS

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a thesis on the topic of Computing Science

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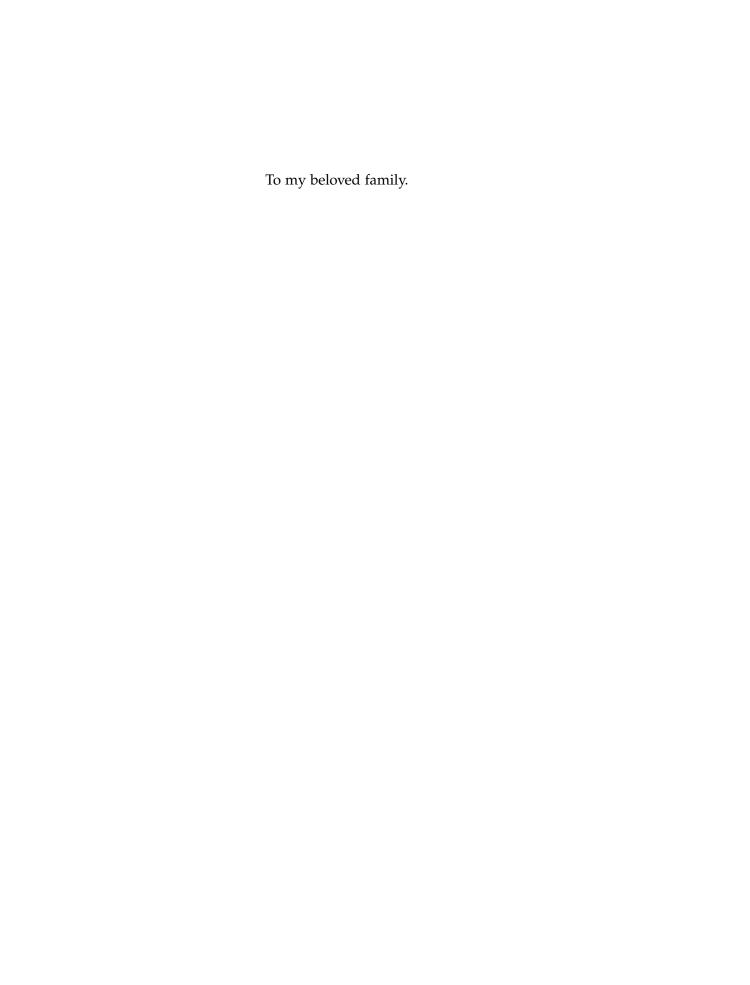University of Groningen

January 2016

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/beckOOPSLA.html
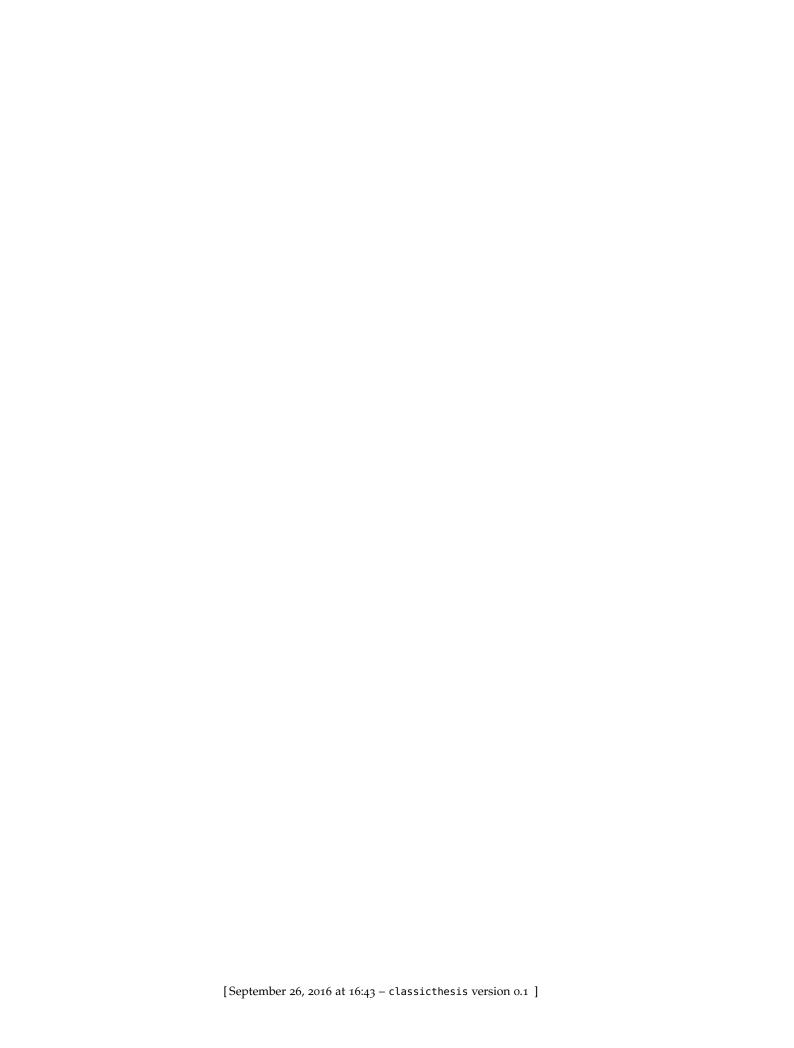
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ACKNOWLEDGMENTS

Put your acknowledgments here.

Many thanks to everybody who already sent me a postcard!

Regarding the typography and other help, many thanks go to Marco Kuhlmann, Philipp Lehman, Lothar Schlesier, Jim Young, Lorenzo Pantieri and Enrico Gregorio[1], Jörg Sommer, Joachim Köstler, Daniel Gottschlag, Denis Aydin, Paride Legovini, Steffen Prochnow, Nicolas Repp, Hinrich Harms, Roland Winkler, Jörg Weber, Henri Menke, Claus Lahiri, Clemens Niederberger, Stefano Bragaglia, Jörn Hees, and the whole LaTeX-community for support, ideas and some great software.

Regarding LyX: The LyX port was intially 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.

[September 26, 2016 at 16:43 – classicthesis version 0.1]

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Part I

MASTER'S THESIS

INTRODUCTION

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[What How Why] Research question Summary of proposal

In this chapter, present some introduction from paper of Paul.

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.

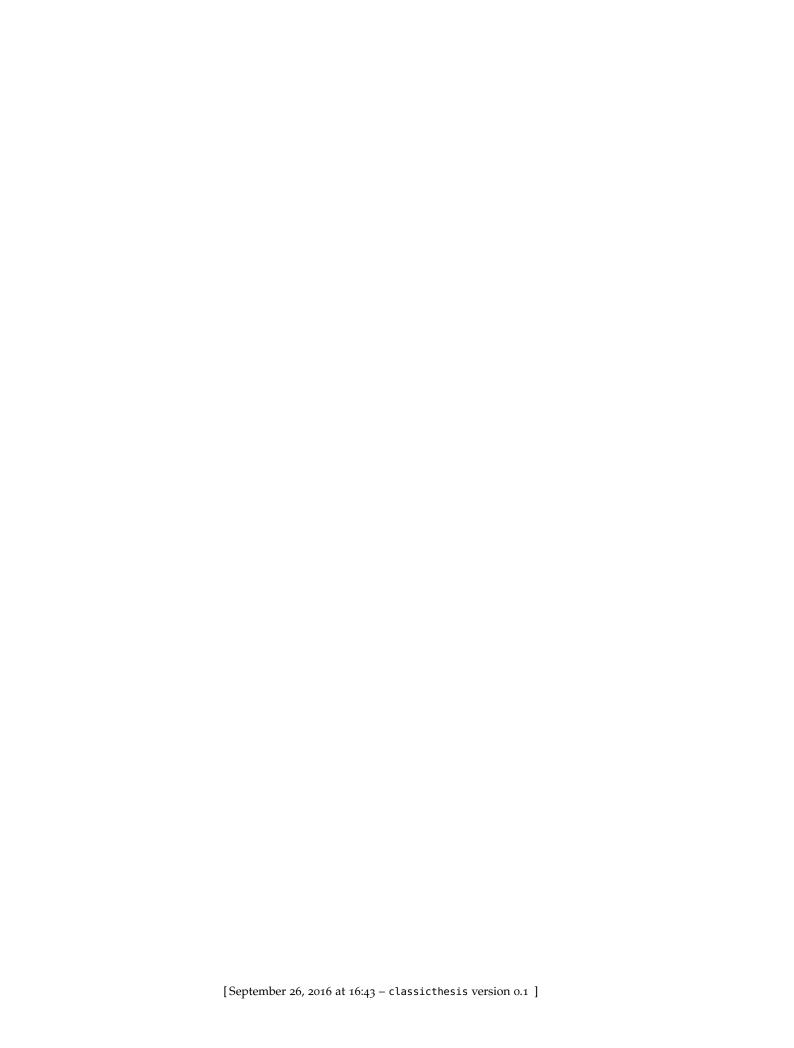Bluetooth data is also used to analyze spatio-temporal movements of visitors event in Belgium [4].

Also mention about noise.

[Why How] Literature on Topic Literature on Method Theoretical Approach Find a Hole Look for debates
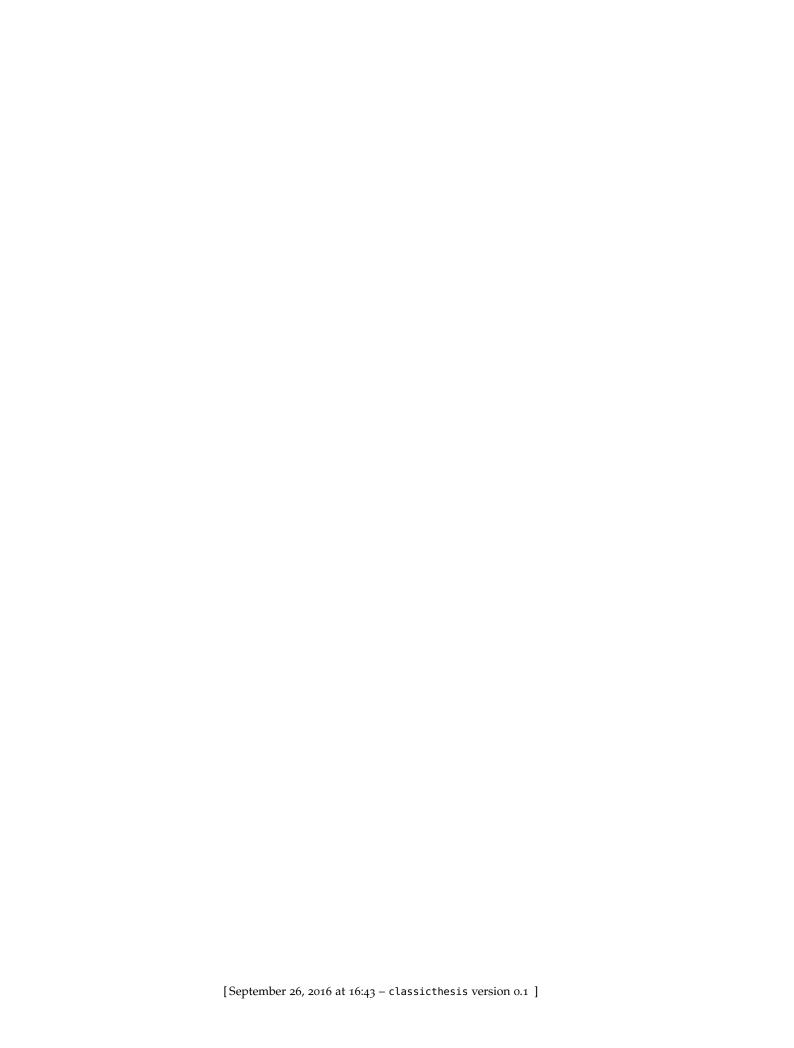
[Methodology] Research design Research procedures Kind of data collection procedures selection and access human subjects review ethics statement costs and funding

[Statement of Limitations] Alternatives weaknesses what your research will do
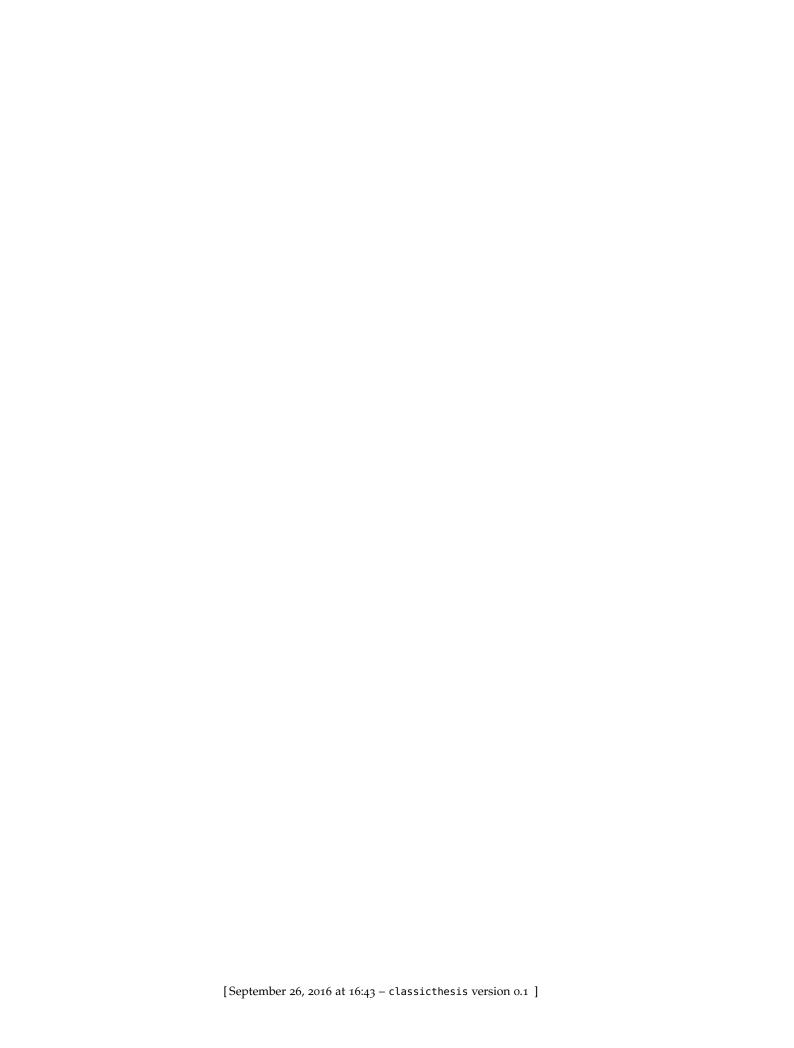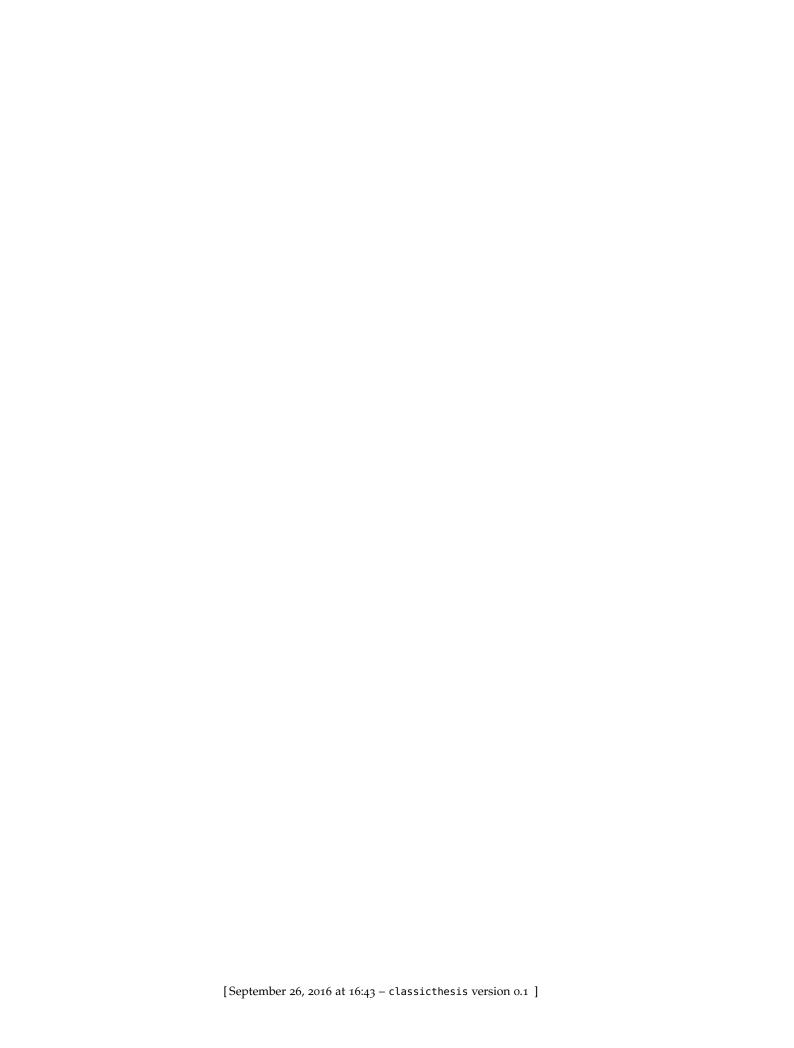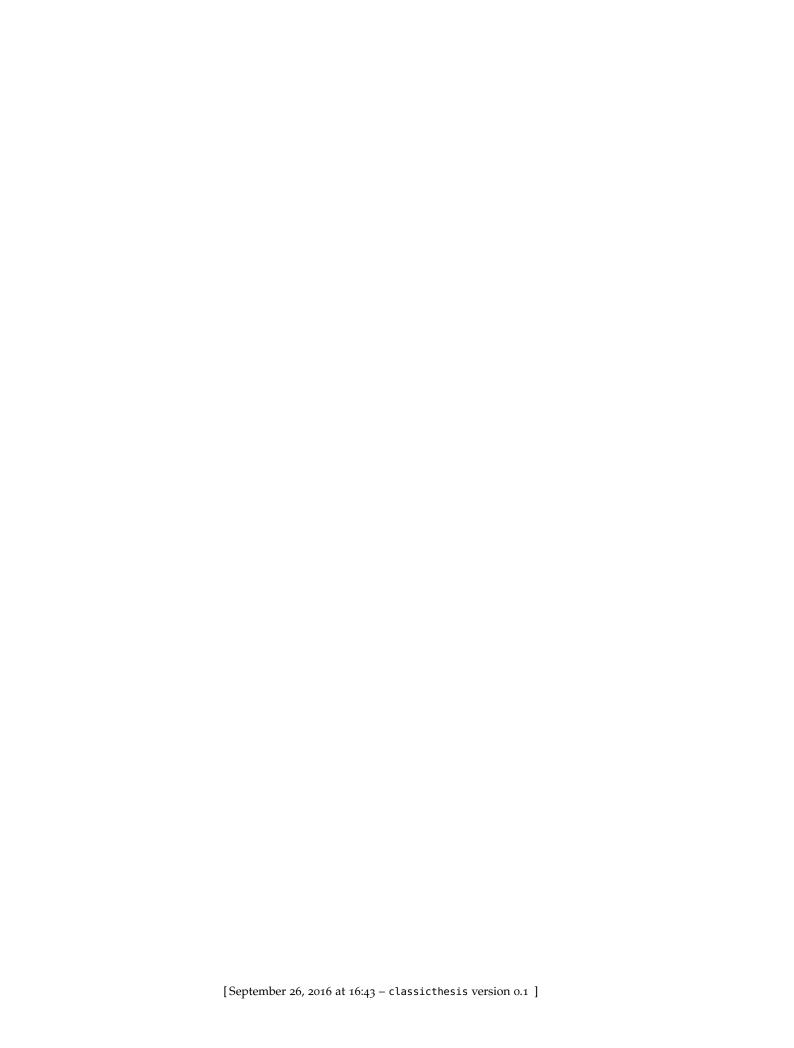
[Conclusion] Contributions Importance
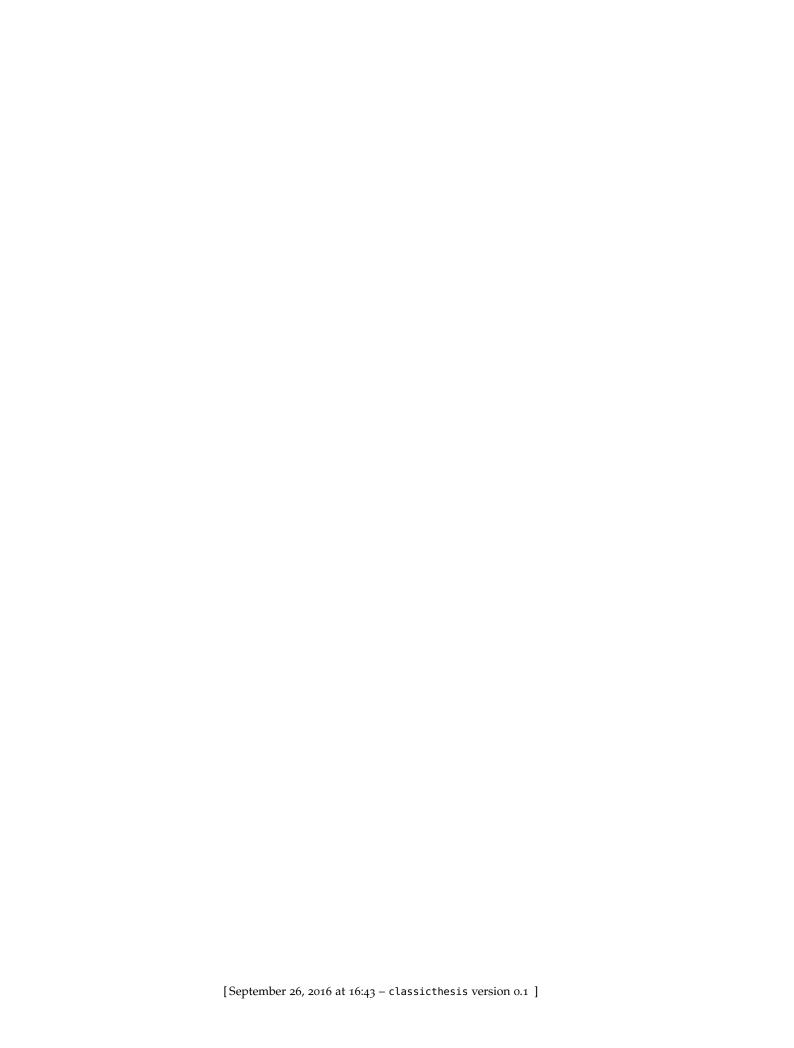
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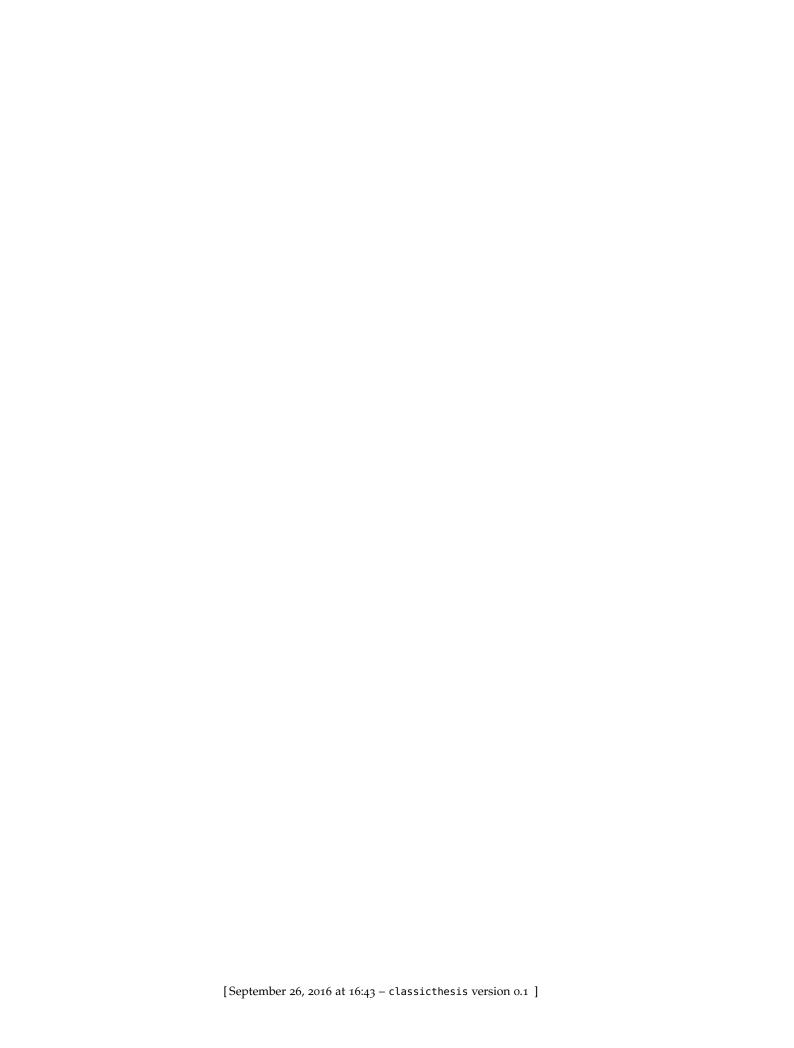
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CONCLUSION

Part II

APPENDIX

A

APPENDIX TEST

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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 instructior	titulo	personas
quaestio philosophia	facto	demonstrated

Table 1: Autem usu id.

A.2 ANOTHER APPENDIX SECTION TEST

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Listing 1: A floating example (listings manual)

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

BIBLIOGRAPHY

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