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A THEORETICAL BASIS FOR WIFI BASED SOCIAL DENSITY
ESTIMATION: CORRELATION OF UNIQUE DEVICE AND
NUMBER OF ACCESS POINTS

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a thesis on the topic of Computing Science
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January 2016

Guntur Dharma Putra: *A theoretical basis for WiFi based Social Density Estimation: Correlation of unique device and number of Access Points*, a thesis on the topic of Computing Science, © January 2016

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LOCATION:

Groningen

TIME FRAME:

January 2016

To my beloved family.

ABSTRACT

This research presents the correlation between number of unique devices and available Access Points in a particular location. WiFi probe-request is used to determine the unique devices. Furthermore, a cross-validation by using voice activity detection is used to determine whether a person is present.

ACKNOWLEDGMENTS

First and foremost, I would like to thank God, the Almighty, for having made everything possible by giving me strength and courage to do this work.

I would like to express my sincere gratitude to my primary supervisor Prof. Alexander Lazovik for the continuous support with my thesis and related research; for his patience, motivation, and immense knowledge. His guidance helped me in all the time of research and I could not have imagined having a better adviser and mentor. I would also like to thank my thesis supervisors: Dr. Apostolos Ampatzoglou and Dr. Andrea Pagani, for their insightful comments, encouragement and trust. My sincere thanks for Dr. Andrea Pagani, who provided me his valuable feedback on my thesis manuscript.

Last but not the least, I would like to thank my family: my parents and my brother for supporting me spiritually throughout working on this thesis and my life in general.

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ACRONYMS

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

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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