

A Great Catchy Thesis Title

Thesis submitted in accordance with the requirements of the University of Liverpool for
the degree of Doctor in Philosophy
by

H Diego Estrada-Lugo
(Maximum Commander)

April 2022

Dedication

Here a space for dedications...

Acknowledgements

This a section where you may want to thank your family, other students, friends, adviser, dog, and so on.

Abstract

The abstract includes a summary of the main ideas developed in your dissertation. This section is the first one that is part of the main document and can be included with the `\input` command in the file **MainDocuments.tex**. To start a document, no tags are need. You can start writing straight away.

Declaration

Here is the statement that your thesis has been composed by yourself and results herein correspond to your original work. It is suggested to include the number of pages, figures, tables, etc.

H Diego
April 2022

List of Publications

Peer-reviewed Journal Publications

1. Estrada-Lugo, H. D., Tolo, S., De Angelis, M., & Patelli, E. (2019). Pseudo credal networks for inference with probability intervals. *ASCE-ASME J Risk and Uncert in Engrg Sys Part B Mech Engrg*, 5(4).
2. Morais, C., Estrada-Lugo, H. D., Tolo, S., Jacques, T., Moura, R., Beer, M., & Patelli, E. (2022). Robust data-driven human reliability analysis using credal networks. *Reliability Engineering & System Safety*, 218, 107990.

Peer-reviewed Conference Publications

1. Estrada-Lugo, H. D., De Angelis, M., & Patelli, E. (2019, May). Probabilistic risk assessment of fire occurrence in residential buildings: Application to the Grenfell Tower. In *13th International Conference on Applications of Statistics and Probability in Civil Engineering*.

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Abbreviations and nomenclature

Nomenclature

X Random variable.

x_i State i of X_i .

Π_i Variable X_i 's parent.

π_i State i of X_i 's parent.

m Number of variables in the network

n Number of states of a random variable

$P(\mathbf{X})$ Joint probability distribution.

$P(x_i)$ Probability distribution of a random variable X_i in state x_i .

$P(x_i|\pi_i)$ Probability of child node x_i conditioned to its parent π_i .

x_q Query variable

x_e Observed variable (evidence).

x^c Complement state

$\underline{P}(x)$ Lower bound.

$\overline{P}(x)$ Upper bound.

$\overline{P}(x)$ Interval probability.

$K(X)$ Credal set over X .

$ext[K(X)]$ Extreme point of the credal set $K(X)$.

U Universe of random variables in network.

$A \perp B$ Variable A independent of B .

Chapter 1

Introduction

1.1 Background

Type here the introduction to your dissertation. You can create different sections or subsections with the corresponding commands.

1.1.1 Next subsection

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A .tex file can be created (and placed in the Chapter folder) for each chapter and be called in the MainDocument.tex file with the `\input` command. This format is handy when doing "collection of papers" type of thesis, as it is easier to add your articles .tex files to this document.

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Chapter 2

Content chapter

This another content chapter to tell the story of your research.

2.1 Introduction

The text can include anything you want. For example a citation using the `\cite` command [1].

2.1.1 More content

You can also include some equations like Equation 2.1. More info about equations and mathematical expressions: Maths.

$$\underline{P}(x_q) = \min_{P(X_i|\pi_i) \in K(X_i|\pi_i)} \sum_{x_1, \dots, x_n \setminus x_q} \prod_{i=0}^n P(x_i|\pi_i) \quad (2.1)$$

Include figures. More info on figures: Figures.

Include Tables like Table 2.1. More info on tables: <https://www.overleaf.com/learn/latex/Tables>.

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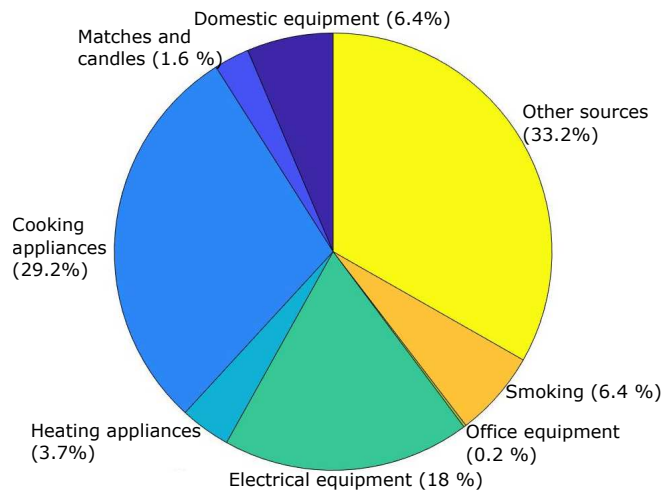


Figure 2.1: This is a pie graph.

Chapter 3

Conclusions

3.1 Concluding Remarks

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Appendix A

Appendix title (if needed)

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Appendix B

An extra Appendix is offered for complementary tables, graphs, code, etc.

Appendices can be added or deleted from the document by using the `\input` command in the `MainDocument.tex` file.

Bibliography

- [1] Name Author and Name Author. Article title. *Journal title*, Volume number:Pagestart–pageend, 1986.