

MINISTRY OF EDUCATION



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**TECHNICAL UNIVERSITY**

OF CLUJ-NAPOCA, ROMANIA

**FACULTY OF AUTOMATION AND COMPUTER SCIENCE  
COMPUTER SCIENCE DEPARTMENT**

**MASTER'S THESIS TITLE**

MASTER'S THESIS

Master's graduate: **Firstname LASTNAME**

Supervisor: **scientific title Firstname LASTNAME**

July, 2024





**TECHNICAL UNIVERSITY**

OF CLUJ-NAPOCA, ROMANIA

**FACULTY OF AUTOMATION AND COMPUTER SCIENCE  
COMPUTER SCIENCE DEPARTMENT**

DEAN,  
Prof.Dr.Eng. Mihaela DÎNȘOREANU

HEAD OF DEPARTMENT,  
Prof.Dr.Eng. Rodica POTOLEA

Master's graduate: **Firstname LASTNAME**

**MASTER'S THESIS TITLE**

1. **Project proposal:** *Brief description of the master's thesis and the initial data*
2. **Project contents:** *(enumeration of the main parts) Example: Presentation page, Title of chapter 1, Title of chapter 2, ..., Title of chapter n, Bibliography, Appendices.*
3. **Place of documentation:** *Example: Technical University of Cluj-Napoca, Computer Science Department*
4. **Consultants:**
5. **Date of issuing the proposal:** *Example: November, 2023*
6. **Date of delivery:** July 12th, 2024 *(the date when the document is submitted)*

Master's graduate: (*here comes the signature*) . . . . .

Supervisor: . . . . .



**FACULTY OF AUTOMATION AND COMPUTER SCIENCE  
COMPUTER SCIENCE DEPARTMENT****Declarație pe proprie răspundere privind  
autenticitatea lucrării de disertație**

Subsemnatul(a) Firstname LASTNAME, legitimat(ă) cu ..... seria ..... nr. ...., CNP ....., autorul lucrării MASTER'S THESIS TITLE, elaborată în vederea susținerii examenului de finalizare a studiilor de disertație la Facultatea de Automatică și Calculatoare, Specializarea ....., din cadrul Universității Tehnice din Cluj-Napoca, sesiunea ..... a anului universitar 2023-2024, declar pe proprie răspundere că această lucrare este rezultatul propriei activități intelectuale, pe baza cercetărilor mele și pe baza informațiilor obținute din surse care au fost citate, în textul lucrării și în bibliografie.

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În cazul constatării ulterioare a unor declarații false, voi suporta sancțiunile administrative, respectiv, *anularea examenului de disertație*.

Declar și sunt de acord ca, pe tot parcursul vieții, în cazul în care este necesar și se va dori verificarea autenticității lucrării mele să fiu identificat și verificat în baza datelor declarate de mine.

Data

.....

Firstname LASTNAME

.....

*Signature*



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# Chapter 1

## Introduction

What it goes in this chapter:

- Context
- Outlining of the exact domain of the theme
- Answer the questions: **what** (has been done)?, **why** (it was done, i.e. motivation; what it is solved, what it is useful for, etc.)?, **how** (it was done, i.e. the particular approach, presented briefly).
- The introduction is ended with a description of the project contents, like this: Chapter X describes ..., Chapter Y presents ...
- The introduction represents a synthesis of the project, from which the reader should be able to decide whether or not the thesis is of interest to him.
- represents around 5% of the thesis

### 1.1 Project context

The font used for the text in this document is Times New Roman, size 12 points, as defined in the Normal style, Line spacing equal to 1.0 (Paragraph, Line spacing) and Justify.

The first line for each paragraph must be indented (implicit in Normal Style), and no additional space is inserted between successive paragraphs<sup>1</sup>.

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<sup>1</sup>Sorry for the Word's users. In Latex these are automatically solved.

### 1.1.1 Subsection

The distance before and after the subsection title is 8 points (this is the default in the given style file). Each table used in this document is labeled as: Table  $x.y$  where  $x$  represents the chapter number, and  $y$  shows the table number within the current chapter. Leave a blank line between and after each table, relative to the adjacent paragraphs (table 1.1).

Case	Method#1	Method#2	Method#3
1	50	837	970
2	47	877	230
3	31	25	415

Table 1.1: Nonlinear Model Results

Each figure used in the document must be cited within the text (ex: in figure  $x.y$  the system components are presented ...) and labeled. The numbering will be automatic: Figure  $x.y$  where  $x$  represents chapter number, and  $y$  figure number from within that chapter. Ex: figure 1.1

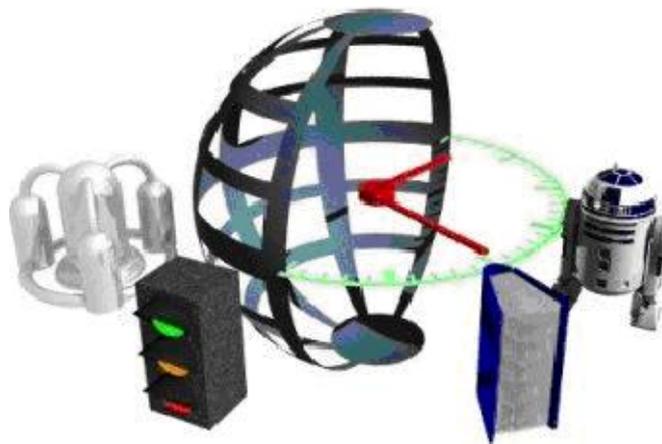


Figure 1.1: Figure name

Ecuations:

$$\Delta = \sum_{i=1}^N w_i (x_i - \bar{x})^2. \quad (1.1)$$

### 1.1.2 Other examples in L<sup>A</sup>T<sub>E</sub>X

Changed Modus ponens:

$$\frac{a \wedge a \rightarrow b}{b} \quad (1.2)$$

	belief			atomicity		
	<i>poor</i>	<i>avg</i>	<i>good</i>	<i>poor</i>	<i>avg</i>	<i>good</i>
<i>success</i>	0.1	0.2	0.3	0.4	0.5	0.6
<i>failure</i>	0.1	0.2	0.3	0.4	0.5	0.6

Table 1.2: Multiplicarea Opiniilor Multinomiale

Curly brace:

$$\begin{cases} p = \frac{x}{x+y+z} \\ q = \frac{y}{x+y+z} \\ r = \frac{z}{x+y+z} \end{cases}$$

Non-numbered items:

- number 1
- number 2
- number 3

Numbered items:

1. number 1
2. number 2
3. number 3

Some authors state that [1] ...

A more complex table is 1.2.

An algorithm can be described as follows:

---

**Algorithm 1** Commitment decision
 

---

```

if Committed( $G_1, GR, \alpha$ ) then
   $BRT_\alpha = PredictBRT(G_1, GR, \alpha, C_{GR})$ 
   $C_\beta = ContextUpdate(C_\beta, o)$ 
   $BRT_\beta = PredictBRT(G_1, G_2, \beta, C_\beta)$ 
   $BRT_\alpha^o = BRTReplace(BRT_\alpha, BRT_\beta)$ 
   $utility = Eval(BRT_\alpha^o) - Eval(BRT_\alpha)$ 
end if
if  $utility \geq CommunicationCost(G_2)$  then
   $Int.To(G_1, Communicate(G_1, G_2, o))$ 
end if

```

---

## Acknowledgements

We thank to Aristotle for Section 1.1.2

# Chapter 2

## Objectives of the research

### 2.1 Contents

- Detailed description of the actual research topic, formulated exactly, with clear objectives on 2-3 pages and possible explanatory figures.
- The title is not necessarily imposed, and the chapter can also be included as a subchapter in Chapter 1, if appropriate.
- Represents about 5–10% of the thesis.

### 2.2 Section

#### 2.2.1 Subsection

# Chapter 3

## Bibliographic research/The current state-of-the art in the field

The bibliographic documentation aims to present the current state of the domain/sub-domain in which the topic is located, to present similar research and to relate to them the approach in the paper.

This chapter represents about 10–15% of the thesis.

References are written in the Bibliography section. The reference format must be IEEE or similar.

Bibliographic references will be made for each book, article or material used for the elaboration of the dissertation.

In the Bibliography section there are examples of references for conference or workshop articles [1], journal article [2], or books [3].

References to online applications or resources (web pages) should include at least a suggestive name in addition to the link itself [4], plus other information if available (authors, year, etc.). References that only link to the online resource will be placed in the footer of the page where they are referenced.

Citing references in the text is mandatory, see the example below (depending on the theme of the project, the presentation of the method/application may vary).

### 3.1 Similar approaches

The citation of the references is done as in the examples in 1.1.2, as above and as in the following citations.

In the article [2] the author describes the technical configuration of a "honeynet" and presents some current attacks on honeynet, as well as a series of recommendations for securing systems connected to computer networks.

In chapter 4 of [3], . . . .

# Chapter 4

## Project presentation

### 4.1 Clarifications on the content and organization

Toghether with the next chapter, it represents about 70% of the thesis.

The title of this chapter is not imposed and it does not necessary represents a single chapter. The title rather indicates a part (important and central, in fact) of the thesis, in which it is presented what was actually achieved: the author's contributions. The organization of this part is dependent and specific to each work and is determined by each author as he sees fit for his theme. It can include the presentation of some theoretical concepts (mathematical tools or techniques used in the paper, the presentation or introduction of some theoretical concepts, etc.), an analysis of different methods/ algorithms/ technologies, etc. considered or developed by the author, a presentation of a design (more or less detailed) or even details of a possible implementations/prototype, if applicable.

It should be noted, however, that this part represents the personal contribution of the author, even if it consists for example only in a comparative analysis of some methods / algorithms, and in no case can it be the synthesis of texts taken from other sources. Therefore, any information presented here must correspond at least to a personal critical interpretation / analysis of the author, if not to his original ideas.

#### 4.1.1 Subsection

# Chapter 5

## Theoretical and experimental results

Together with the project presentation part, it must represent about 70% of the thesis.

Here are presented the theoretical or practical methods of validation/verification of the solutions proposed in the previous part, the scenarios for testing the functional correctness, usability, performance, etc.

The results of experimental tests are also subject to interpretation and comparison with the results of other similar methods.

# Chapter 6

## Conclusions

### 6.1 Contents

- summary of the contributions
- a critical analysis of the results: advantages, disadvantages, limits
- a description of the possibilities of improving/further development.

### 6.2 Technical details

#### 6.2.1 Size

About 3–5% of the whole.

# Bibliography

- [1] C. Zhou, L.-T. Chia, and B.-S. Lee, “Daml-qos ontology for web services,” in *ICWS '04: Proceedings of the IEEE International Conference on Web Services*. Washington, DC, USA: IEEE Computer Society, 2004, p. 472.
- [2] G. Antoniou, “Defeasible logic with dynamic priorities.” *International Journal of Intelligent Systems*, vol. 19, no. 5, pp. 463–472, 2004.
- [3] W. Strunk, Jr. and E. B. White, *The Elements of Style*, 3rd ed. Macmillan, 1979.
- [4] “Ajax tutorial.” [Online]. Available: <http://www.tutorialspoint.com/ajax/>.

# Appendix A

## Various appendices

Including: Detailed mathematical proofs (if there are any); Pseudocode or source code (if there is any)

```
/** Maps are easy to use in Scala. */
object Maps {
  val colors = Map("red" -> 0xFF0000,
                  "turquoise" -> 0x00FFFF,
                  "black" -> 0x000000,
                  "orange" -> 0xFF8040,
                  "brown" -> 0x804000)

  def main(args: Array[String]) {
    for (name <- args) println(
      colors.get(name) match {
        case Some(code) =>
          name + " has code: " + code
        case None =>
          "Unknown color: " + name
      }
    )
  }
}
```

# Appendix B

## Published papers