

Alma Mater Studiorum - University of Bologna

COMPUTER SCIENCE AND ENGINEERING - DISI

ARTIFICIAL INTELLIGENCE

Labeled Prolog: a computational model in
2p-KT

Master degree thesis

Supervisor

Prof. Roberta Calegari

Co-supervisor

Prof. Giovanni Ciatto

Candidate

Giuseppe Boezio

Abstract

Content of the abstract

Contents

1	Introduction	1
1.1	Thesis organization	1
2	Background notions	3
2.1	The Prolog Language	3
2.1.1	Brief History	3
2.1.2	Concepts	3
2.1.3	2p-Kt	3
2.2	Constraint Programming	3
2.2.1	Brief History	3
2.2.2	Constraint Logic Programming	3
2.2.3	SWI Prolog - CLP libraries	3
3	CLP in 2p-Kt	5
3.1	Requirements	5
3.2	Design	5
3.3	Implementation	5
3.4	Case study	5
3.4.1	Design	5
3.4.2	Implementation	5
4	Labeled Prolog	7
4.1	Model	7
4.1.1	Labeled Variables	7
4.1.2	Labeled Terms	7
4.2	Implementation	7
5	CLP as Labeled Prolog	9

6	Conclusions and future work	11
	Bibliography	15

List of Figures

List of Tables

Chapter 1

Introduction

1.1 Thesis organization

First chapter introduces the general content about thesis and gives a short presentation of the topic, the problem and the solution we propose;

Second chapter a deepening about the theoretical foundations used during the stage and the project;

Third chapter presents the datasets used during for the training and the testing of the model;

Fourth chapter presents the experiments did during to develop the system;

Fifth chapter presents the different implementations of the system;

Sixth chapter discusses about the results and possible future developments.

During the drafting of the essay, following typography conventions are considered:

- the acronyms, abbreviations, ambiguous terms or terms not in common use are defined in the glossary, in the end of the present document;
- the first occurrences of the terms in the glossary are highlighted like this: **word**;
- the terms from the foreign language or jargon are highlighted like this: *italics*.

Chapter 2

Background notions

2.1 The Prolog Language

2.1.1 Brief History

2.1.2 Concepts

2.1.3 2p-Kt

2.2 Constraint Programming

2.2.1 Brief History

2.2.2 Constraint Logic Programming

2.2.3 SWI Prolog - CLP libraries

Chapter 3

CLP in 2p-Kt

3.1 Requirements

3.2 Design

3.3 Implementation

3.4 Case study

3.4.1 Design

3.4.2 Implementation

Chapter 4

Labeled Prolog

4.1 Model

4.1.1 Labeled Variables

4.1.2 Labeled Terms

4.2 Implementation

Chapter 5

CLP as Labeled Prolog

Chapter 6

Conclusions and future work

Acknowledgements

First, I would like to express my deepest gratitude to Professor Calegari and Professor Ciatto for all the support they provided me during the internship and thesis redaction processes.

Second, I would like to thank my family, my friends, my former classmates and all people who believed in me during this long study path.

Last but not least, I would like to thank myself to have been able to never give up during these two years.

Bologna, 03 February 2023

Giuseppe Boezio

Bibliography