PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE
ESCUELA DE INGENIERÍA

DEEP NEURAL NETWORK MODELS WITH EXPLAINABLE COMPONENTS FOR URBAN SPACE PERCEPTION.

ANDRÉS CÁDIZ VIDAL

Thesis submitted to the Office of Research and Graduate Studies
in partial fulfillment of the requirements for the degree of
Master of Science in Engineering

Advisor:
HANS LÖBEL

Santiago de Chile, July 2020

© MMXX, ANDRÉS CÁDIZ VIDAL

PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE
ESCUELA DE INGENIERÍA

DEEP NEURAL NETWORK MODELS WITH EXPLAINABLE COMPONENTS FOR URBAN SPACE PERCEPTION.

ANDRÉS CÁDIZ VIDAL

Members of the Committee:
HANS LÖBEL
PATRICIO DE LA CUADRA
MEMBER B
MEMBER C

Thesis submitted to the Office of Research and Graduate Studies
in partial fulfillment of the requirements for the degree of
Master of Science in Engineering

Santiago de Chile, July 2020

© MMXX, ANDRÉS CÁDIZ VIDAL

Gratefully to my parents and siblings

ACKNOWLEDGEMENTS

Write in a sober style your acknowledgements to those persons that contributed to the development and preparation of your thesis.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS iv

LIST OF FIGURES vii

LIST OF TABLES viii

ABSTRACT ix

RESUMEN x

1. INTRODUCTION 1
   1.1. Thesis outline. 1
   1.2. Importance of automatic urban perception 1
   1.3. Importance of explainability in artificial intelligence 1
   1.4. Hypothesis 1

2. OBJECTIVES 2

3. RELATED WORK 3

4. PROPOSED ARCHITECTURE 4
   4.1. Problem Definition 4
   4.2. Network architecture 4
   4.3. Loss function 4

5. METHODOLOGY 5
   5.1. Implementation 5
   5.2. Training 5

6. RESULTS 6

7. CONCLUSIONS 7

REFERENCES 8

APPENDIX 9
A. First Appendix 10

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

The abstract must contain between 100 and 300 words. The abstract must be written in English and Spanish. In the case of doctoral theses, the layout of the abstract page is different, so please check the template provided by the OGRS.

Keywords: thesis template, document writing, **(Write here the keywords relevant and strictly related to the topic of the thesis)**.

RESUMEN

El resumen debe contener entre 100 y 300 palabras. El resumen debe ser escrito en inglés y español. En el caso de tesis de doctorado, el formato de la página del resumen es distinta, por favor verifique la plantilla entregada por la Dirección de Postrgrado.

Palabras Claves: plantilla de tesis, escritura de documentos, **(Colocar aquí las palabras claves relevantes y estríctamente relacionadas al tema de la tesis)**.

1. INTRODUCTION

1.1. Thesis outline.

This work consists of seven chapters, first is this introduction, which shows the importance of both the automatic calculation of urban perception, and explainability in artificial intelligence, and ends with the hypothesis of this research. Chapter 2 is a detailed description of the research objectives. Chapter 3 consists of a summary of the relevant previous research. In chapter 4 the problem is formally defined and the proposed model is described. Chapter 5 gives details on model implementation and training. Finally, in chapter 6 and 7 consist of the results and conclusions of the research.

1.2. Importance of automatic urban perception

1.3. Importance of explainability in artificial intelligence

1.4. Hypothesis

2. OBJECTIVES

This are the thesis objectives

3. RELATED WORK

This are some related investigations.

4. PROPOSED ARCHITECTURE

4.1. Problem Definition

4.2. Network architecture

4.3. Loss function

5. METHODOLOGY

5.1. Implementation

5.2. Training

6. RESULTS

7. CONCLUSIONS

Nothing to say. Be happy.

REFERENCES

APPENDIX

A. FIRST APPENDIX