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Università degli Studi di Napoli Federico II

Dottorato di Ricerca in

Ingegneria Strutturale, Geotecnica e Rischio Sismico

**THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY**

Title First Row

Title Second Row

by

GIVEN\_NAME FAMILY\_NAME

Advisor: Prof. X Y

Co-advisor: Prof. W Z

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DIPARTIMENTO D STRUTTURE PER L’INGEGNERIA E L’ARCHITETTURA

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Ph.D. Thesis presented

for the fulfillment of the Degree of Doctor of Philosophy

in Ingegneria Strutturale, Geotecnica e Rischio Sismico

by

**GIVEN\_NAME FAMILY\_NAME**

February 2023

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Approved as to style and content by

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Prof. W Z, Co-advisor

Università degli Studi di Napoli Federico II

Ph.D. Program in Ingegneria Strutturale, Geotecnica e Rischio Sismico

XXXV cycle - Chairman: Prof. Iunio Iervolino

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**Candidate’s declaration**

I hereby declare that this thesis submitted to obtain the academic degree of Philosophiæ Doctor (Ph.D.) in Ingegneria Strutturale, Geotecnica e Rischio Sismico is my own unaided work, that have not used other than the sources indicated, and that all direct and indirect sources are acknowledged as references.

Parts of this dissertation have been published in international journals and/or conference proceedings (see list of the author’s publications at the end of the thesis).

Napoli, February 16, 2023

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# **Abstract**

According to the PhD program regulations, theses are written in English. An abstract and keywords are mandatory, both in English and in Italian. Try to make each fit on one page.

Start with a short paragraph setting up the context. Move to a motivation paragraph for your research, synthetically explaining the problem you targeted. State the original contribution(s).

The abstract is followed by a list of four to six keywords. To be relevant and effective for indexing purposes, keywords must be chosen carefully.

*The PhD thesis is expected to present original research contributions developed during the PhD studies of the candidate. The thesis, as well as the research work, is developed under the guidance of a supervisor.*

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**Keywords**: list from, four to six, keywords, separated by commas.

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La tesi di dottorato è redatta in lingua inglese. La tesi deve essere corredata da una sintesi (abstract) in lingua inglese e in lingua italiana.

Cercare di limitare ciascuna sintesi ad una pagina.

L’abstract è seguito da una lista da quattro a sei parole chiave. Le parole chiave devono essere scelte accuratamente per l’efficacia dell’indicizzazione e delle ricerche nelle banche dati.

La tesi è valutata da almeno due docenti di elevata qualificazione, anche appartenenti a istituzioni estere, esterni ai soggetti che concorrono al rilascio del titolo di dottorato (valutatori).

I valutatori esprimono un giudizio analitico scritto sulla tesi e ne propongono l’ammissione alla discussione pubblica o il rinvio per un periodo non superiore a sei mesi se ritengono necessarie significative integrazioni o correzioni.

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L’Università entro trenta giorni dalla discussione e approvazione della tesi deposita copia della stessa, in formato elettronico, nella banca dati ministeriale.

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Previa autorizzazione del Collegio dei Docenti, possono essere rese indisponibili, eventualmente anche fissando un limite temporale, parti della tesi in relazione all’utilizzo di dati tutelati da segreto industriale ai sensi della normativa vigente in materia.

**Parole chiave**: da quattro, a sei, parole chiave, separate da virgola.

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# **Acknowledgements**

Put acknowledgements here, e.g. to fundings (PON, company-funded scholarship, EU project, INPS Dottorati innovativi Intersettoriali “Industria 4.0”, etc.), to hosting labs, to used resources, to foreign hosting institutions for research periods spent abroad, etc.

Examples:

The research presented in this dissertation has been supported by the Italian Ministry of University and Research (MUR) under program PON 2014-2020 ...

The author’s work has been supported by a PhD scholarship funded by ... company name ...

The author’s work has been carried out in the framework of the PRIN 2018 (Progetti di Rilevante Interesse Nazionale) project “Project Title”, grant nr. ...

The author’s work has been partially carried out in the framework of the European Union project of the Horizon program “PROJECT ACRONYM

- Title”, grant nr. ...



# List of Acronyms

The following acronyms are used throughout the thesis.

**ML** Machine Learning

**RQ** Research Question



# List of Figures

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# List of Tables

[Table 2.1. Table caption goes above the table. 4](#_Toc122438227)



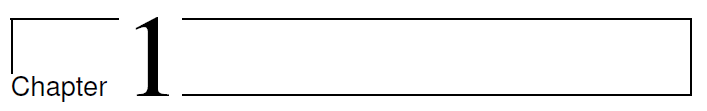
# List of Symbols

The following symbols are used within the thesis

*c* Speed of light in a vacuum

h Planck constant





# **Introduction**

*Experience is the hardest kind of*

*teacher: it gives you the test first and the lesson afterward.*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Oscar Wilde

The thesis page format is B5, double side.

Chapters start at odd page numbers (right pages). Optionally, an

epigraph may be added like above.

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Just an example of how to conclude the introduction:

The rest of the thesis is structured as follows.

Chapter 1 introduces ...

Chapter 2 presents ...

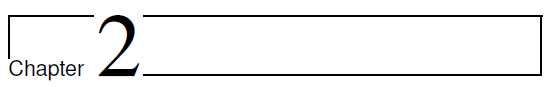
Chapter 3 ...

Chapter 4 ...

Chapter 5 summarizes ...

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# **Title, e.g.: Background and related work**

*Experience is the hardest kind of*

*teacher: it gives you the test first and the lesson afterward.*

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Oscar Wilde

Chapters start at odd page numbers (right pages). Optionally, an epigraph may be added like above.

Previous page left empty if previous chapter ends with odd page number.

Text continues.

Text

This chapter presents ...

## Section title

### Subsection title

Text

Text



Figure 2.1. Figure caption goes below the figure.

### Subsection title

Sample text with reference to Figure 2.1.

Text with citation to ref. [1].

#### Subsubsection title (no numbering)

Sample text with reference to Table 2.1.

Text

Table 2.1. Table caption goes above the table.

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| Name | Command |
| Chapter | \chapter{Chapter name} |
| Section | \section{Section name} |
| Subsection | \subsection{Subsection name} |
| Subsubsection | \subsubsection{Subsubsection name} |
| Paragraph | \paragraph{Paragraph name} |
| Subparagraph | \paragraph{Subparagraph name} |

#### Subsubsection title

Left page of a chapter (even page number) - note the page heading

## Section title

### Subsection title

Right page of a chapter (odd page number) - note the page heading

Text

#### Subsubsection title (no numbering)

Text

### Subsection title

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Example of itemization:

* Item 1 text
* Item 2 text
* Item 3 text
* Item 4 text

#### Subsubsection title (no numbering)

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Example of enumeration:

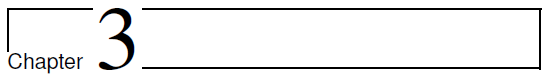
1. Item 1 text
2. Item 2 text
3. Item 3 text
4. Item 4 text

Text

### Subsection title

Text

Text



# **Title of chapter 3**

Chapters start at odd page numbers (right pages).

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## Section title

### Subsection title

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#### Subsubsection title

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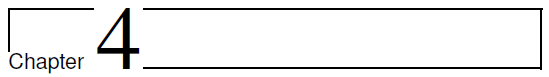
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# **Title of chapter 4**

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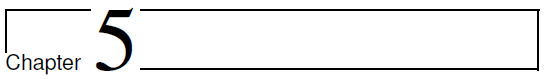
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## Section title

### Subsection title

#### Subsubsection title





# **Conclusions**

Text



# **Bibliography**

1. D.E. Knuth. The errors of TEX. *Software: Practice and Experience*, 19(7), 1989.



# Author’s publications

Insert here the list of your scientific publications during the PhD, e.g.:

1. D.E. Knuth. The errors of TEX. Software: Practice and Experience, 19(7), 1989. DOI: 10.1002/spe.4380190702.
2. D.E. Knuth. Structured Programming with go to Statements, ACM Computing Surveys, 6(4), 261-301, 1974. DOI: 10.1145/356635.356640.

