

THÈSE

pour obtenir le grade de

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Spécialité : **Informatique et Mathématiques appliquées**

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préparée au sein du
Laboratoire d'Informatique de Grenoble (LIG)
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Metric Learning for Time Series Analysis

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Cao Tri DO

Metric Learning for Time Series Analysis

Thèse dirigée par Ahlame DOUZAL-CHOUAKRIA

préparée au Laboratoire d'Informatique de Grenoble (LIG)

soutenue le date de soutenance

Jury :

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Todo list

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- my AMA colleagues
- my Schneider colleagues
- my parents

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Table of Acronyms

LIG	<i>Laboratoire d'Informatique de Grenoble</i>
AMA	<i>Apprentissage, Méthode et Algorithme</i>
GIPSA-Lab	<i>Grenoble Images Parole Signal Automatique Laboratoire</i>
AGPiG	<i>Architecture, Géométrie, Perception, Images, Gestes</i>

Introduction

Motivation

- idea 1
- idea 2
- ...

Problem statement (with words)

- idea 1
- idea 2
- ...

PhD contributions

- idea 1
- idea 2
- ...

Organisation du manuscrit

Présenter les différents chapitres

Notations

\mathbf{x}_i	a time series
y_i	a label (discrete or continuous)
$\mathbf{X} = \{(\mathbf{x}_i, y_i)\}_{i=1}^n$	a set of $n \in \mathbb{N}$ labeled time series
d_E	Euclidean distance
L_q	Minkovski q-norm
$\ \mathbf{x}\ _q$	q-norm of the vector \mathbf{x}

Part I

Work positionning

Put the introduction to part 1.

1.1	Section 1	5
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1.1 Section 1

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Chapter

Sommaire

2.1	Section 1	7
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Give an overview of the chapter

2.1 Section 1

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Chapter

Sommaire

3.1	Section 1	9
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Give an overview of the chapter

3.1 Section 1

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Conclusion of Part I

Put the conclusion of part 1.

Part II

Title for part 2

Introduction to part 2.

Chapter

Sommaire

4.1	Section 1	15
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Give an overview of the chapter

4.1 Section 1

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Experiments

Sommaire

5.1	Section 1	17
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Give an overview of the chapter

5.1 Section 1

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Conclusion of Part II

Conclusion to second part

Conclusion and perspectives

Detailed presentation of the datasets

Solver library

SVM library

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Mots clés : Série temporelle, Apprentissage de métrique, k -NN, SVM, classification, régression.

Abstract — Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed non risus. Suspendisse lectus tortor, dignissim sit amet, adipiscing nec, ultricies sed, dolor. Cras elementum ultrices diam. Maecenas ligula massa, varius a, semper congue, euismod non, mi. Proin porttitor, orci nec nonummy molestie, enim est eleifend mi, non fermentum diam nisl sit amet erat. Duis semper. Duis arcu massa, scelerisque vitae, consequat in, pretium a, enim. Pellentesque congue. Ut in risus volutpat libero pharetra tempor. Cras vestibulum bibendum augue. Praesent egestas leo in pede. Praesent blandit odio eu enim. Pellentesque sed dui ut augue blandit sodales. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Aliquam nibh. Mauris ac mauris sed pede pellentesque fermentum. Maecenas adipiscing ante non diam sodales hendrerit. Ut velit mauris, egestas sed, gravida nec, ornare ut, mi. Aenean ut orci vel massa suscipit pulvinar. Nulla sollicitudin. Fusce varius, ligula non tempus aliquam, nunc turpis ullamcorper nibh, in tempus sapien eros vitae ligula. Pellentesque rhoncus nunc et augue. Integer id felis.

Keywords: Time series, Metric Learning, k -NN, SVM, classification, regression.

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Université Grenoble Alpes, GIPSA-Lab