Thesis Title

Author's Full Name

Universidad de Antioquia

This dissertation is submitted for the degree of

Doctor of Engineering

Research Group

Advisor
Dr. XXXXXXXXXX

Committee
Dr. XXXXXXXXXXXXXXXXXX
Dr. XXXXXXXXXXXXXXXXXX
Dr. XXXXXXXXXXXXXXXXXX

Date
September, 2021.

I would like to dedicate this thesis to ...

Acknowledgements

I would firstly like to thank $\cdots$

Thanks to ...

This research was developed under the project: "XXXXXXXXXX" with code XXXX, financed by XXXXX I would like to thank my thesis defence committee: Dr. XXXXXXX, Dr. XXXXXXXX, and Dr. XXXXXXX for their comments and suggestions that allow me to improve this document.

I would like to acknowledge my source of funding given by Convocatoria XXXX.

Finally, I want to thank ....

Abstract

Your abstract info ....

Contents

List of Figures

List of Tables

Notation

Mathematical notation

Generalities

V	number of views
N_v	Number of objects (observations) in the vth view
D_v	dimensionality of the v-th view
L_v	Dimensionality of the observed features in the vth view
K	Dimensionality of the latent feature vector
J	Number of correspondences (latent vectors) to which objects are assigned

Operators

$\mathbb{E}[\cdot]$	expected value
$\mathrm{tr}(\cdot)$	trace of a matrix

Functions

$k(\cdot,\cdot)$	covariance function for a Gaussian process of $\mathbf{x}_{vn}$
$f_d(t)$	d-th output or response function evaluated at t
$\boldsymbol{\phi}(\cdot)$	nonlinear mapping function

Vectors and matrices

$\mathbf{x}_{vn}$	Observation of the nth object in the vth view, $\mathbf{x}_{vn} \in \mathbb{R}^{D_v}$
$\boldsymbol{\phi}(\mathbf{x}_{vn})$	Observation of the nth feature object in the vth view, $\boldsymbol{\phi}(\mathbf{x}_{vn}) \in \mathbb{R}^{L_d}$
$\boldsymbol{\zeta}_j$	Latent feature vector for the jth correspondence, $\boldsymbol{\zeta}_j \in \mathbb{R}^K$
$\boldsymbol{B}_v$	Projection matrix for the vth view, $\boldsymbol{B}_v \in \mathbb{R}^{L_d \times K}$
θ_j	Mixture weight for the jth cluster, $\theta_j \geq 0$, $\sum_{j=1}^{\infty} \theta_j = 1$
$\mathbf{K}_v$	covariance matrix with entries $k(\mathbf{x}_{vn}, \mathbf{x}'_{vn})$
$\mathbf{f}_d$	$f_d(t)$ evaluated at $\mathbf{f}_d = [f_d(t_{d,1}), \ldots, f_d(t_{d,N_d})]^\top$
$\mathbf{f}$	vectors $\{\mathbf{f}_d\}_{d=1}^D$, stacked in one column vector
$\mathbf{I}_N$	identity matrix of size N

Abbreviations

LVM	Latent Variable Model
UCM	Unsupervised Clustering Matching
GP	Gaussian Process
GP-LVM	Gaussian Process Latent Variable Model
iGMM	Infinite Gaussian Mixture Model
DP	Dirichlet Process
EM	Expectation Maximization

Chapter 1

Introduction

Your Intro ....

1.1 Aims

1.1.1 General aim

XXXXXXXXXXx

1.1.2 Specific aims

1. XXXXX
2. XXXXX
3. XXXXX

1.2 Outline of the Thesis

From the *XXXXXXX perspective*, we introduced XXXXXXXXXXXXXXX.

> From the *XXXXXXX perspective*, our contribution was based on XXXXXXXX. In detail, the rest of the thesis is structured as follows:

- Chapter 3 XXXXXXXXXX.
- Chapter XXXXXXXXXXXXXXXXXxx

- Chapter 5 summarizes the key contributions of the thesis and discusses ideas for future work.

1.3 Associated Publications and Software

The work presented in Chapter XXXXXXXX is based on two published papers. First paper XXXXXXXXX states the motivation of problem. Then, paper XXXXXXX extend ...

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Chapter 2

Thesis Theme

This chapter describes how to tackle XXXXXXXXXXXXXXXXXX.

The original contribution of this chapter is to offer a review showing the implications of different XXXXXXXXXXXXX problems, and ...

2.1 Theme 1

As in (Adams, 1993)...

2.2 Theme 2

...

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Chapter 3

Thesis Theme

This chapter describes how to tackle XXXXXXXXXXXXXXXXXX.

The original contribution of this chapter is to offer a review showing the implications of different XXXXXXXXXXXXX problems, and ...

3.1 Theme 1

As in (Adams, 1993)...

3.2 Theme 2

...

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Chapter 4

Conclusions and Future Work

This thesis considered XXXXXXXXXXXX ....

This chapter summarizes the contributions and research work done in the thesis, besides some future research lines are presented.

4.1 Conclusions

- Chapter 3 provided a unifying view of existing approximation to the correspondence problem. A special focus is given for a set of correspondence approaches in the context of shape analysis.
- Chapter XXXXXXXXXXXXX.

4.2 Future Work

Some interesting paths for future work involve approaches to solving current limitations of the presented methods and further extensions of the developed methodologies. In particular, XXXXXXXXXXXXXx.

The main ideas for the XXXXXXXXXX problem are summarized

Idea1: XXXXXXXXXX.

Idea1: XXXXXXXXXX.

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Chapter 5

Conclusions and Future Work

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5.1 Conclusions

- Chapter 3 provided a unifying view of existing approximation to the correspondence problem. A special focus is given for a set of correspondence approaches in the context of shape analysis.
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Idea1: XXXXXXXXXX.

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Appendix A

Performance metrics

A.1 Metric 1

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Appendix B

Appendix for Chapter 1

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Appendix C

Appendix for Chapter 2

Appendix D

Publications

D.1 Published Papers

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Appendix E

Performance metrics

E.1 Metric 1

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Appendix F

Appendix for Chapter 1

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Appendix G

Appendix for Chapter 2

Appendix H

Publications

H.1 Published Papers

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