

Thesis Title



Author's Full Name

Universidad de Antioquia

This dissertation is submitted for the degree of
Doctor of Engineering

Research Group

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Dr. XXXXXXXXXXXXXXXXXXXX

Date

September, 2021.

I would like to dedicate this thesis to ...

Acknowledgements

I would firstly like to thank ...

Thanks to ...

This research was developed under the project: “XXXXXXXXXXXX” with code XXXX, financed by XXXXX I would like to thank my thesis defence committee: Dr. XXXXXXXX, Dr. XXXXXXXX, and Dr. XXXXXXXX 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

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Notation

Mathematical notation

Generalities

| | |
|-------|--------------------------------------------------------------------------|
| V | number of views |
| N_v | Number of objects (observations) in the v th view |
| D_v | dimensionality of the v -th view |
| L_v | Dimensionality of the observed features in the v th 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 |
| $\text{tr}(\cdot)$ | 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 |
| $\phi(\cdot)$ | nonlinear mapping function |

Vectors and matrices

| | |
|-------------------------|-----------------------------------------------------------------------------------------------------------|
| \mathbf{x}_{vn} | Observation of the n th object in the v th view, $\mathbf{x}_{vn} \in \mathbb{R}^{D_v}$ |
| $\phi(\mathbf{x}_{vn})$ | Observation of the n th feature object in the v th view, $\phi(\mathbf{x}_{vn}) \in \mathbb{R}^{L_d}$ |
| ζ_j | Latent feature vector for the j th correspondence, $\zeta_j \in \mathbb{R}^K$ |
| \mathbf{B}_v | Projection matrix for the v th view, $\mathbf{B}_v \in \mathbb{R}^{L_d \times K}$ |
| θ_j | Mixture weight for the j th 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 $\mathbf{f}_d = [f_d(t_{d,1}), \dots, f_d(t_{d,N_d})]^\top$ |
| \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 |

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Chapter 1

Introduction

Your Intro

1.1 Aims

1.1.1 General aim

XXXXXXXXXXXXx

1.1.2 Specific aims

1. XXXXX
2. XXXXX
3. XXXXX

1.2 Outline of the Thesis

From the *XXXXXXX perspective*, we introduced XXXXXXXXXXXXXXXX.

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

- Chapter 3 XXXXXXXXXXXX.
- Chapter XXXXXXXXXXXXXXXXXXXXxx

- 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 XXXXXXXX extend ...

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Chapter 2

Thesis Theme

This chapter describes how to tackle XXXXXXXXXXXXXXXXXXXX.

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

2.1 Theme 1

As in (?)...

2.2 Theme 2

...

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Chapter 3

Thesis Theme

This chapter describes how to tackle XXXXXXXXXXXXXXXXXXXX.

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3.1 Theme 1

As in (?)...

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 XXXXXXXXXXXX.

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, XXXXXXXXXXXXx.

The main ideas for the XXXXXXXXXXXX problem are summarized

Idea1: XXXXXXXXXXXX.

Idea1: XXXXXXXXXXXX.

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Chapter 5

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.

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.
- Chapter XXXXXXXXXXXX.

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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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