

# Review - Unsupervised classification for longitudinal data and trajectorie analysis

Armel SOUBEIGA

2022-04-20



# Contents

<b>About</b>	<b>5</b>
0.1 Objectives . . . . .	5
0.2 Definition . . . . .	5
0.3 Delimitations . . . . .	5
0.4 Keywords definition . . . . .	6
0.5 Types of information . . . . .	6
0.6 The ressources . . . . .	6
0.7 Bibliographic review management . . . . .	6
<b>1 unsupervised and semi-supervised classification methods</b>	<b>9</b>
1.1 Lecture 1 . . . . .	9
1.2 Lecture 2 . . . . .	9
1.3 Lecture 3 . . . . .	9
<b>2 Unsupervised classification for longitudinal data and trajectories (reference articles)</b>	<b>11</b>
2.1 Paper 1 . . . . .	11
2.2 Paper 2 . . . . .	11
<b>3 Extend the reading</b>	<b>13</b>



# About

This paper reports on the bibliographic research of my thesis on unsupervised classification for longitudinal data and trajectories analysis.

## 0.1 Objectives

The objective is to synthesise the current state of research related to the topic (what others have done - said - found).

## 0.2 Definition

unsupervised classification : **Unsupervised classification refers to a set of methods whose objective is to establish or recover an existing typology characterising a set of  $n$  observations, from  $p$  characteristics measured on each of the observations.**

longitudinal data : **Longitudinal data is a series of repetitive observations of the same topics, collected over a period of time. Longitudinal data varies from cross-sectional data, since it tracks the same subjects over a period of time, whereas cross-sectional data samples different subjects at every point of time.**

trajectories data :

## 0.3 Delimitations

We are only interested in unsupervised classification as an analysis method, with this different terms :

- unsupervised classification

- unsupervised learning
- clustering / partitioning

## 0.4 Keywords definition

Direct terms :

- unsupervised classification of trajectories
- data unsupervised classification of longitudinal data

Synonymous terms :

- clustering of trajectories
- automatical classification of trajectories
- clustering of longitudinal data
- automatical classification of longitudinal

Indirect terms :

- classification of *life, health, care* pathways
- analysis of longitudinal data
- analysis of trajectories

## 0.5 Types of information

In the literature review, we are looking for theoretical analyses or examples of applications (longitudinal data, trajectory data, source code)

## 0.6 The ressources

## 0.7 Bibliographic review management

1. Do a quick refresh of the list of unsupervised and semi-supervised classification methods.

Ressource	Type
[Google Scholar](https://scholar.google.com/ "Google Scholar")	Articles académiques
[Cairn](https://www.cairn.info/)	Articles académiques
[Science Direct](https://www.sciencedirect.com/)	Articles académiques, Actes de congrès, Résumé

2. Find articles treating exactly with the subject (reference articles)
3. Extend the reading

- For each article reading, I will summarize it according to : the title, authors, date and location of article publication, the problem, limits and advantages of the results.
- Then, I will archive it to my account **mendeley**
- At end, I will do repport (presentation) to Violaine and the team if necessary.





# Chapter 1

## unsupervised and semi-supervised classification methods

### 1.1 Lecture 1

Grira N, Crucianu M, & Boujemaa N. Unsupervised and semi-supervised clustering: A brief survey. In A review of machine learning techniques for processing multimedia content, report of the muscle European network of excellence, 2004.

<http://cedric.cnam.fr/~crucianm/src/BriefSurveyClustering.pdf>

### 1.2 Lecture 2

E. Lebarbier, T. Mary-Huard. Classification non supervisée. AgroParisTech

### 1.3 Lecture 3

DJIBEROU MAHAMADOU Abdoul Jalil. Development of clustering algorithms for categorical data and applications in Health

<https://perso.isima.fr/~viantoin/PAPERS/thesis/these-2021-09-DjiberouAbdoul.pdf>



## Chapter 2

# Unsupervised classification for longitudinal data and trajectories (reference articles)

### 2.1 Paper 1

Philippe Apparicio, Mylène Riva and Anne-Marie Séguin. A comparison of two methods for classifying trajectories: a case study on neighborhood poverty at the intra-metropolitan level in Montreal. *European Journal of Geography, Space, Society, Territory*, document 727, Online since 04 June 2015, connection on 07 July 2021. URL: <http://journals.openedition.org/cybergeo/27035>

### 2.2 Paper 2

Classification et Prévion des Données Hétérogènes : Application aux Trajectoires et Séjours Hospitaliers.

[https://perso.univ-lyon1.fr/haytham.elghazel/Papers/Pdf/Rapport\\_These.pdf](https://perso.univ-lyon1.fr/haytham.elghazel/Papers/Pdf/Rapport_These.pdf)



## Chapter 3

### Extend the reading