

UNIVERSITY OF TORINO

M.Sc. in Stochastics and Data Science

Final dissertation



**Write here the title of your thesis and consider
using more lines if it is long**

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Summary

Insert here a summary of your thesis

Acknowledgements

You can insert here possible thanks and acknowledgements

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List of Figures

Chapter 1

Chapter title

1.1 Section title

Body of text, with unnumbered equations

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

if not referenced, or numbered equations

$$Y = \beta_0 + \beta_1 X + \varepsilon \tag{1.1}$$

to be referenced like this (1.1) if needed.

Start of a new paragraph here, where you can have inline math $y = a + bx$.

1.2 Another section

Tex of the section with example of theorem

Theorem 1.2.1. *Example of theorem*

Proof. proof of the theorem

□

to be referenced like Theorem 1.2.1.

Same for proposition

Proposition 1.2.2. *Example of proposition*

or lemma

Definition 1.2.3. Example of definition

□

Remark 1.2.4. Example of remark

□

Lemma 1.2.5. *Example of lemma*

Algorithm 1: Algorithm title

Data: $y_{t_j} = (y_{t_j,1}, \dots, y_{t_j,m_{t_j}})$
Set parameters $\alpha = \theta P_0$, $\theta > 0$, $P_0 \in M_1(\mathbb{Y})$

Initialise
 $y \leftarrow \emptyset$, $y^* = \emptyset$, $m \leftarrow 0$, $M \leftarrow 0$, $M \leftarrow \{0\}$, $K_m \leftarrow 0$, $w_0 \leftarrow 1$

For $j = 0, \dots, J$

Title set of instructions 1
 $\text{read data } y_{t_j}$
 $m \leftarrow m + \text{card}(y_{t_j})$
 $y^* \leftarrow \text{distinct values in } y^* \cup y_{t_j}$
 $K_m = \text{card}(y^*)$

Title set of instructions 2
for $M \in M$
 $n \leftarrow t(y_{t_j}, M)$
 $w_n \leftarrow w_M \text{PU}_\alpha(y_{t_j} \mid y)$
 $M \leftarrow t(y_{t_j}, M)$
for $M \in M$
 $w_M \leftarrow w_M / \sum_{\ell \in M} w_\ell$
 $X_{t_j} \mid y, y_{t_j} \sim \sum_{M \in M} w_M \Pi_{\alpha + \sum_{i=1}^{K_m} m_i \delta_{y_i^*}}$

Return $y \leftarrow y \cup y_{t_j}$

Example of pseudo code of algorithm
which is referred as Algorithm 1.

Example of table

Temperatura °C	Densità t/m ³
0	13,8
10	13,6
50	13,5
100	13,3

Table 1.1: Densità del mercurio. Si può fare molto meglio usando il pacchetto `booktabs`.

Items in the bibliography to be referenced like this [Ethier and Kurtz \(1986\)](#) and this [Ethier and Kurtz \(1981\)](#), check the different style for books and articles.

Abbreviations of Journal names can be found at this link
msc2010.org/MS2010-CD/extras/serials.pdf

Bibliography

- ETHIER, S.N. and KURTZ, T.G. (1981). The infinitely-many-neutral-alleles diffusion model. *Adv. Appl. Probab.* **13**, 429–452.
- ETHIER, S.N. and KURTZ, T.G. (1986). *Markov processes: characterization and convergence*. Wiley, New York.