MAP555 : Signal Processing [1]

Rémi Flamary

February 23, 2021

[1] **Warning** : This document is currently being written and should be considered unfinished and full of mistakes and typos. It should not be used yet as a pedagogical support for a course.

Contents

Chapter 1

Introduction

1.1 Signal processing

See Chap 2 for intro to Fourier

1.2 Definitions and signal properties

1.3 Bibliographical notes

[Haykin and Van Veen, 2007, Oppenheim et al., 1997]

Chapter 2

Fourier analysis and analog filtering

Chapter 3

Digital signal processing

Chapter 4

Random signals

4.1 Random Signals and Correlations

4.2 Frequency representation of random signals

4.3 AR modeling and linear prediction

Chapter 5

Signal representations

5.1 Short Time Fourier Transform

5.2 Common signal representations

5.3 Source separation and dictionary learning

5.4 Machine learning for signal processing

Bibliography

[Haykin and Van Veen, 2007] Haykin, S. and Van Veen, B. (2007). *Signals and systems*. John Wiley & Sons.

[Oppenheim et al., 1997] Oppenheim, A. V., Willsky, A. S., and Nawab, S. H. (1997). Signals and systems prentice hall. *Inc., Upper Saddle River, New Jersey*, 7458.