MAP555 : Signal Processing [1]

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[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.

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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

2.1 Fourier transform

2.2 Frequency response and filtering

2.3 Applications of analog signal processing

Chapter 3

Digital signal processing

3.1 Sampling and Analog/Digital conversion

3.2 Digital filtering

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Chapter 4

Random signals

4.1 Random Signals and Correlations

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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.