



UNICUSANO
Università degli Studi Niccolò Cusano - Telematica Roma

FUNDAMENTALS OF STATISTICAL SIGNAL PROCESSING

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Abstract

Statistical signal processing is the branch of digital signal processing dealing with detection, estimation, and time series analysis. The theory of statistical signal processing draws upon the ideas from probability theory, mathematical statistics, linear algebra, Fourier analysis, and systems theory. The present course will introduce the students to the main tools for the statistical analysis of signals. To this end, the first part is a brief review of linear algebra and probability theory with emphasis on multivariate models. The second part deals with the most common estimation techniques. Finally, the last part is devoted to the Detection Theory.

Course duration: 6 lectures of about 4 hours

Syllabus:

Brief Review of Linear Algebra (4 hr)

(09/01/2019, 15:00-19:00)

Brief Review of Probability and Multivariate Normal Distribution (4 hr)

(10/01/2019, 15:00-19:00)

Sufficiency and Cramer Rao Lower Bound (6 hr)

(11/01/2019, 15:00-19:00)

(14/01/2019, 15:00-17:00)

Estimators: Least Squares, Minimum Mean Square Error, Maximum likelihood (6hr)

(14/01/2019, 17:00-19:00)

(15/01/2019, 10:30-14:30)

Detection Theory (4 hr)

(16/01/2019, 15:00-19:00)