Prof. Keijo Ruotsalainen (University of Oulu, Finland) will give the course

INTRODUCTION TO COMPRESSED SENSING

First meeting: May, 21 2018, from 2.30 to 5 PM
in room 1D, Politecnico

The course will be oriented to master level and PhD students with prerequisites in matrix analysis, convex analysis and Fourier analysis.

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PROGRAMME

The basic problem in several practical problems of science and technology is the task of inferring quantities of interest from measured information. When the information retrieval is linear, the problem reduces to solving a linear a system of equations Ax = y where $A \in C^{m \times D}$ is the linear information retrieval process, $x \in C^D$ the signal to be reconstructed and $y \in C^m$ the measured data. In Big Data application then both m and D are Big Numbers. If we have random signals, then we may include the noise $n \in C^m$: Ax + n = y.

In this lecture series, some basic ideas of compressed sensing will be presented: performing data collection and compression simultaneously. With some simple examples it will be demonstrated that under certain conditions it is possible to reconstruct signals when the number of measurements is less than the signal length, in contrary to Shannon's sampling theorem.

SCHEDULE

Mo 21.5 Room 1D 14.30-17
Mo 28.5 Room 2D 14.30-17
Th 31.5 Room 8D 14.30-17
Mo 4.6 Room Buzano at DISMA 14.30-17
Th 7.6 Room Buzano at DISMA 14.30-17
Mo 11.6 Room 1D 14.30-17
Th 14.6 Room Buzano at DISMA 14.30-17
Mo 25.6 Room 1D 14.30-17
Th 28.6 Room Buzano at DISMA 14.30-17
Th 2.7 Room Buzano at DISMA 14.30-17