

Theory of information and coding

Introducing

Description

- Shannon paradigm, quantity of information, entropy
 - Data compression with and without loss of information
 - Linear error-correcting codes
 - Classical, contemporary and post-quantum cryptography
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Objectives

The aim of the course is to introduce the founding principles of information theory with its applications in data compression, corrective codes and cryptography.

At the end of the course, students will be able to:

- apply the principles of information theory to evaluate, quantify and size algorithms for data compression and error detection and correction.
 - apply standard cryptographic encryption algorithms for confidential information transfer.
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Necessary prerequisites

Basic mathematics in algorithms, information representation, linear algebra, probability and modular arithmetic.

Évaluation

L'évaluation des acquis d'apprentissage est réalisée en continu tout le long du semestre. En fonction des enseignements, elle peut prendre différentes formes : examen écrit, oral, compte-rendu, rapport écrit, évaluation par les pairs...

Practical info

Location(s)

 Toulouse