Information theory and coding

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Summary
The mathematical principles of communication that govern the compression and transmission of data and the design of efficient methods of doing so.

Content
1. Mathematical definition of information and the study of its properties.
3. Communication channels and their capacity.
4. Coding for reliable communication over noisy channels.
5. Multi-user communications: multi access and broadcast channels.
7. Information Theory and statistics

Learning Outcomes
By the end of the course, the student must be able to:
- Formulate the fundamental concepts of information theory such as entropy, mutual information, channel capacity
- Elaborate the principles of source coding and data transmission
- Analyze source codes and channel codes
- Apply information theoretic methods to novel settings

Teaching methods
Ex cathedra + exercises

Assessment methods
With continuous control

Resources
- Ressources en bibliothèque
  - Elements of Information Theory / Cover

Websites