

# Data Compression

## Postgraduate Course

**Catalog Description** The objective of this course is to present compression techniques for various types of data, such as image, video and audio.

The course covers the following subjects:

- Image Fundamentals
  - Analog vs. Digital representation
- Image Compression
  - Lossless Coding
    - Entropy, Prefix Codes, Huffman Coding
    - Adaptive Huffman Coding
    - Run Length Coding
    - Arithmetic Coding
    - Dictionary Coding, LZ778
    - Dictionary Coding, LZW
  - Lossy Compression
    - Vector Quantization (VQ)
    - Coding standards, JPEG, JPEG2000
- Video Fundamentals
  - Analog vs. Digital representation
- Video Compression
  - Coding standards, MJPEG, H.26x, HEVC, MPEG
- Audio Fundamentals
  - Analog/Digital representation
- Audio Compression
  - Coding standards (MP3, G.72x, AC3)
- Networking

### **Textbooks and other required material:**

[1] David Salomon, “Data Compression”, Springer, 2007.

### **Class/laboratory schedule:**

1 Semester (16 weeks)

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