00   A brief overview of the course

00.01   The course organization

Digital Signal and Image Processing is a 9 CFU course in the first year of the Laurea Degree in Computer Engineering. The course aims to introduce fundamental concepts of signals and images, present principles and methodologies of signal analysis and signal processing through discrete-time systems, and illustrate the main techniques for audio, image, and video signal compression.

The lecture notes posted on the e-learning platform are an expanded transcription of the face-to-face lessons at the University of Trieste. Like every course, these lectures have been prepared based on specific textbooks. At the end of each topic, you will find a reference to the book and chapter from which the lessons are derived. You are encouraged to read/study these book chapters to enhance your preparation.

In particular, the first part of the course introduces the fundamentals of Digital Signal Processing. The lessons primarily follow the content of the book:

Sanjit K. Mitra, "Digital Signal Processing: a computer based approach," 4th edition, McGraw-Hill, 2011. ISBN-10: 0071289461; ISBN-13: 978-0071289467

The second part of the course introduces the fundamentals of Digital Image Processing. The lessons are based on the content presented in the book:

Rafael C. Gonzalez and Richard E. Woods, "Digital Image Processing," 4th edition, Pearson, 2007. ISBN 10: 1-292-22304-9; ISBN 13: 978-1-292-22304-9

Many examples shown during the lessons will utilize MATLAB, employing resources from the Signal Processing Toolbox and the Image Processing Toolbox.

The final exam will be oral and will include open questions and exercises.