Target skills and knowledge

The course provides the skills needed to build a mobile application, from its design and development to the deployment in the different stores and its maintenance. Moreover, it presents the main technologies for encoding, storage and dissemination of multimedia data.

Textbooks and other supplementary readings

The slides of the lessons are available in each topic section. Papers from scientific journals and other documents, as well as media item examples and software, are available in the Didactic Material Section.

Textbooks are available at the department's library.

Course unit contents

Introduction

Multimedia and hypermedia systems. Media formats. Media and data models. Classification of media items. Audio, static images and video. Static media, continuous media, timed media.

Data Compression

Reversible and non-reversible compression. Entropic compressione. LZW compression. Compression of the acoustical data. Hints to the psychoacoustic theory. Temporal and spatial masking. MP3 compression. Compression of JPEG images. Video Compression. Motion Vector. MPEG compression.

Images

Representation of digital images. Resolution and color depth. Human perception of color. Models for encoding colors. Techniques for the reduction of colors. Standard formats for the representation of images: GIF, PNG, JPEG, JPEG2000. Vector images.

Audio Files

Digital representation of audio information. Sampling and quantization. Nyquist theorem. Signal-to-noise ratio. Dimension of the data vs network capabilities. Standard formats for the encoding: WAV, u-Law. MIDI systems.

Video Format

Representation of the analogue video signal. Standard NTSC and PAL. Digital video. Representation of the color. Subsampling of the color. Standard H261, H263, MPEG.

Mobile Programming

Operating systems: history, diffusion, features. Data from sensors. Characteristics of mobile applications. Design of a touch user interface. Publishing, deployment and distribution.

Framework for cross-platform mobile development

History, classification and features. How to choose the correct framework. Energy consumption.

Design of mobile applications

The peculiarity of the mobile market and how the users purchase through mobile applications: diffusion, devices used and strategies.

Mobile design: how to organize a mobile user interface, how to choose, place and size widgets. Comfort zone. Design and choose the correct gesture. Used metaphors. Emotional design.

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