230204 - EDCAV - Audiovisual Content Description

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications
Academic year: 2017
Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Optional)
BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional)
ECTS credits: 6  
Teaching languages: English

Teaching staff

Coordinator: RUBEN TOUS LIESA
Others: RUBEN TOUS LIESA
CLIMENT NADEU CAMPRUBI
JAVIER RUIZ HIDALGO

Prior skills

Basic knowledge of programming, and coding and compression of audiovisual content.

Requirements

Second year.

Degree competences to which the subject contributes

Transversal:
1. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

Teaching methodology

Theory + application classes: Development of concepts from examples and problems.
Laboratory classes: Development of practices based on a case to solve, using existing resources. Analysis of specific problems.

Learning objectives of the subject

Provide the necessary tools to analyze and describe audiovisual content, and for developing systems for storage and retrieval of audiovisual content.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>39h</th>
<th>26.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours small group:</td>
<td>13h</td>
<td>8.67%</td>
</tr>
<tr>
<td></td>
<td>Self study:</td>
<td>98h</td>
<td>65.33%</td>
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</tbody>
</table>
## Content

<table>
<thead>
<tr>
<th>Audiovisual databases</th>
<th>Learning time: 16h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 10h</td>
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</tbody>
</table>

**Description:**
- Data and information retrieval: Structured vs. non-structured information; textual vs. audiovisual non-structured information.
- SQL databases.
- Non-SQL databases.
- XML databases.

<table>
<thead>
<tr>
<th>High-level description of audiovisual content</th>
<th>Learning time: 8h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 2h</td>
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</tbody>
</table>

**Description:**
- Semantic description and ontologies (RDF, OWL, ...).
- Standards for audiovisual search (MPQF, JPSearch, ...).
- High-level descriptors formats. Audiovisual content metadata standards: Description, Interoperability.

<table>
<thead>
<tr>
<th>Low-level description of audiovisual content</th>
<th>Learning time: 12h</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 6h</td>
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</tbody>
</table>

**Description:**
- Low-level descriptors of audiovisual content
- Extraction of low-level descriptors (pitch, timbre, rhythm, ...).
- Extraction of low-level descriptors of image (color, shape, texture, etc.) and video (key frames, movement, etc.).
- Standards of audiovisual descriptors (MPEG-7, other).
Retrieval and classification of audiovisual content

Learning time: 12h

- Theory classes: 6h
- Laboratory classes: 6h

Description:
- Retrieval and classification of audiovisual contents using low-level descriptors.
- Performance evaluation: methodology, confusion matrix, performance measures (precision, recall, ...), etc.
- Commercial applications. Examples: music, face detection and recognition.

Qualification system

Evaluation of part 1 (50%, topics 1 and 2):
- Project assignment 90%
- Laboratory assignments 10%

Evaluation of part 2 (50%, topics 3 and 4.):
Part two will have two different evaluations, one for the audio part and the other for the video part.
- Audio part:
  - Project assignment 30%
  - Laboratory assignments 15%
  - Attendance and participation 5%
- Video part:
  - Project assignment 30%
  - Laboratory assignments 20%

Regulations for carrying out activities

Bibliography

Basic:


