Course guides
230207 - BIOTEC - Biometric Technologies

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications.
Degree: BACHELOR’S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR’S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject).

Academic year: 2015  ECTS Credits: 6.0  Languages: English

LECTURER
Coordinating lecturer: JAVIER HERNANDO
Others: XAVIER GIRÓ

REQUIREMENTS
PIV, PAV.

TEACHING METHODOLOGY
- Lectures- Laboratory classes- Group work (distance) - Oral presentations- Short answer test (Control) - Extended answer test (Final Exam)

LEARNING OBJECTIVES OF THE SUBJECT
In this course principles and methods of biometric systems will be presented to the student. The course will also cover the state-of-the-art techniques in audio, image and video technologies.

STUDY LOAD

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

CONTENTS

1. Introduction

Description:
Definitions, examples, applications.
2. Pattern Classification
Description:
- Definitions, applications, basic concepts.
- Architecture: features, classifiers.
- Discriminative, un/supervised algorithms.

3. System Architecture and Assessment
Description:
- System architecture.
- Performance criteria.

4. Speaker Recognition
Description:
- Text dependent and text independent system.
- Speech features.
- Speaker models: GMM, HMM, discriminative approaches.

5. Main Image Biometrics
Description:
- Face recognition.
- Iris recognition.
- Fingerprint recognition.
- Other image-based modalities.

6. Multimodal Biometrics
Description:
- Signal, feature, score and decision levels.
- Normalization and fusion.

7. Other Biometrics
Description:
Other biometrics: technologies and applications.

ACTIVITIES

LABORATORY
Description:
Algorithm implementation and testing.

GROUP
Description:
Bibliographic research.
ORAL PRESENTATION

Description:
Presentation of the group work.

SHORT ANSWER TEST (CONTROL)

Description:
Multiple choice test.

EXTENDED ANSWER TEST (FINAL EXAMINATION)

Description:
Discussion of concepts.

GRADING SYSTEM

Final examination: 40%
Partial examinations and controls: 20%
Exercises: 25%
Laboratory assessments: 15%

BIBLIOGRAPHY

Basic:

Complementary: