12082 Computer Vision

- **Classes** will be taught in **English**

- **Slides** are available in **Spanish** and **English**

  http://webdiis.unizar.es/~neira/

- **Lab** instructions will be in **Spanish**

- Students can **ask questions** in **Spanish** or **English**

- Students can **answer questions** in **Spanish** or **English**
12082 Computer Vision

Teachers:
José Neira Parra
Juan Domingo Tardós Solano

- Theory: 2.5
- Problems: 0.5
- Lab work: 3.0

30 teaching hours

A.3

3 hour sessions
in
Labs L0.01 y L1.02
# Schedule

## Computer Vision

**Academic year 2006-2007**

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Preliminaries

- Course program:
  - Introduction
  - Lesson 1: Thresholding
  - Lesson 2: Connectivity Analysis
  - Lesson 3: Descriptors
  - Lesson 4: 2D recognition
  - Lesson 5: Morphology
  - Lesson 6: Contours
  - Lesson 7: Regions
  - Lesson 8: Colour
Preliminaries

• Requirements:
  - Discrete mathematics
  - Set theory
  - Algebra
  - Probability and statistics
  - Data structures and algorithms
Labs

P1: Thresholding (3 hrs).
P2: Connectivity (3 hrs).
P3: Descriptors (3 hrs).
P4: Recognition (3 hrs).
P5: Morphology (3 hrs).
P6: Segment detection (3 hrs).
P7: Hough transform (3 hrs).
P8: Colour (3 hrs).
Labs 1-5

• Computer vision, Part I: Binary Vision

• Goals:
  – Illustrate the theoretical foundations and usefulness of binary vision
  – Point out limitations of binary vision for the analysis of complex scenes

⇒ Gray level vision
1. Thresholding

- Gray level image
  - Pixels 0..255
- Binary image
  - Pixels 0 y 1
2. Connectivity analysis

- Partition of 1-pixels
- Elimination of uninteresting regions
3. Descriptors

- Bounding box
- Centroid
- Orientation
- Image moments
4. Descriptor-based recognition

Annotated image

Z8525BB
(or unknown)
5. Morphological operators

Binary image

Smoothed image
5. Morphological operators

- Perimeter
- Minimum and maximum radii

Smoothed image

Borders


Labs

- Attendance to labs is **highly recommended**.
- Lab work is submitted and presented in the school’s machine (**merlin**).

Do you have an account in **merlin**?

- If you don’t **prepare the labs prior** to the lab session, you will not have time enough to finish.
- The deadline for submitting is **the day and time** of the lab session.
Evaluation

- The final grade will be the **mean** of the grades of each lab.

- To pass the course, you need **at least** a mean of **5.0** in the labs.

- The labs submitted late will be **penalized** with one point per week or fraction.

- If a lab works correctly and you explain it clearly, the **minimum grade** will be **5.0**.