

# Advanced pattern recognition course at TUDELTF

Hernán Darío Benítez R.

Computer Science and Engineering Department-Pontificia Universidad Javeriana-Cali

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## Talk outline

- Main themes in APR course
- Material for teaching
- Relevant themes for research at the department
- Final assignment

## Main themes in APR course

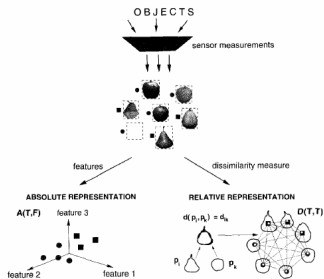
- Classification and discriminant analysis
- Classifier evaluation
- Cluster analysis and semi-supervised learning
- Data representations
- Feature extraction
- Feature selection
- Classifier complexity
- Combining classifiers, bagging, boosting
- Image segmentation and recognition

## Material for teaching

- The course provided handouts with presentations and exercises to use the pattern recognition toolbox PRTOOLS 4.1.
- Datasets such as NIST handwritten digits, Delft Image database, Highway images, etc for training and evaluation of pattern recognition systems are available.
- This material will be used for the pattern recognition course to be taught next semester at the Master level.

## Relevant themes for research at the department

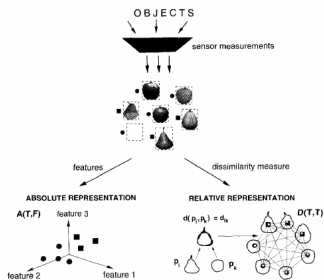
- Dissimilarities representation  
 This approach will be used for the development of the research project: *System for defective electrical equipment infrared image retrieval using Content Based Image Retrieval* currently developed by the group *DESTINO*



**Figura:** Dissimilarity representation diagram (taken from: E. Pekalska y R.P.W. Duin, *The Dissimilarity Representation for Pattern Recognition, Foundations and Applications*, World Scientific, Singapore, 2005)

## Relevant themes for research at the department

- Dissimilarities representation  
 This approach will be used for the development of the research project: *System for defective electrical equipment infrared image retrieval using Content Based Image Retrieval* currently developed by the group *DESTINO*
- Any application in which automatic classification is important, i.g. Classification of land use in civil engineering, biosequences analysis, signal analysis etc.



**Figura:** Dissimilarity representation diagram (taken from: E. Pekalska y R.P.W. Duin, *The Dissimilarity Representation for Pattern Recognition, Foundations and Applications*, World Scientific, Singapore, 2005)

## Final assignment

The final assignment was made by using infrared nondestructive testing data which is thermal contrast curves extracted from composite materials. This can be found in:

<http://cic.puj.edu.co/wiki/doku.php?id=grupos:secsy:secsy>.