

IMA4511 Pattern Recognition and Biometrics

Period : S8 / P2

ECTS : 4

Language: English

Organization :

- Teaching Load / Total Load : 45/90
- Lectures/Exercices/Labs/Final Exam : 15/12/18/0

Assessment

Validation is based on 3 evaluated Lab sessions (Lab1, Lab2 and Lab3) and an oral exam (O).

Final Mark = $1/3$ [Average (Lab1, Lab2, Lab3) + 2*O]

Objectives

- Master the tools for pattern recognition and data classification
- Knowledge biometric modalities specific techniques and tool adaptation
- Be able to implement a biometric system of identity verification

Keywords

Biometrics, face recognition, on-line signature verification, iris recognition, speaker verification

Prerequisites

Notions of Statistics and Probability Theory

Course outline

- Basics of Pattern Recognition
 - Bayes Classifier
 - The Linear Model
 - The K Nearest Neighbor Rule
 - Hidden Markov Models
 - Principal Component Analysis, Discriminant Analysis
 - Multilayer Perceptrons
 - Kohonen Feature Maps
- Application to Biometric Identity Verification
 - Face Recognition Techniques
 - On-line Signature Verification Techniques
 - Iris Recognition Techniques
 - Speaker Verification Techniques

Learning materials and literature

- R.O. Duda, P. E. Hart, D.G. Stork, "Pattern Classification", John Wiley, 2001.
- L. Rabiner, B.H. Juang, "Fundamentals of Speech Recognition", Prentice Hall Signal Processing Series, 1993.
- S. Haykin, "Neural Networks", Second Edition, Prentice Hall International, 1999.

Person in charge

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Lecturers

- Prof. Bernadette Dorizzi
- Dr. Dijana Petrovska
- Dr. Sonia Salicetti