Course Code : EC 720

Course Title : Modern Techniques in pattern recognition

Credit Hours : 3

Course Description

Introduction to pattern recognition, Approaches for Pattern recognition (connectionist, statistical, syntactic), Pattern preprocessing (segmentation), Feature extraction, Feature selection, Pattern classification, Machine learning Supervised learning, Machine learning Unsupervised learning, Post-processing, Theory of biometric recognition techniques, Traditional classifiers of biometric recognition techniques

Course Objectives

To introduce basic methods and principles of pattern recognition so students can apply them to their problem domains

Course Topics

Week no. 1:   Introduction to pattern recognition

Week no. 2:   Approaches for Pattern recognition (connectionist)

Week no. 3:   Approaches for Pattern recognition (statistical)

Week no. 4:   Approaches for Pattern recognition (syntactic)

Week no. 5:   Pattern preprocessing (segmentation)

Week no. 6:   Feature extraction

Week no. 7:   Feature extraction / 7th week evaluation.

Week no. 8:   Feature selection

Week no. 9:   Pattern classification

Week no. 10:   Machine learning Supervised learning

Week no. 11:   Machine learning Unsupervised learning

Week no. 12:   Machine learning Unsupervised learning / 12th week evaluation

Week no. 13:   Post-processing

Week no. 14:   Theory of biometric recognition techniques

Week no. 15:   Traditional classifiers of biometric recognition techniques

Week no. 16:   Final Examination

References

- K. Fukunaga, Introduction to Statistical Pattern Recognition, Academic Press, 1996
- Rabines, Juarg, Fundamentals of Speech Recognition, Englewood Cliffs, Prentice–Hall, 1993
- Duda and Hart, Pattern Classification and Scene Analysis, Wiley, 1973
- Chris Bishop, Neural Networks for Pattern Recognition, Oxford University Press, 1995.
- Vladimir N. Vapnick, The Nature of Statistical Learning Theory, Springer Verlag.