

EE7403**IMAGE ANALYSIS AND PATTERN RECOGNITION**

Acad Unit: 3
Pre-requisite: Nil
Effective: Academic Year 2013-2014
Last update: January 2013

LEARNING OBJECTIVE

Understanding the fundamental yet critical methods of automatic image analysis and pattern recognition by computers/machines. Acquiring foundations for further topics such as computer vision, machine learning, data mining and artificial intelligence.

CONTENT

Image Fundamentals. Image Enhancement and Restoration. Image Analysis. Decision Theory and Statistical Estimation. Classification and Clustering. Dimensionality Reduction.

LAB DESCRIPTION (if applicable)

Nil

LEARNING OUTCOME

Students of this course will be trained to have the ability of utilizing mathematics to solving real-world problems in the area of image analysis and pattern recognition. Students will learn solid fundamentals in image processing and analysis, statistical estimation, machine learning, pattern recognition and classification.

STUDENT ASSESSMENT

Continuous Assessment	20%
Final Examination	80%

TEXTBOOKS

1. Rafael C. Gonzalez and Richard E. Woods, Digital Image Processing, 3rd Edition, Pearson Prentice Hall, 2008.
2. R. O. Duda, P. E. Hart, and D. G. Stork, Pattern Classification, 2nd Edition Wiley Inter-science, 2001.

REFERENCES

1. Gonzalez, R. C., Woods, R. E., and Eddins, S. L., Digital Image Processing Using, Matlab, Prentice Hall, 2004.
2. Christopher M. Bishop, Pattern Recognition and Machine Learning, Springer, 2nd Edition 2011.