

EE7207 NEURAL AND FUZZY SYSTEMS

Acad Unit: 3
Pre-requisite: Nil
Effective: Academic Year 2014-2015
Last update: Feb 2014

LEARNING OBJECTIVE

This course is intended to provide PhD students with an in depth understanding of the fundamental theories and learning methods, as well as advanced issues of neural networks and fuzzy logic systems. After the course, the students will be able to apply the learned knowledge to solve problems in their respective research fields..

CONTENT

Introduction to artificial neural networks. Recurrent and Hopfield Neural Network. Multi-layer perception neural network. Radial basis function neural network. Support vector machines. Self-organizing map neural network. Applications of neural network. Fundamentals of fuzzy logic and fuzzy systems. Takagi-Sugeno (T-S) fuzzy modeling and identification. Stability analysis of fuzzy systems. Applications of fuzzy systems.

LEARNING OUTCOME

1. Gain an in depth understanding of fundament theories, learning methods and advanced issues of neural network and fuzzy logic.
2. Be able to apply the learned knowledge of neural and fuzzy systems to solve their research problems.

STUDENT ASSESSMENT

Continuous Assessment	20%
Final Examination	80%

TEXTBOOKS

1. Simon Haykin, Neural networks and learning machines, 3rd Edition, Prentice Hall, 2009.
2. Gang Feng, Analysis and Synthesis of Fuzzy Control Systems – a Model-Based Approach, CRC Press Inc, 2010.