COURSE	Name	: Intelligent Electronic Systems
	Code	: EE185341
	Credit(s)	: 2
	Semester	: III

Description of Course

The Intelligent Electronics Systems course learns about machine learning, fuzzy systems, and genetic algorithms. Problems in machine learning include supervised learning (regression and classification) and unsupervised learning (clustering). Neural networks and deep neural networks are specifically discussed to solve machine learning problems. In the fuzzy system section, we discuss the fuzzy concepts and their applications in decision making, classification & pattern recognition, and control systems. In the final section, we discuss genetic algorithm to solve problems in optimization.

Learning Outcomes

Knowledge

(P02) Mastering engineering concepts and principles to develop the necessary procedures and strategies for systems analysis and design in the areas of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

Specific Skill

(KK02) Being able to compose problem solving in engineering through depth and breadth of knowledge which adapts to changes in science and technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

General Skill

(KU07) Being able to improve the capacity of learning independently.

Attitude

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently.

Course Learning Outcomes

Knowledge

Mastering the concepts and applications of intelligent electronic systems.

Specific Skill

Able to realize machine learning based on smart electronic systems, fuzzy systems and genetic algorithms.

General Skill

Able to implement intelligent electronic systems for certain applications.

Attitude

Demonstrate an attitude of working independently, creatively, and innovatively in problem solving.

Main Subjects

1. Machine learning
2. Neural network
3. Deep neural network
4. Fuzzy system
5. Genetic algorithm

Reference(s)

[1] Nikhil Buduma and Nicholas Lacascio, Fundamentals of Deep Learning: Designing Next-Generation Machine Intelligence Algorithms, O'Reilly Media Inc, 2017
[2] Ethem Alpaydin, Introduction to machine learning, The MIT Press, 2010
[3] Timothy J. Ross, Fuzzy logic with engineering applications, John Wiley & Sons Ltd, 2010
[4] Randy L. Haupt and Sue Ellen Haupt, Practical genetic algorithms, John Wiley & Sons, Inc, 2004
[5] Madan M. Gupta, Liang Jin, and Noriyasu Homma, Static and Dynamic Neural Networks: from Fundamentals to Advanced Theory, John Wiley & Sons Inc, 2003

Prerequisite(s)

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