Department of Mathematics
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Course	**Course Name**	**: Artificial Neural Network**
	Course Code	**: KM184828**
	Credit	**: 2**
	Semester	**: 8**

Description of Course	
The course of artificial neural networks is a course that studies computational algorithms that mimic how biological neural networks work. This course is part of the Data Science, because the algorithm learned works well when applying data processing.	
Learning Outcome	
PLO 2	[C3] Students are able to solve simple and practical problems by applying basic mathematical statements, methods and computations
PLO 3	[C4] Students are able to analyze simple and practical problems in at least one field of analysis, algebra, modeling, system optimizations and computing sciences
PLO 4	[C5] Students are able to work on a simple and clearly defined scientific task and explain the results, both written and verbally either on the area of pure mathematics or applied mathematics or computing sciences
Course Learning Outcome	
1. Students are able to explain in any field the application of ANN 2. Students are able to analyze the simplest ANN algorithm to recognize AND, OR, NAND and NOR logic patterns. 3. Students are able to well explain the different implementation of ANN algorithm with 1 processing element and multi processing element.	

4. Students are able to properly explain the network capable of storing memory
5. Students are able to properly explain the basic concepts of competition-based networks and problems that the network can solve
6. Students are able to explain the difference between the concept of backpropagation and varietin network algorithms
7. Students are able to properly examine the scientific work on the ANN application

Main Subject

1. Modeling of artificial neural networks from biological neural networks,
2. A simple pattern recognition with Perceptron, Hebb and Adaline,
3. Character recognition with Percepron, Associative memories,
4. Classification with BP, and LVQ,
5. Clustering with Kohonen SOM,
6. Forecasting BP, and RBF
7. Alternative model of ANN

Prerequisites

Linear Algebra Elementer
Computer Programming

Reference

1. Irawan, M. Isa, "Dasar-Dasar Jaringan Syaraf Tiruan ", Penerbit ITS Press, 2013

Supporting Reference

1. Laurene Fauset, "Fundamental of Artificial Neural Networks", Penerbit Prentice Hall, 1994
2. James A. Freeman and David M. Skapura, "Neural Networks Algorithms, Applications, and Programming Techniques", Penerbit Addison Wesley, 1991
3. Simon Haykin, "Kalman Filtering and Neuralnetwork", Penerbit John Wiley & Sons, 2001