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Manually Coding a Neural Network

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Title:
Manually Coding a Neural Network

Author:
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Difficulty:
Moderate

Specialization:
Artificial Intelligence

If other, please specify:

Most Appropriate Course:
Project II

Brief Description:
Student will study/will have previously studied the basis of neural networks including perceptrons, layering, gradient descent, and backpropogation. They will then implement one or more perceptron types (step, linear, sigmoid, tanh) and implement a simple neural network.

This specific project can be tackled from either a machine learning or software engineering approach (using object-oriented design principles).

Number of students needed:
1

Outcomes and Deliverable:
A working code base implementing a simple neural network.

Skills Required:
Software development skills at an intermediate level in any language Comfort with advanced mathematical concepts

Available Resources:

Program Goal:
CISC 1.1: Mathematical Analysis, CISC 1.3: Develop Solution CISC 2.2: Software Platform

Student Learning Outcomes:

1b: The student should be able to apply relevant principles of computing during their analysis of a problem., 2a: Student is able to create a formal software design based on a given set of requirements., 2b.:Student is able to develop a software solution from a formal design specification., 2c: Student is able to evaluate a software solution to determine its compliance with the specification., 6a: Student will be able to produce computer-based solutions by applying applicable computer science theory and software development fundamentals