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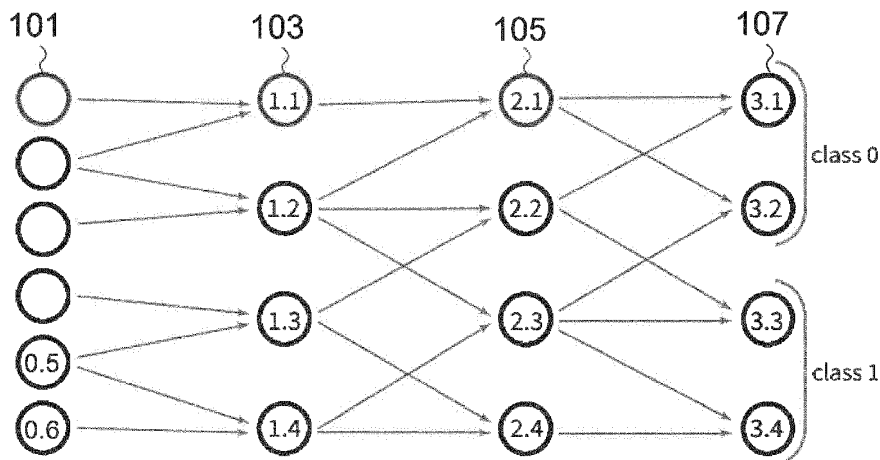
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(54) Title: TRAINING A NEURAL NETWORK TO PERFORM A MACHINE LEARNING TASK



(57) Abstract: A method, program and system for training a neural network to perform a machine learning task is provided. The method comprises receiving input data for the neural network. The method further comprises determining values for a plurality of hyperparameters of the neural network. The method further comprises building the neural network according to the hyper parameter values, wherein the neural network comprises a plurality of neurons. Each neuron includes a probability distribution for a plurality of logic operators, such that the neuron includes a corresponding probability for each of the logic operators. The method further comprises training the neural network according to the hyper parameter values and the input data by learning the probability distribution of each neuron. The method further comprises determining a logic operator of the plurality of logic operators for each neuron by selecting a value in the probability distribution.

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