ARN - Report - Labo04

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Contents

Learning algorithm

1. What is the learning algorithm being used to optimize the weights of the neural networks? What are the parameters (arguments) being used by that algorithm? What cost function is being used ? please, give the equation(s)

Model Complexity

2. Model complexity: for each experiment (shallow network learning from raw data, shallow network learning from features, CNN, and Fashion MNIST), select a neural network topology and describe the inputs, indicate how many are they, and how many outputs. Compute the number of weights of each model (e.g., how many weights between the input and the hidden layer, how many weights between each pair of layers, biases, etc..) and explain how do you get to the total number of weights.

Deep Neural Networks

3. Do the deep neural networks have much more "capacity" (i.e., do they have more weights?) than the shallow ones? explain with one example

Tests

4. Test every notebook for at least three different meaningful cases (e.g., for the MLP exploiting raw data, test different models varying the number of hidden neurons, for the feature-based model, test pix_p_cell 4 and 7, and number of orientations or number of hidden neurons, for the CNN, try different number of neurons in the feed-forward part) describe the model and present the performance of the system (e.g., plot of the evolution of the error, final evaluation scores and confusion matrices). Comment the differences in results. Are there particular digits that are frequently confused?