

INTRODUCTION TO NEURAL NETWORKS (CONT.)

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Vocabulary

Glossary	
Machine learning	Statistics
network, graphs	model
weights	parameters
learning	fitting
generalization	test set performance
supervised learning	regression/classification
unsupervised learning	density estimation, clustering
large grant = \$1,000,000	large grant= \$50,000
nice place to have a meeting: Snowbird, Utah, French Alps	nice place to have a meeting: Las Vegas in August

Figure 1: Difference in vocabulary used.

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- Try to build a “simple” neural network from scratch using Python and Keras
- Train it to do a task (classification)!

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- Try to build a “simple” neural network from scratch using Python and Keras
- Train it to do a task (classification)!
- Brainstorm along the way
- Ask questions (both ways)

Multilayer Perceptron

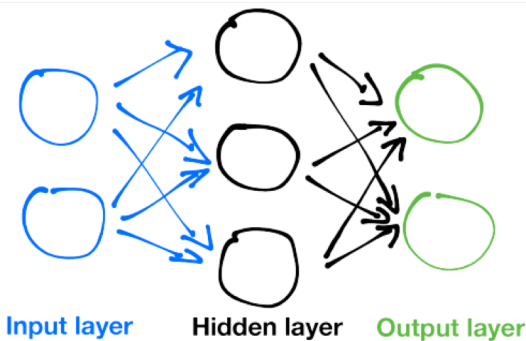


Figure 2: Multilayer perceptron (1986, colored)

Multilayer Perceptron

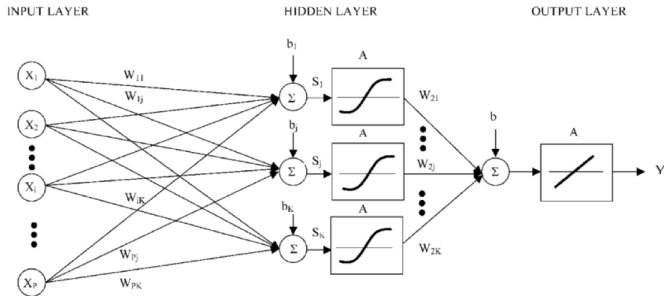


Figure 3: Multilayer perceptron

MNIST Dataset



Figure 4: Modified National Institute of Standards and Technology (MNIST) dataset

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- Used very frequently to test machine learning models

Let's try it out!

Using a Jupyter notebook...

Many packages that do the same thing?



Figure 5: Library zoo

Be careful of overfitting!

Difference between learning and memorization

- Generalizability vs. overfitting

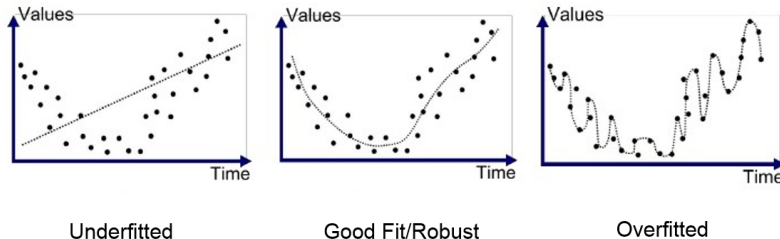


Figure 6: Example of model overfitting