Gradient Descent
Towards Neural Networks

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Outline

1. Classifying Digits through MNIST
   - Defining the Problem
   - References

Example Images

Figure 1: How would you devise a system for a **computer** to classify the digits above? What assumptions do we have to make about the data set?

Assumptions
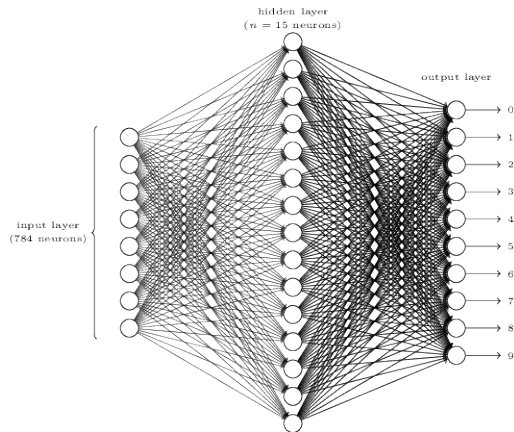
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What we're building towards

Figure 2: A simple neural network structure. The input vectors on the left hand side have $28 \times 28 = 784$ inputs for each pixel, and the output layer has 10 digits, one for each number from 0 to 9.

References

- Stewart Calculus: Early Transcedentals, 6th Edition

- Professor Leonard Calculus 3 (Full Length Videos)

- Paul's Online Math Notes, Calculus III