Introduction to Neural Networks Continued

Hunter Glanz

OUTLINE

Overview

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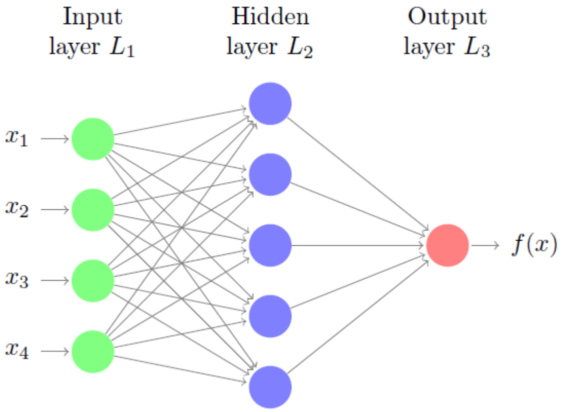
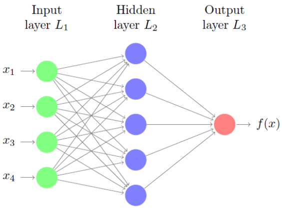


More Detail



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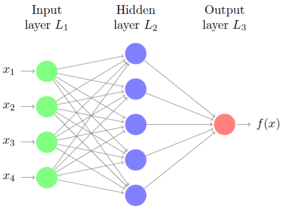

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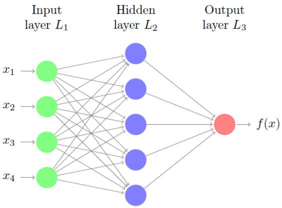

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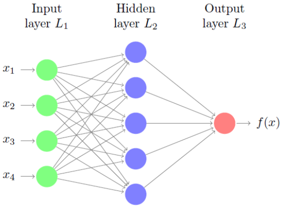

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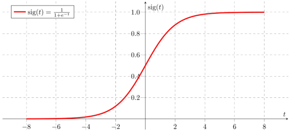

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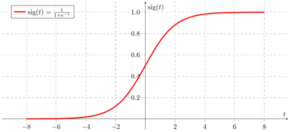

- For quantitative regression, h is typically the identity
- For classification, h is once again the sigmoid

Some Updates on Activation Functions

- Some other popular choices:

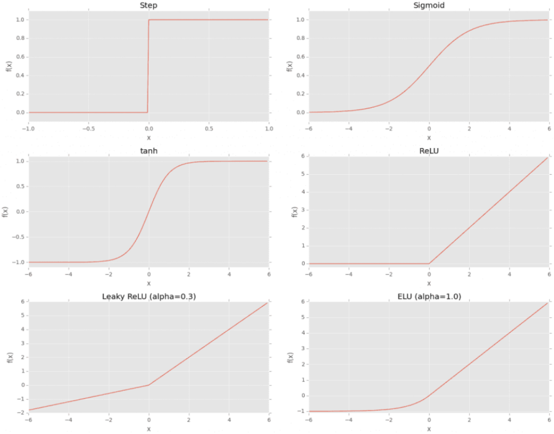

Figure 4: *Top-left:* Step function. *Top-right:* Sigmoid activation function. *Mid-left:* Hyperbolic tangent. *Mid-right:* ReLU activation (most used activation function for deep neural networks). *Bottom-left:* Leaky ReLU, variant of the ReLU that allows for negative values. *Bottom-right:* ELU, another variant of ReLU that can often perform better than Leaky ReLU.

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- **A solution:**
  - Use other activation functions like ReLU (Rectified Linear Unit) defined as $f(x) = max(0, x)$.