AMMI Deep Learning DIY:

Day 3

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Welcome to the high dimension

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  - The list goes on!

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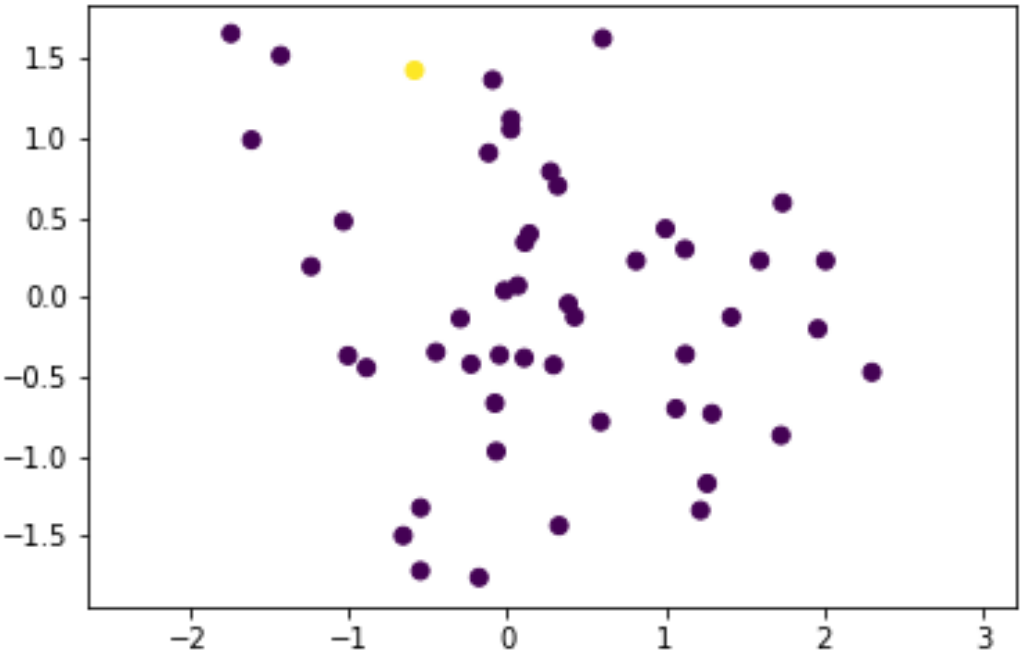

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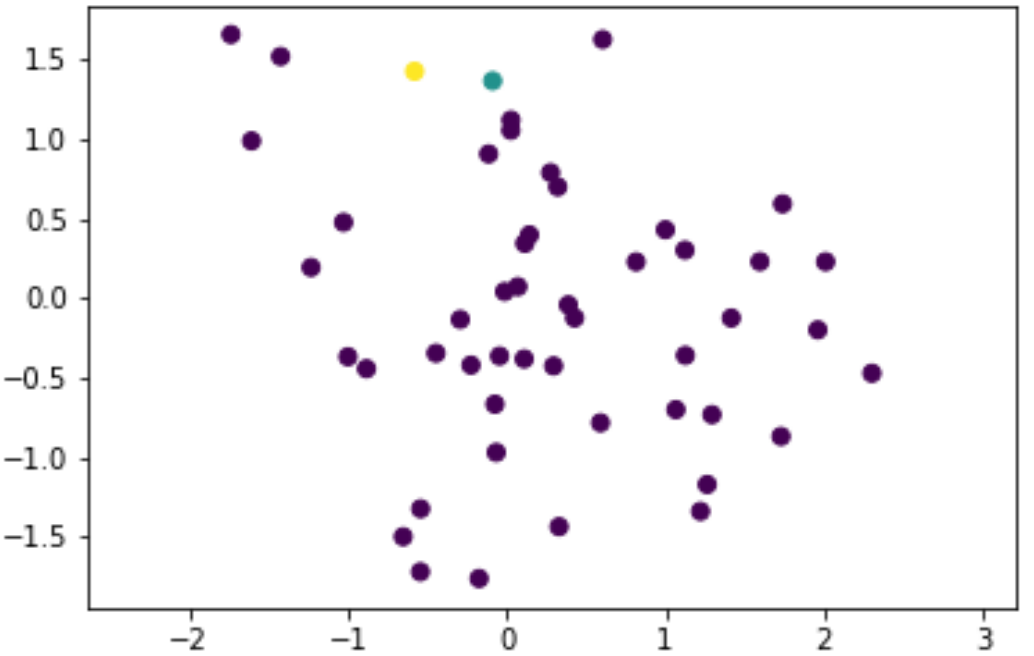

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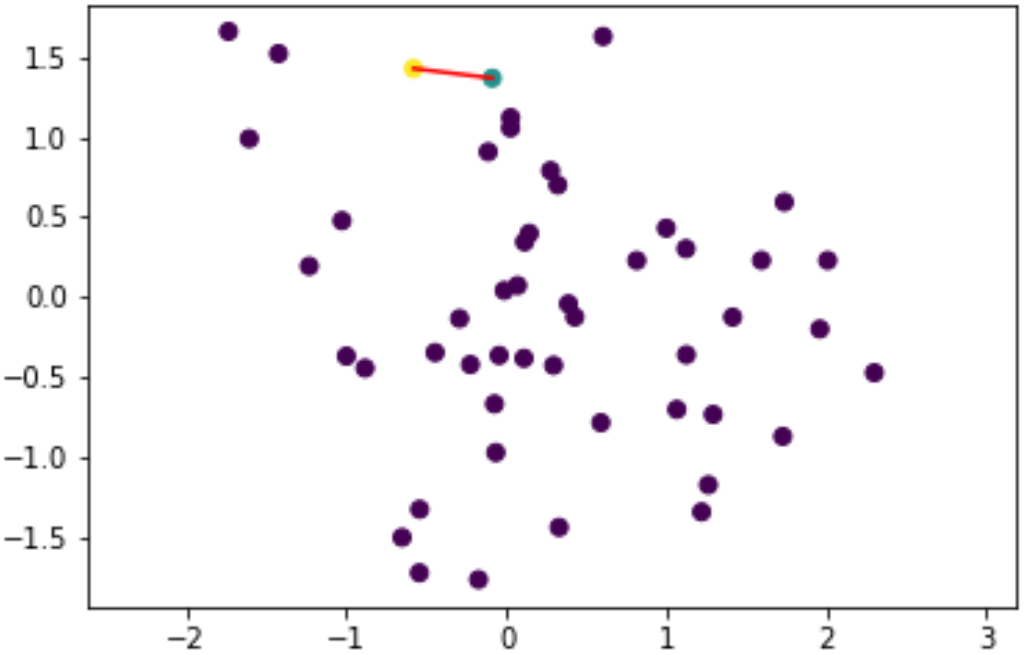

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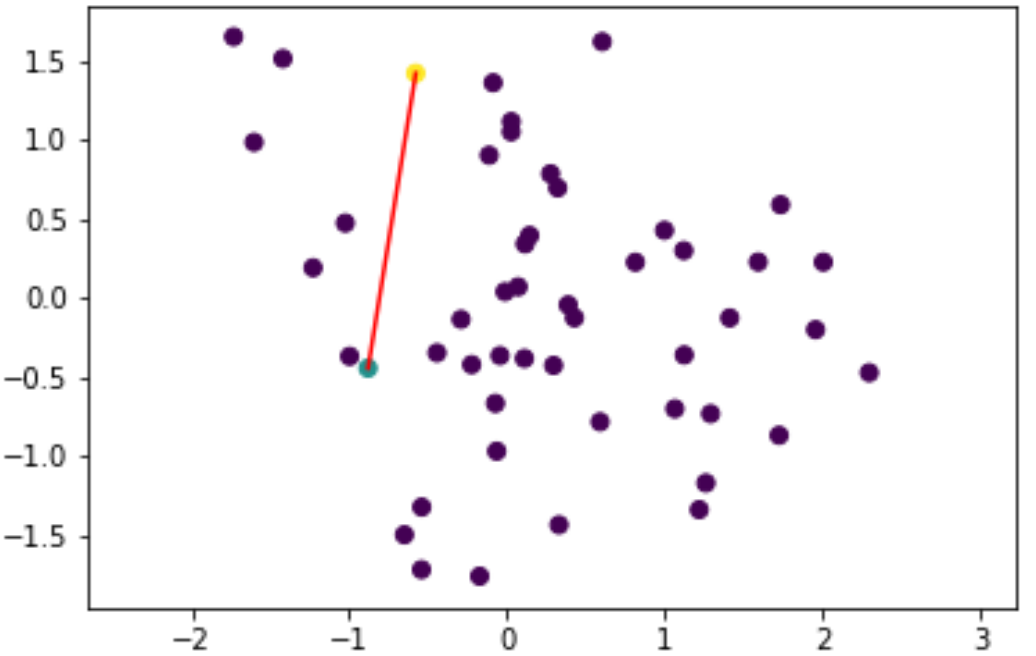

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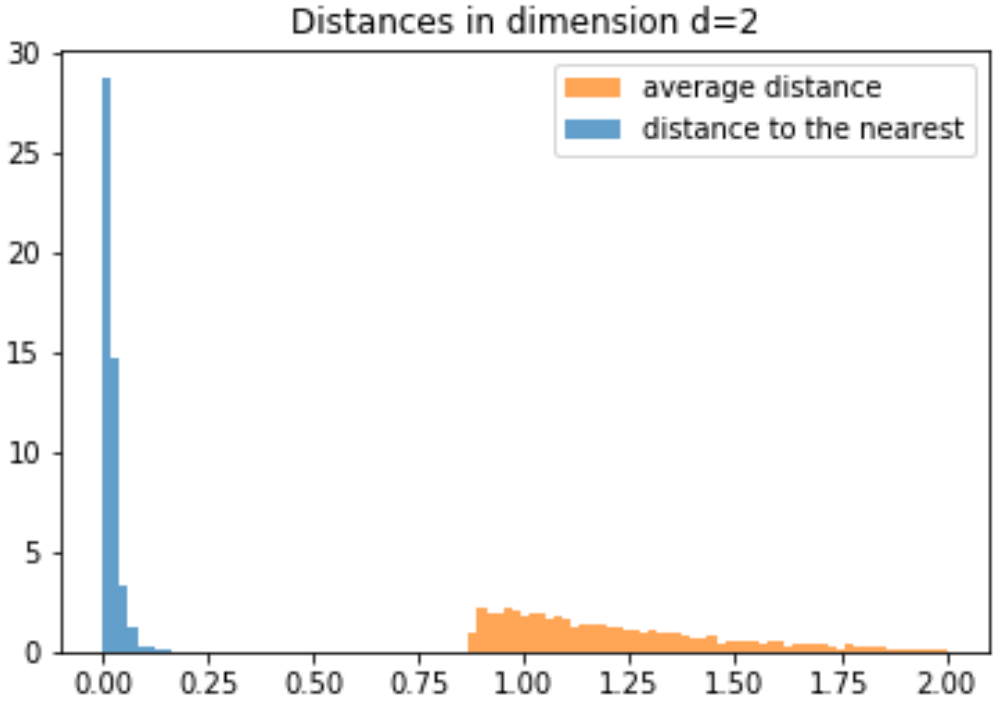

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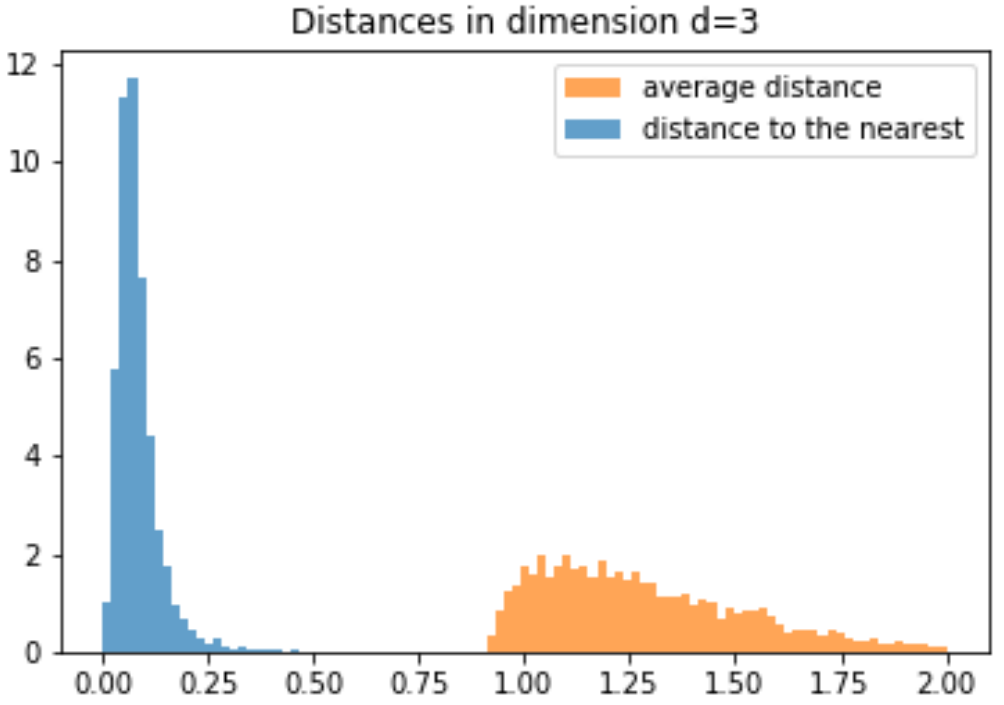

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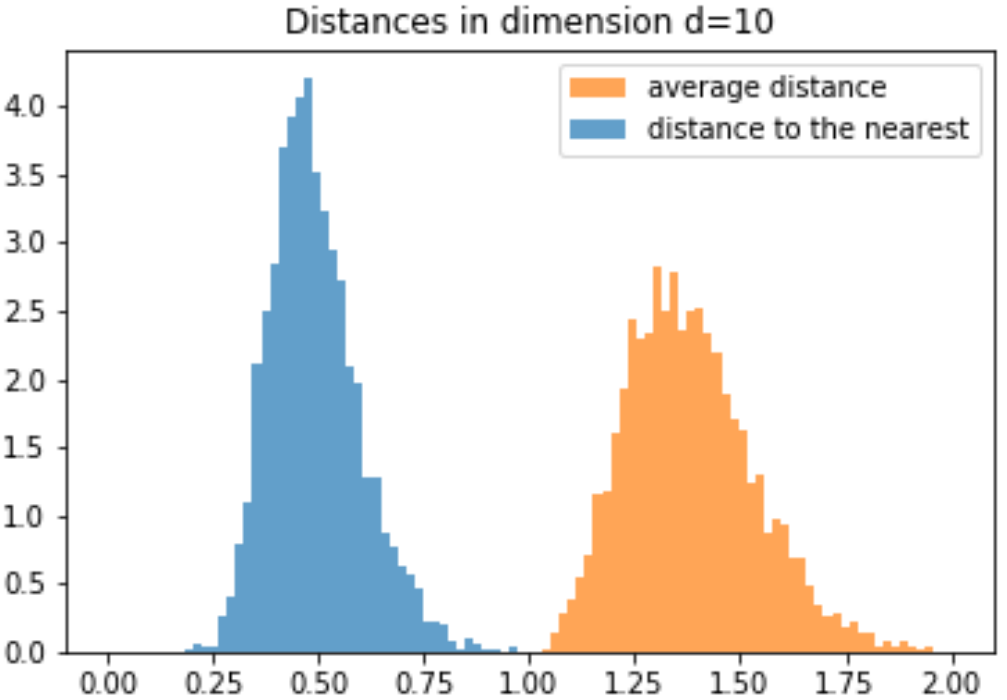

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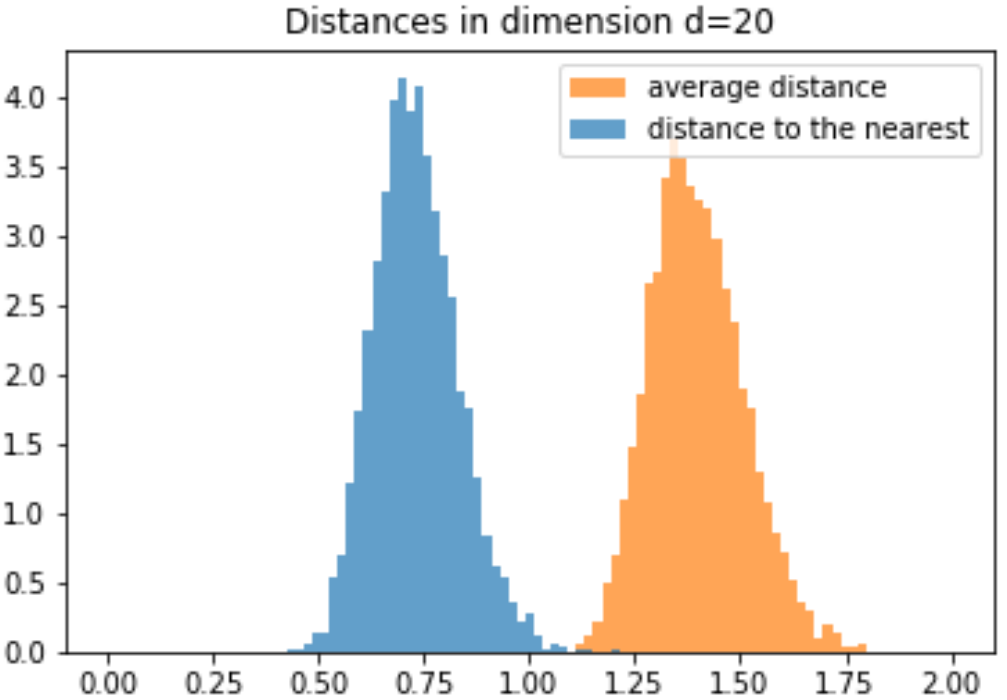

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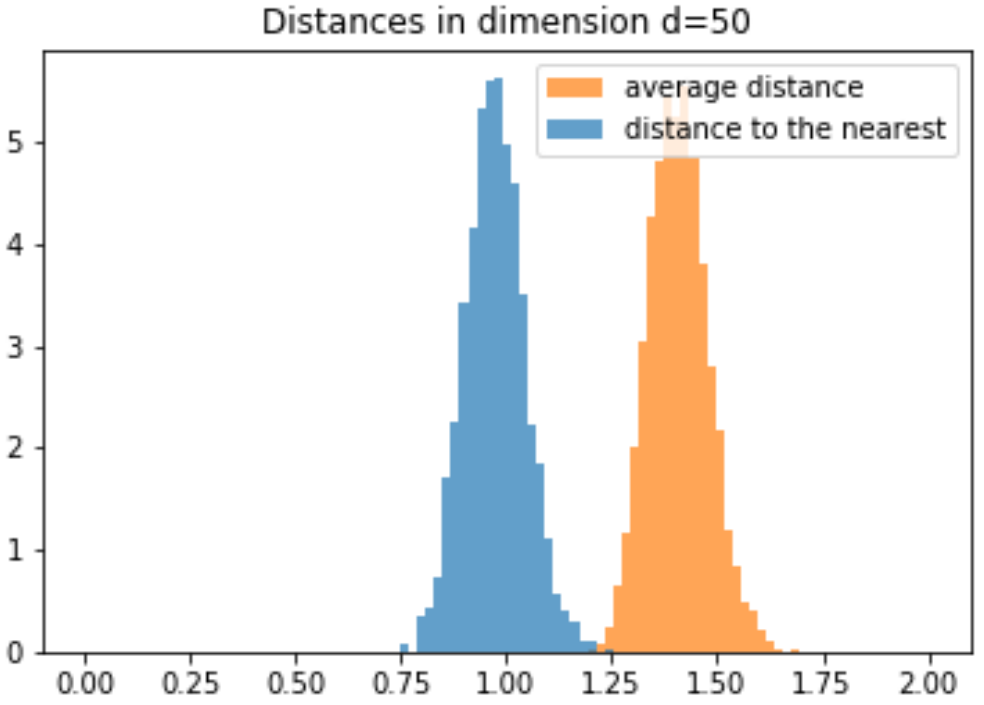

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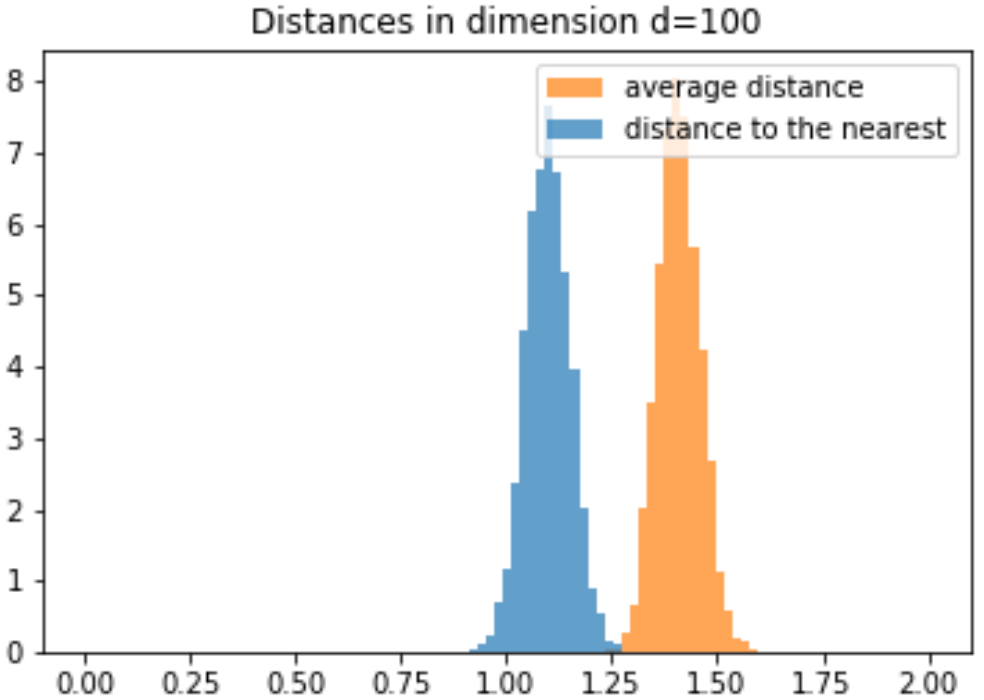

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- In high dimensions, the "nearest" neighbor is actually very far
  - It almost is as far as the all the other points

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  - activations of a neural network

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  - the activation function can be σ (sigmoid), ReLU

$$h = \sigma(x) = 1/(1 + \exp(-x))$$

$$h = ReLU(x) = \max(x, 0)$$

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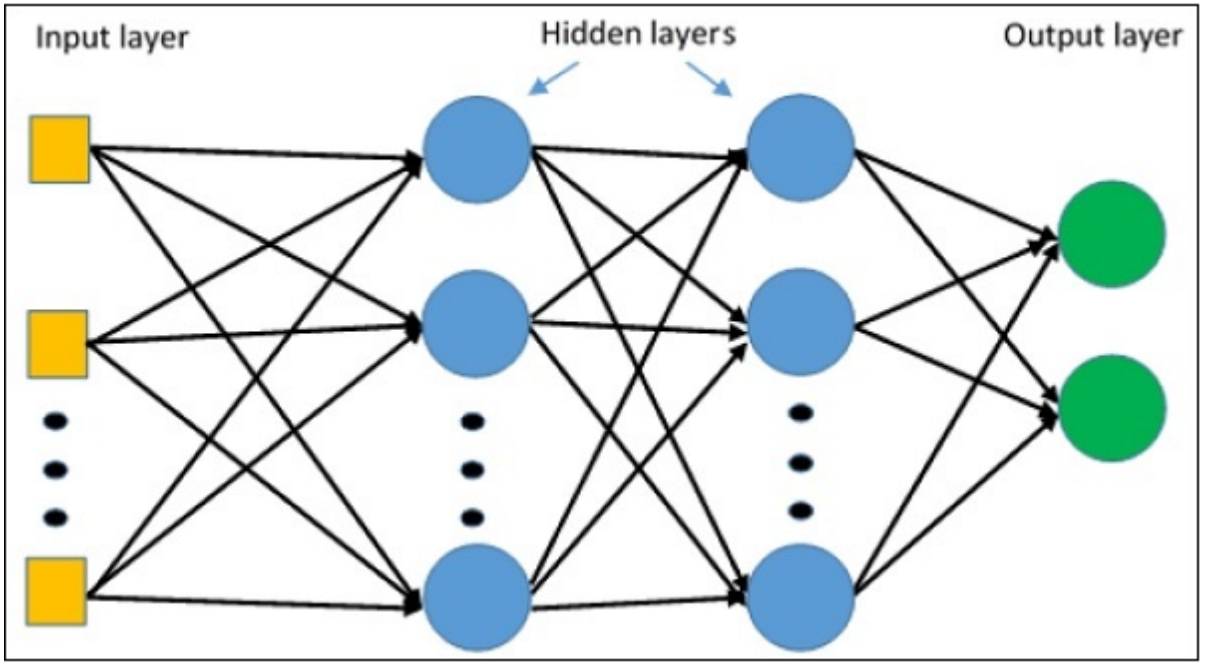
- A neural network is a stack of linear layers and activation function
  - Input layer: typically image, text, etc.
  - Output layer: our target (typically a class)
  - Hidden layers: intermediate representations learned by the neural net



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  - We cannot understand what each dimension does but we can understand what the vector represents **globally**

Understanding high dimensional data ?

1. Visualization: PCA (linear)
2. Visualization: t-SNE
3. Metrics (black-box approach)