Traditional ML Algorithm

- Suppose we have n=100 features

- For Non-Linear Logistic Regression, a quadratic function of order 2 will have features = n*(n+1)/2 = **5050** features

$$x_1^2 + x_1x_2 + x_1x_3 + x_1x_4 + x_1x_5 + \ldots\ldots x_{99}x_{100} + x_{100}^2$$

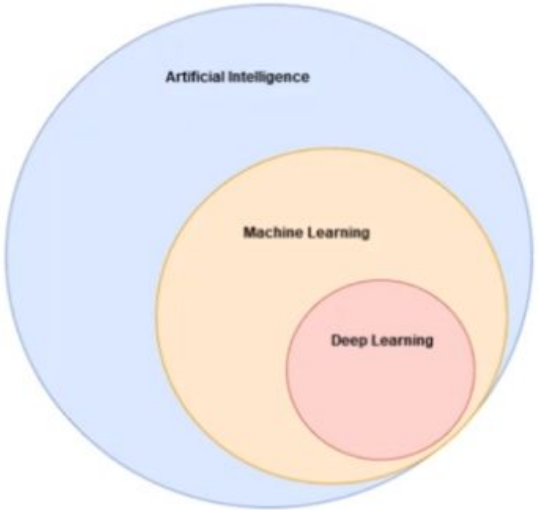
- For order 3 it will be = n*(n+1)*(n+2)/6 = **1,71,700** features

Traditional ML Algorithm

- Suppose We have an Image of pixel size 100 * 100
- Total pixels = 100 * 100 = 10,000 pixels, n = **10,000** (30,000 for RGB)
- n = 10,000 for order 2 quadratic feature will have total **100 Million features** (900 Million feature for RGB)

Deep Learning

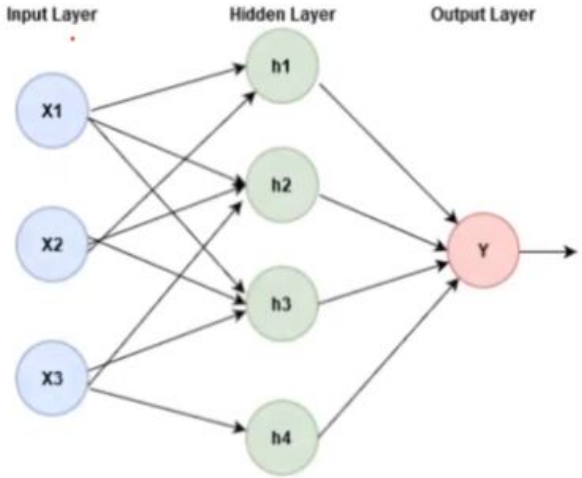
- Deep learning is part of a broader family of machine learning methods based on artificial neural networks.

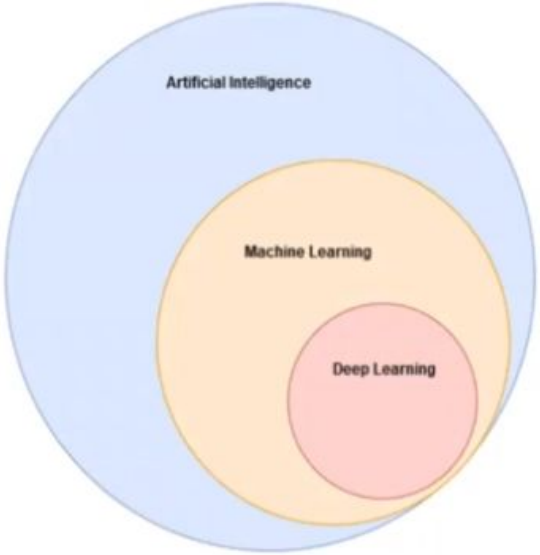


Deep Learning

- Deep learning is part of a broader family of machine learning methods based on artificial neural networks.
- The “deep” in deep learning refers

to the depth of the network.





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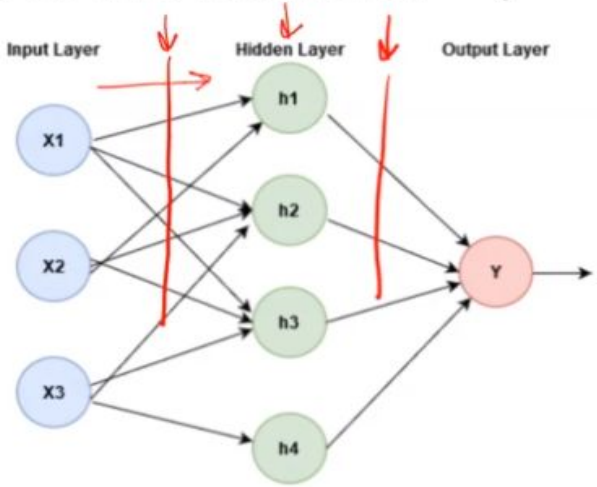
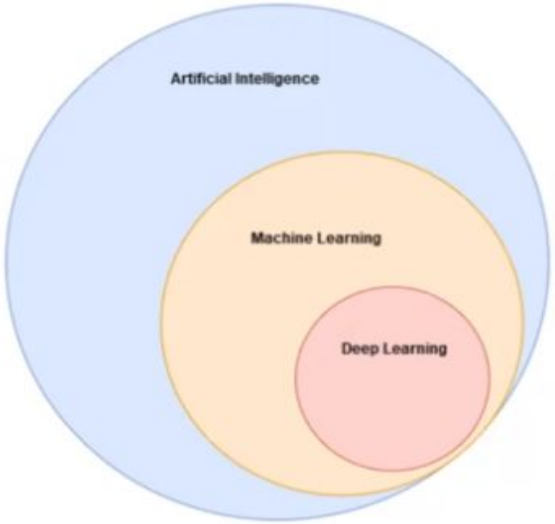
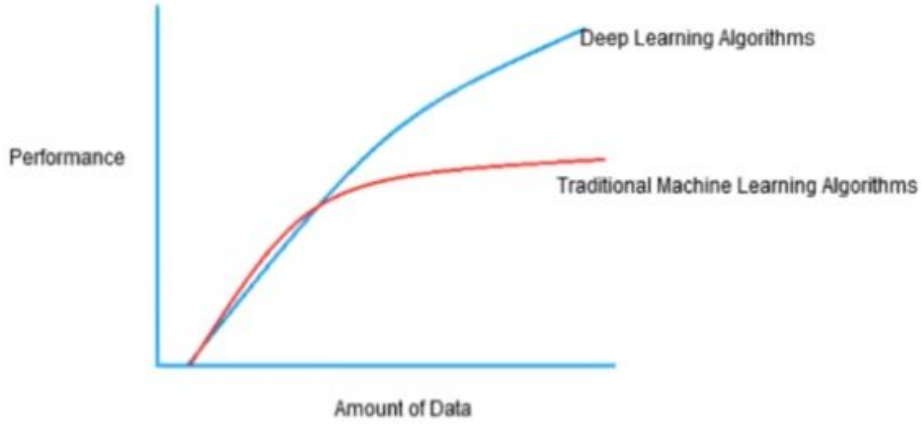




Deep Learning Performance

- Performance Increases as amount of data increase

- Need large data to learn



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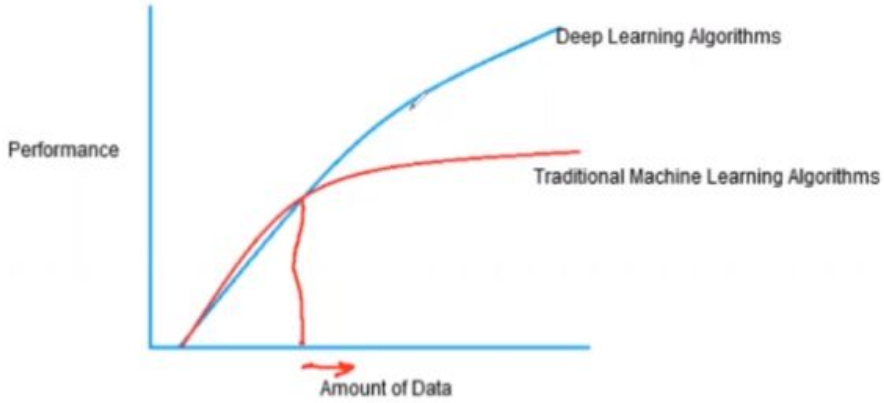

Application

- Self driving cars
- Automatic hand writing generation
- Face Detection (facebook)
- Fraud Detection
- Language translation