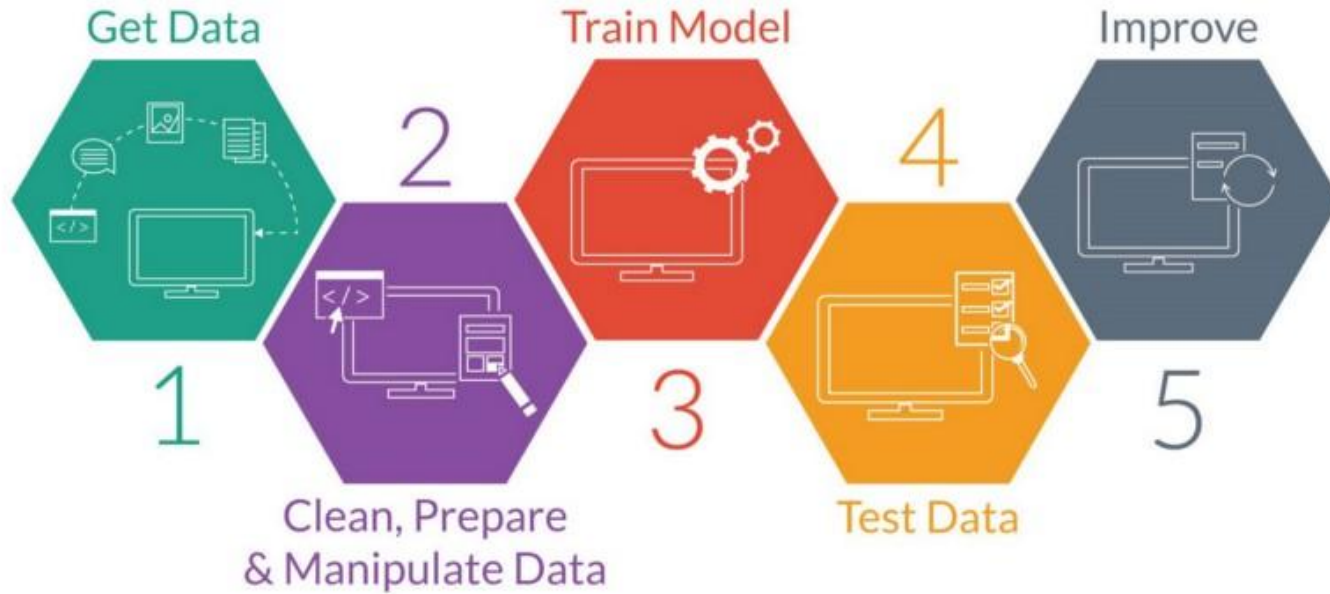


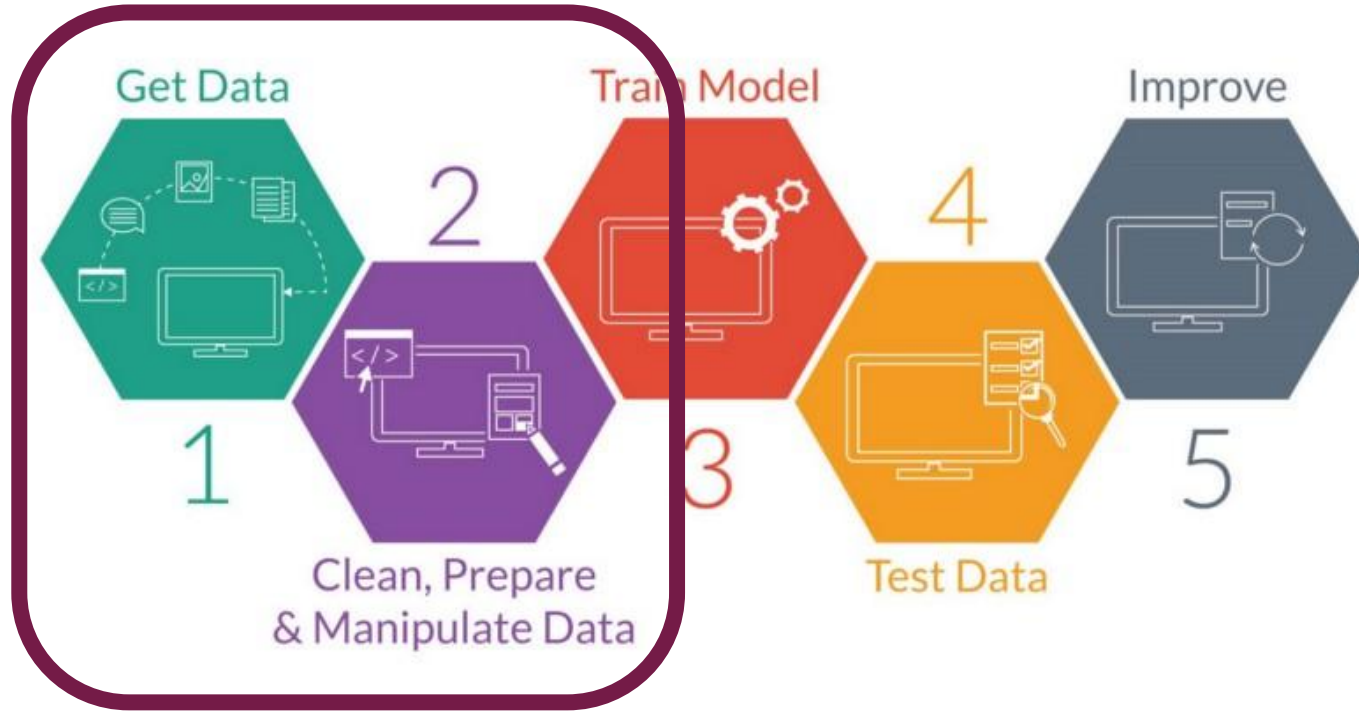
CS Mentors: Machine Learning Workshop

Josh Myers-Dean, Robin Cosbey

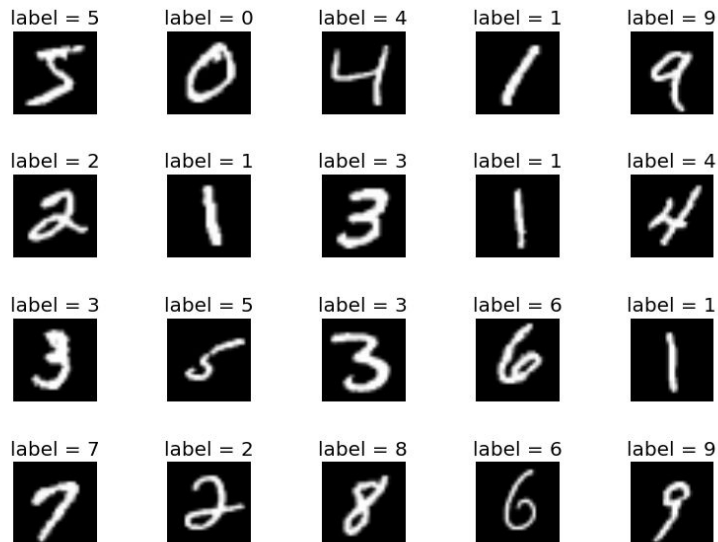
Introduction



Introduction



Data Sets



Iris Versicolor

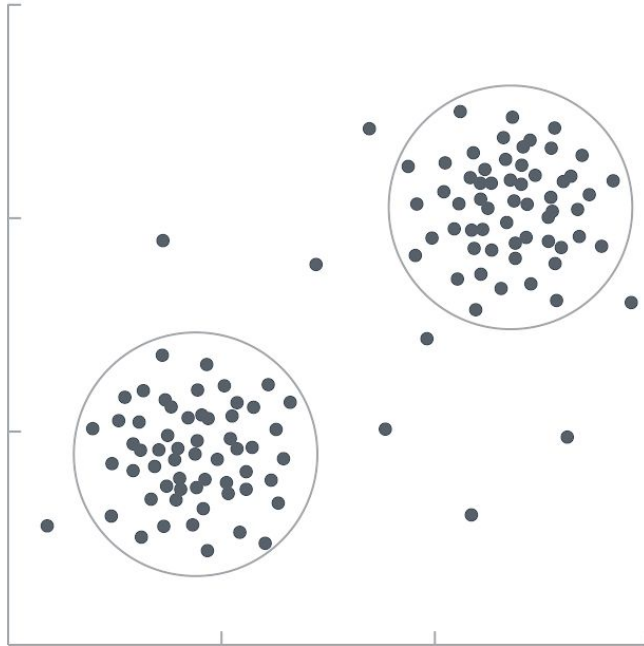
Iris Setosa

Iris Virginica

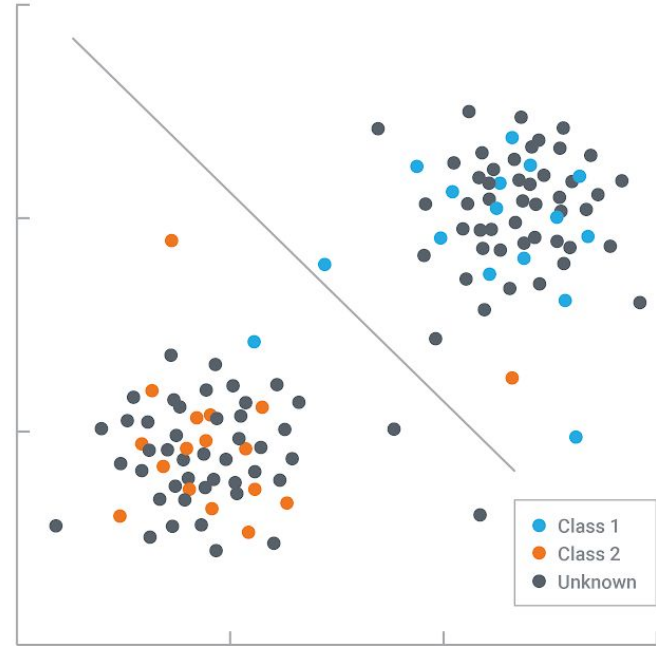
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2	2	1 5 6	16	16	4 2 6
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4	4	6 2 1	18	18	3 2 4
5	5	3 1 4	19	19	3 4 6
6	6	1 2 7	20	20	5 4 7
7	7	2 7 3	21	21	1 3 2
8	8	6 7 2	22	22	3 7 6
9	9	3 6 2	23	23	7 5 1
10	10	7 6 1	24	24	2 6 5
11	11	6 5 3	25	25	6 7 4
12	12	2 4 5	26	26	7 3 5
13	13	4 5 1	27	27	3 5 2
14	14	3 5 1	28	28	4 7 3
			29	29	5 7 6

Unsupervised and Supervised Learning

UNSUPERVISED

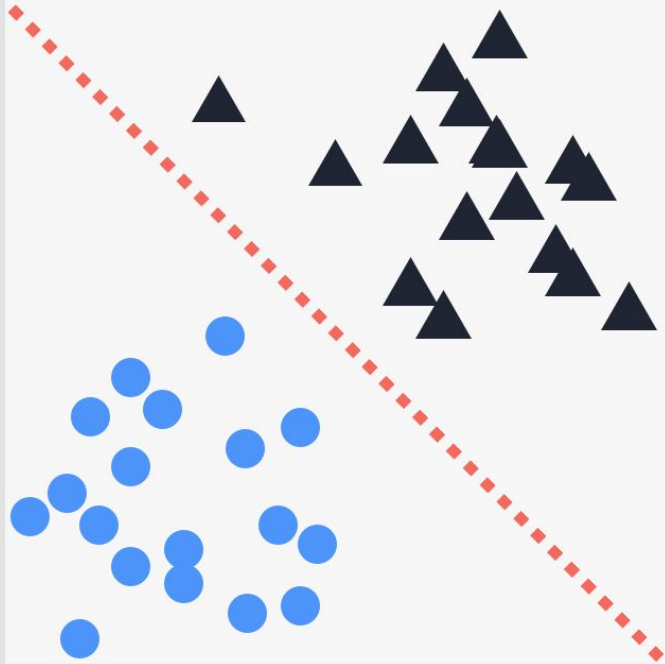


SUPERVISED

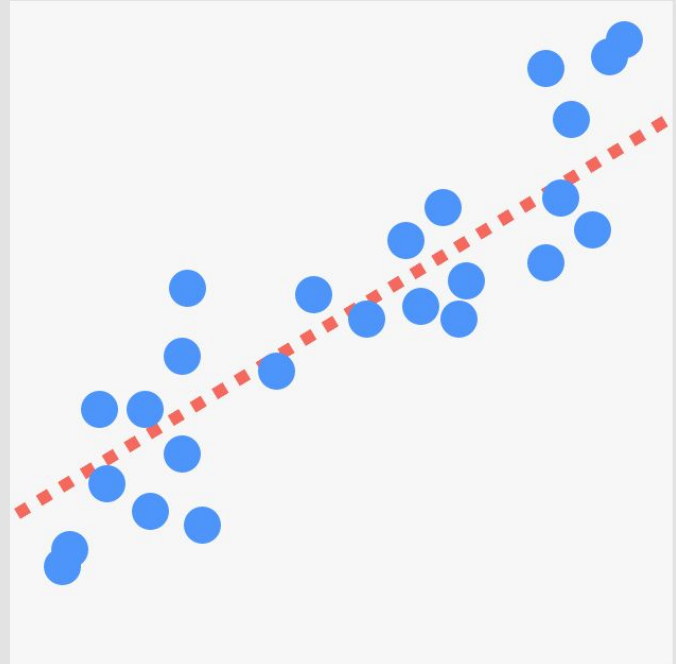


Supervised: Classification and Regression

Classification



Regression



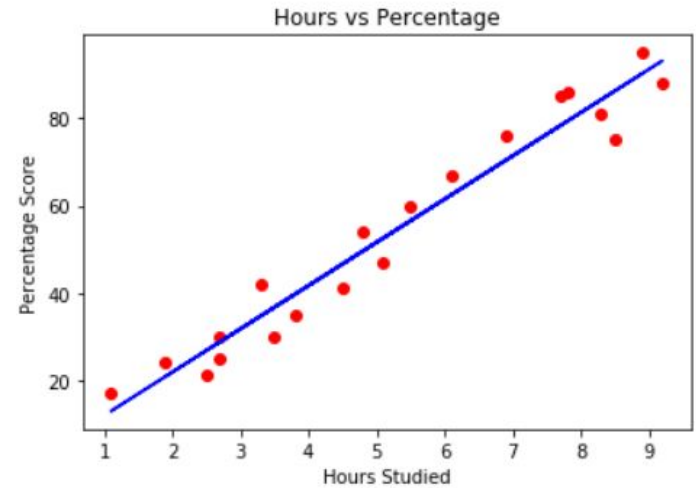
Classification



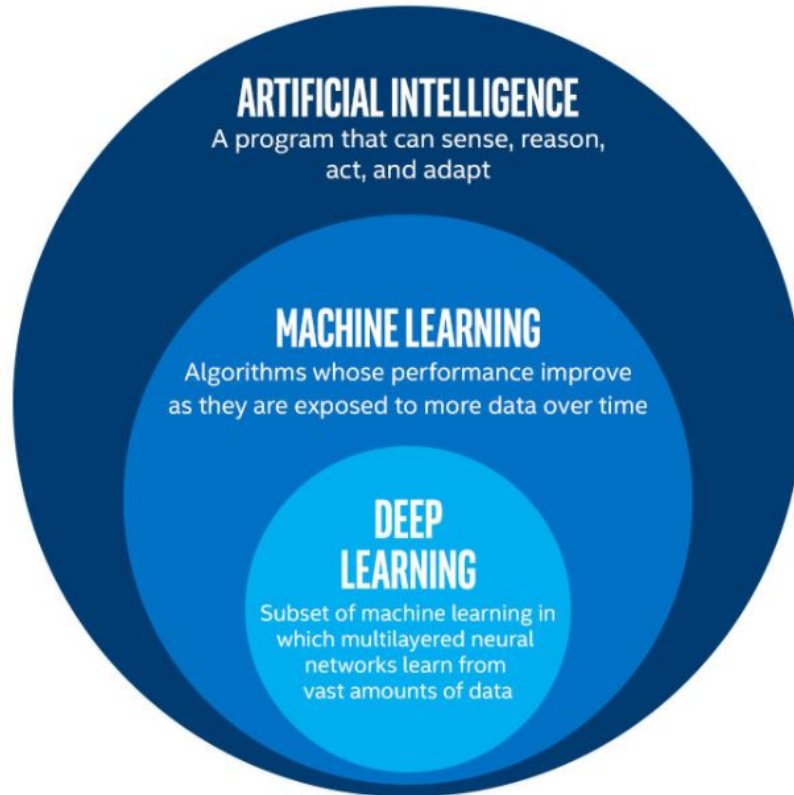
Classification



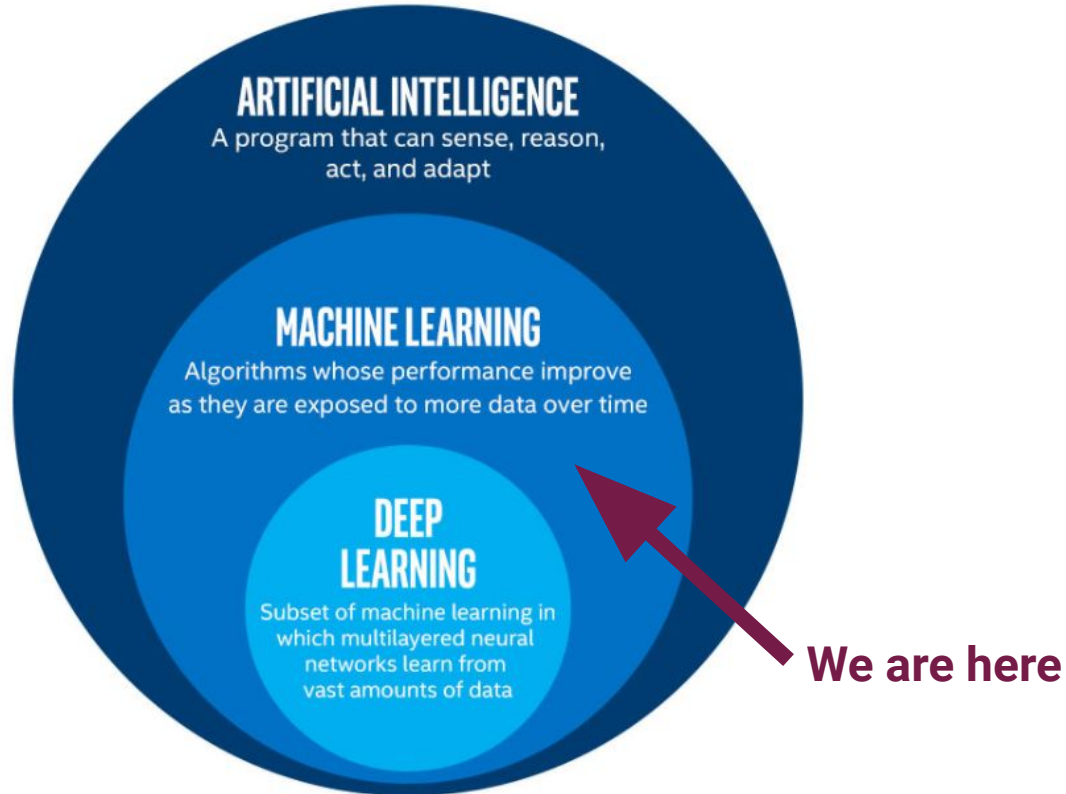
Regression



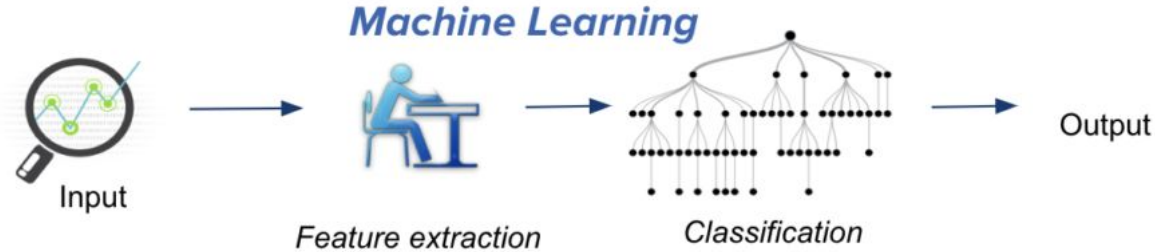
The Umbrella of AI



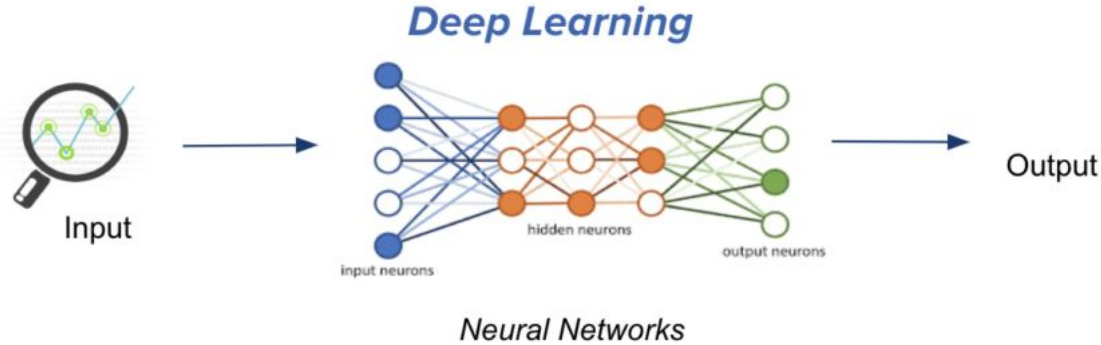
The Umbrella of AI



Machine Learning and Deep Learning



Traditional machine learning uses hand-crafted features, which is tedious and costly to develop.

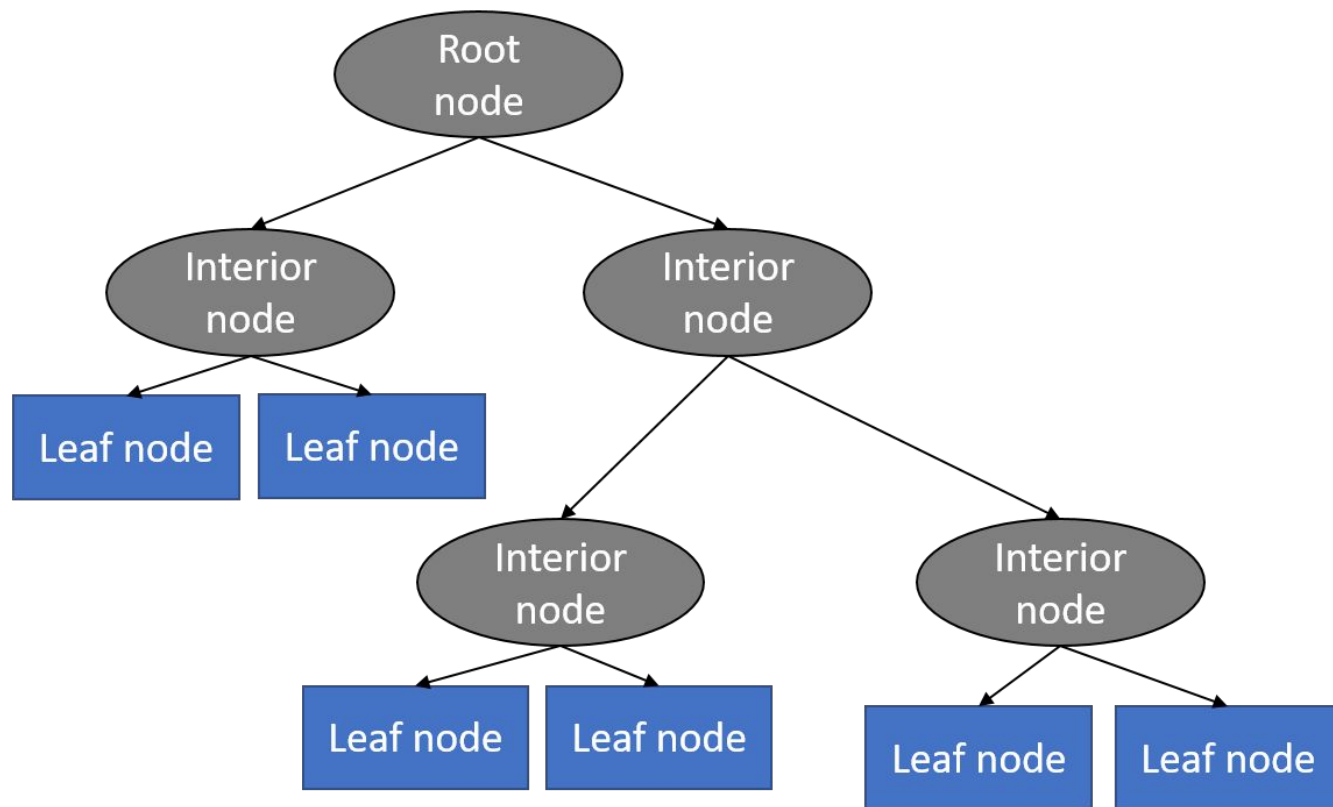


Deep learning learns hierarchical representation from the data itself, and scales with more data.

Machine Learning and Deep Learning

	Machine Learning	Deep Learning
Layered?	Sometimes	Yes
Scalable?	Sometimes	Yes (context dependent)
Data?	Small-Medium	Large
Hardware?	Less intensive (CPU)	More intensive (GPU)
Training Time?	Shorter training time (more feature extraction)	Longer training time
Interpretability?	Completely	Very difficult!

ML: Decision Trees



ML: Decision Trees

Iris Dataset



Iris Versicolor



Iris Setosa



Iris Virginica



Let's try it out!

But first: any questions?

> For more information about what we have covered as well as additional algorithms and approaches, check out [**ml_workshop.pdf**](#)