

Machine Learning 101

By Abdullah Shareef



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CS & Math Major @ Rutgers



HELLO!

Machine Learning is the Future.

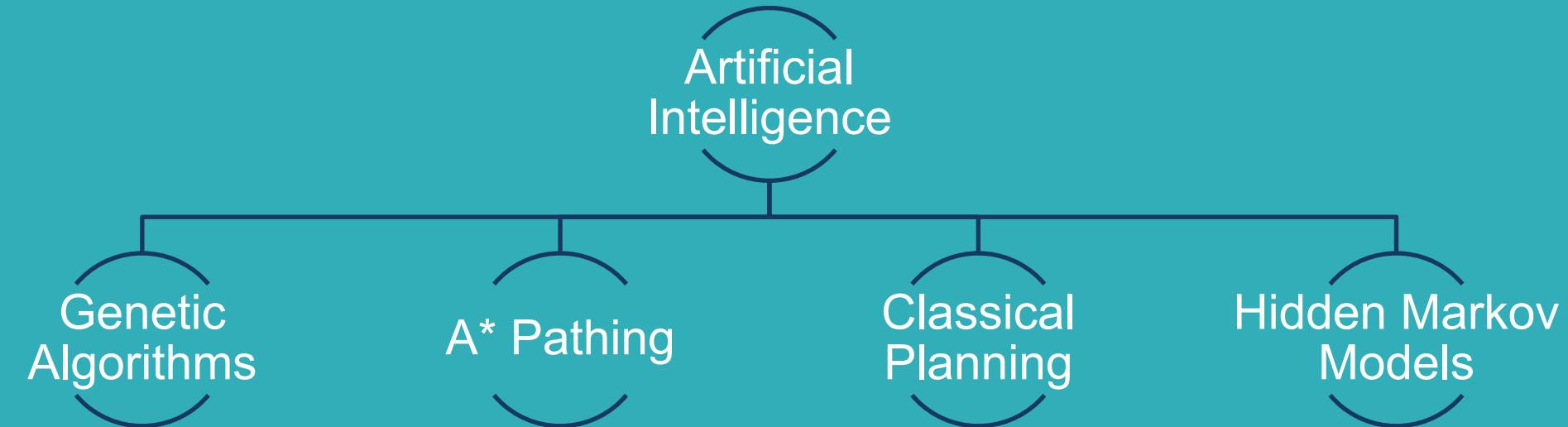




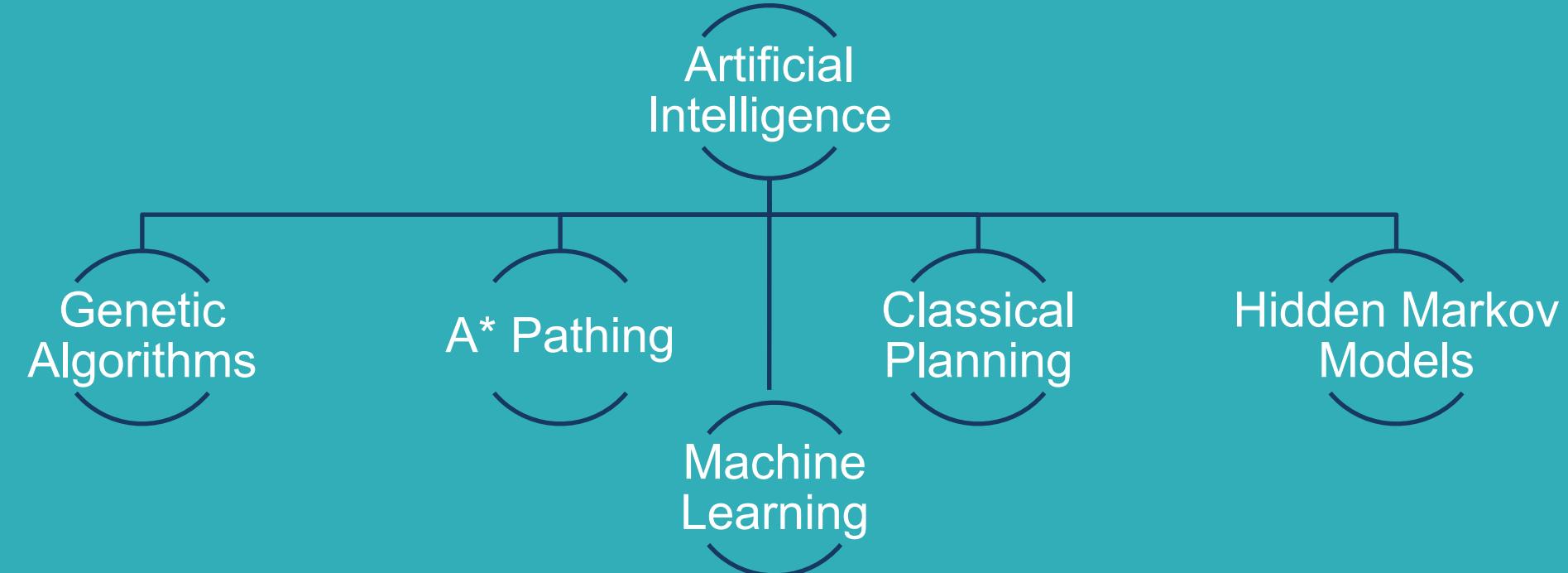
What?

What is Machine Learning?

Artificial Intelligence



Artificial Intelligence



Supervised Learning

Classification

Regression

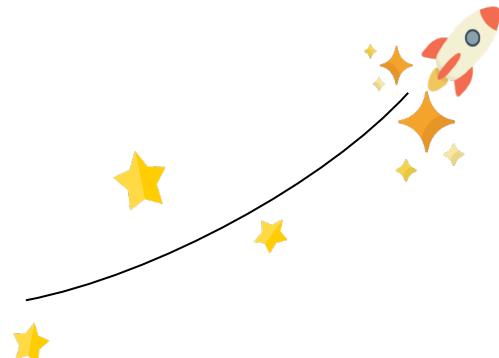
Unsupervised Learning

Clustering

Feature Extraction

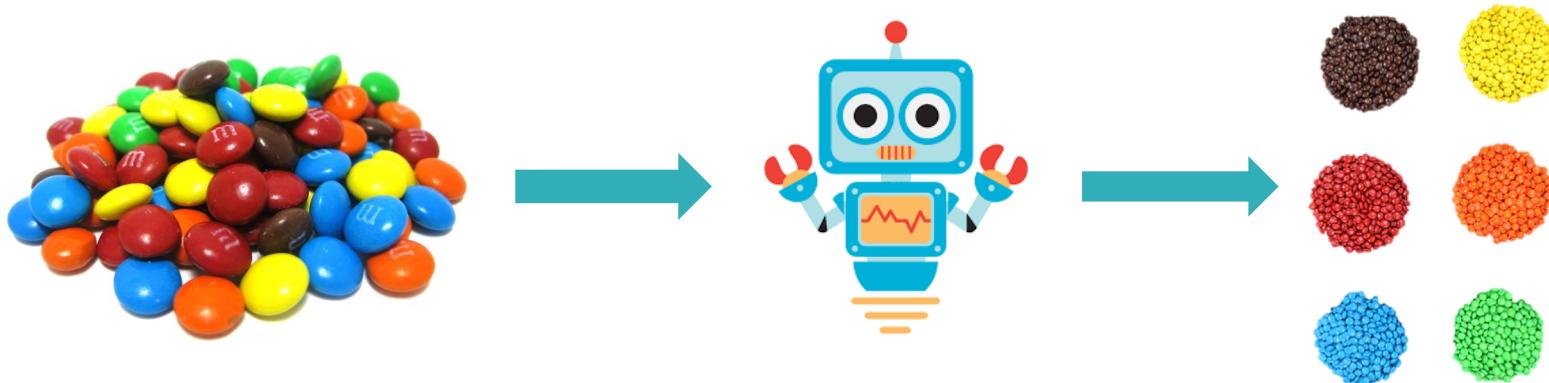
Machine Learning

Machine learning is a field of computer science that gives computer systems the ability to "learn with data, without being explicitly programmed

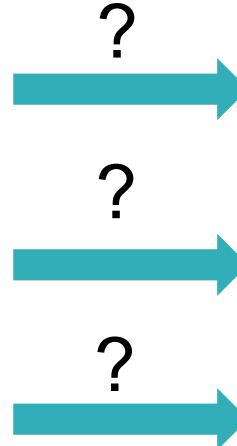
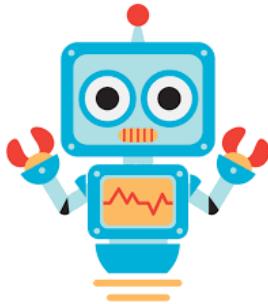
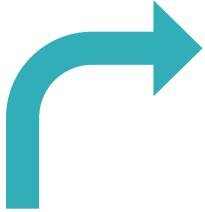




CLUSTERING



CLUSTERING



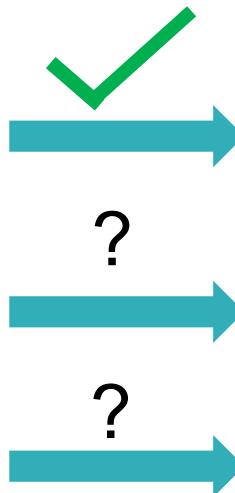
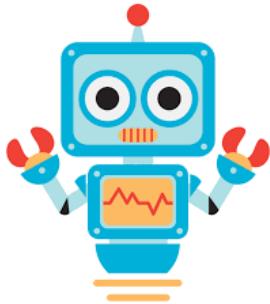
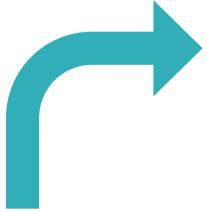
Dog

Cat

Horse



CLASSIFICATION



Dog

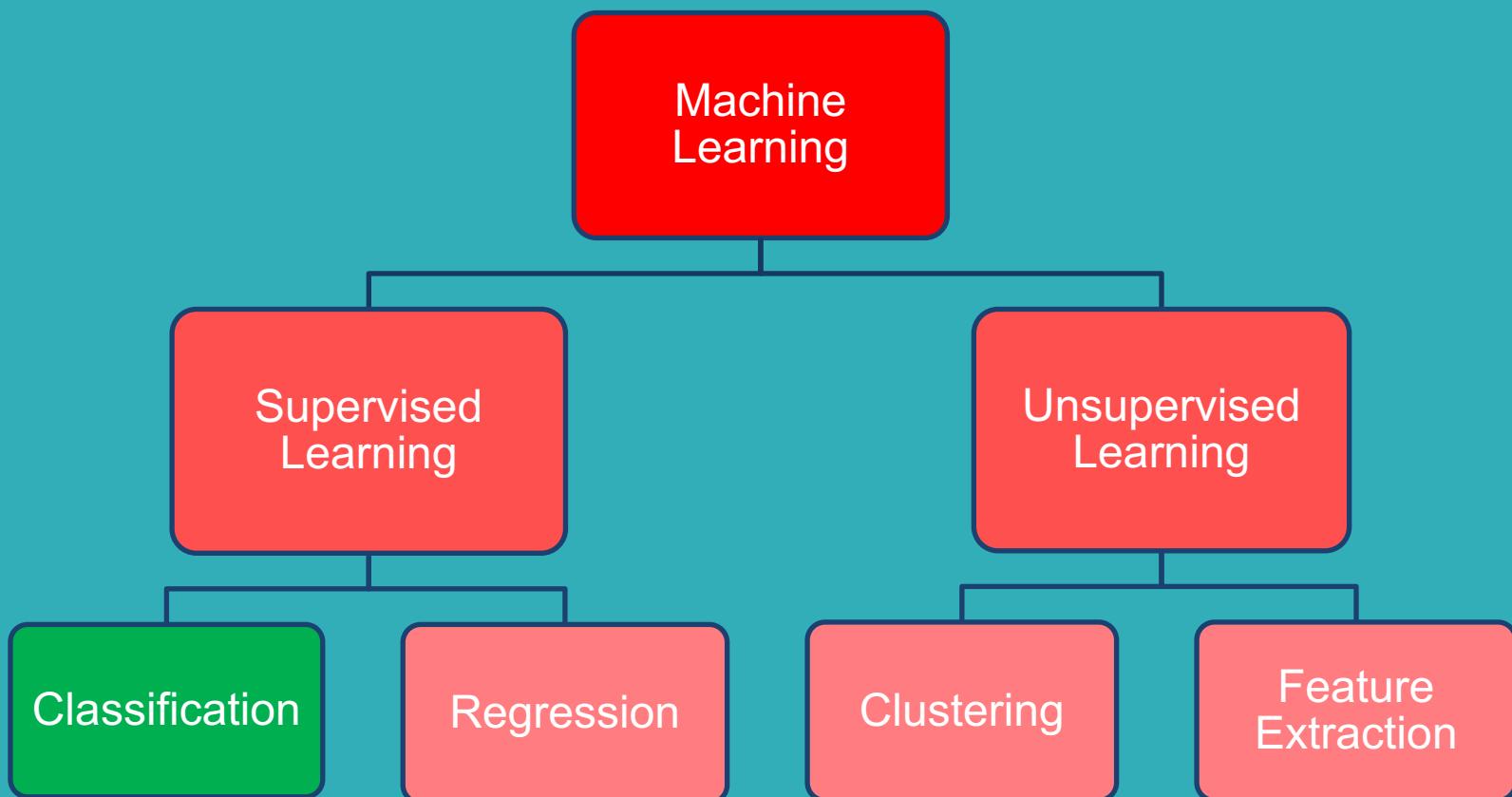
Cat

Horse



CLASSIFICATION

Machine Learning

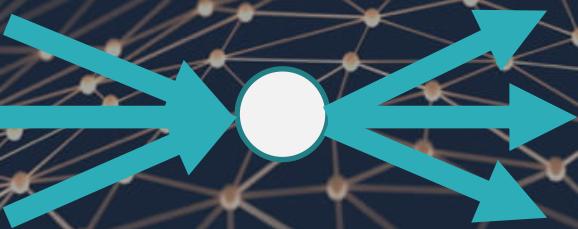


Neural Networks

Neural Networks



Neural Networks



Neural Networks

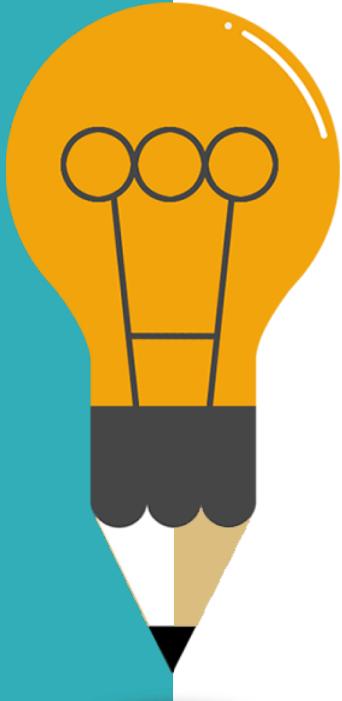
Inputs

Hidden

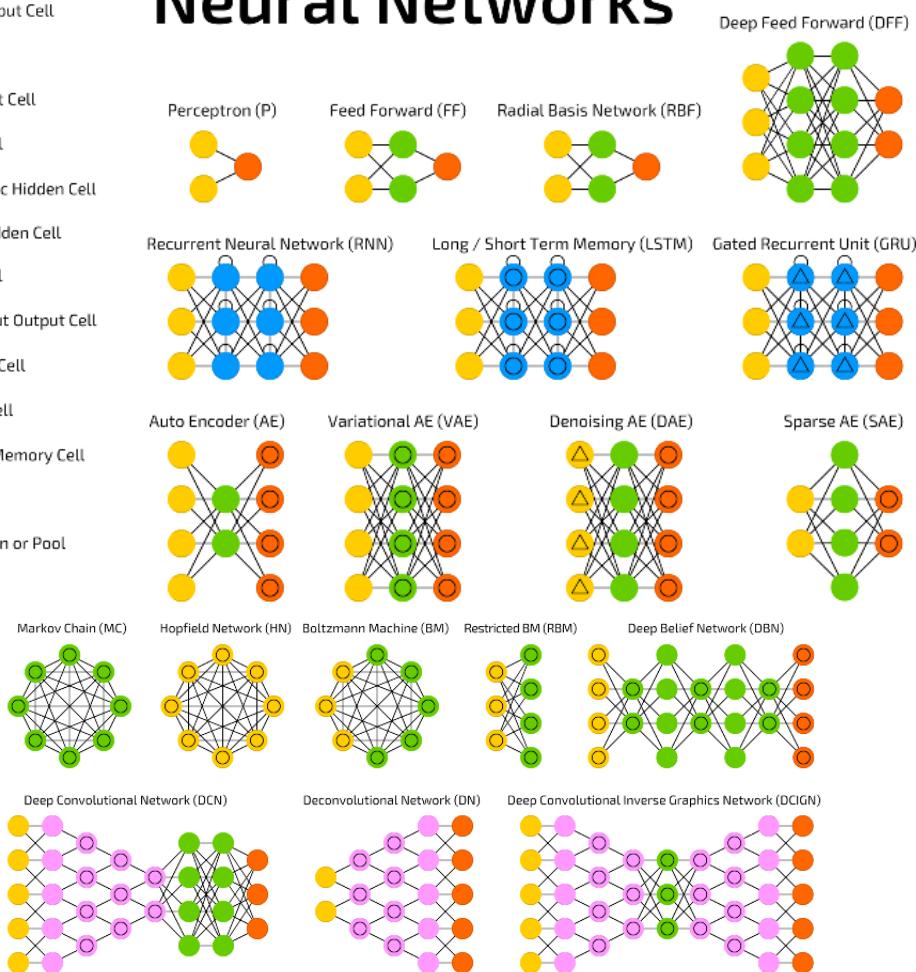
Outputs

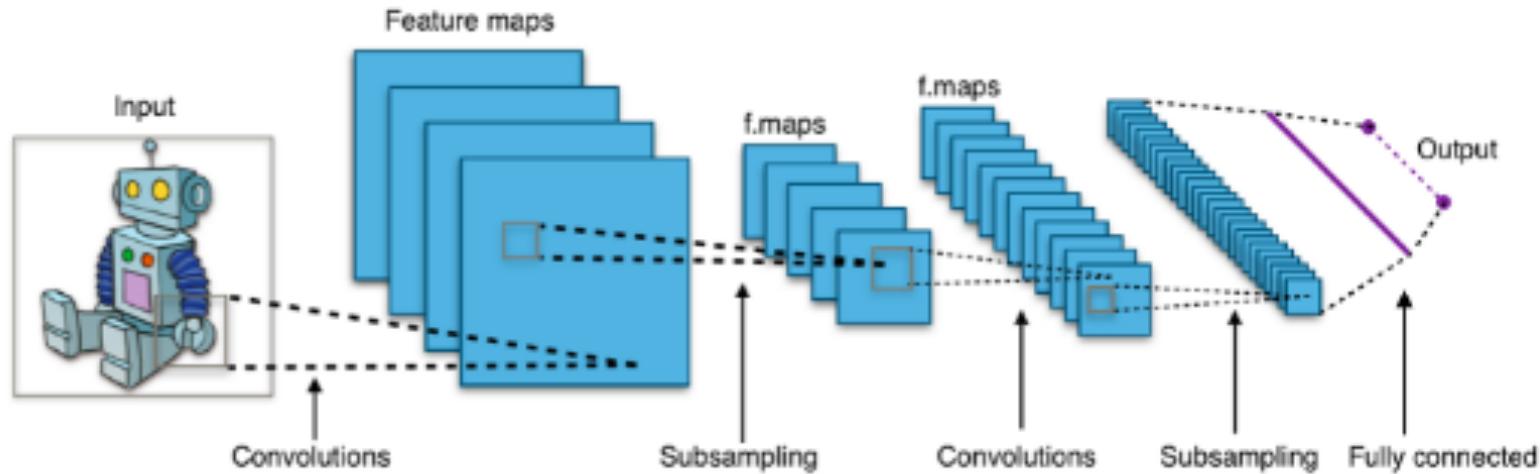


Neural Networks

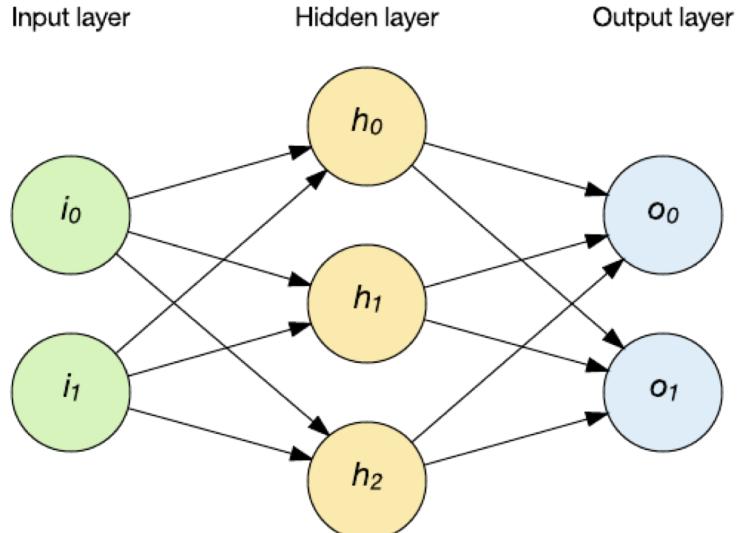


- Backfed Input Cell
- Input Cell
- △ Noisy Input Cell
- Hidden Cell
- Probabilistic Hidden Cell
- △ Spiking Hidden Cell
- Output Cell
- Match Input Output Cell
- Recurrent Cell
- Memory Cell
- △ Different Memory Cell
- Kernel
- Convolution or Pool

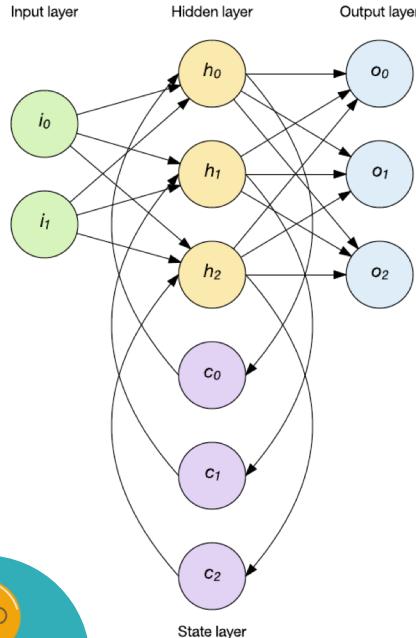




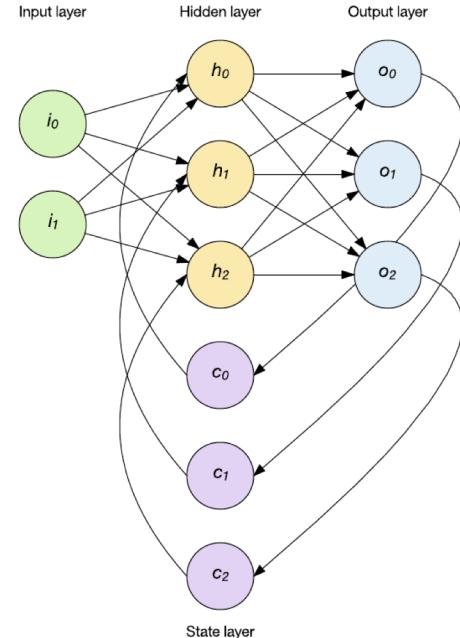
Convolutional Neural Network (CNN)



Elman network



Jordan network



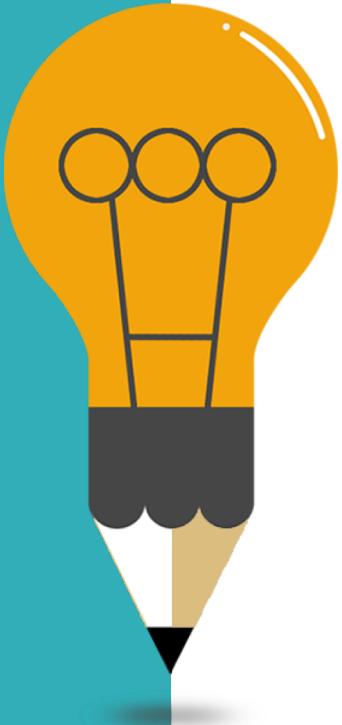
Recurrent Neural Network (RNN)



How?

How does a machine actually learn?

Vector Inputs



Metrics :

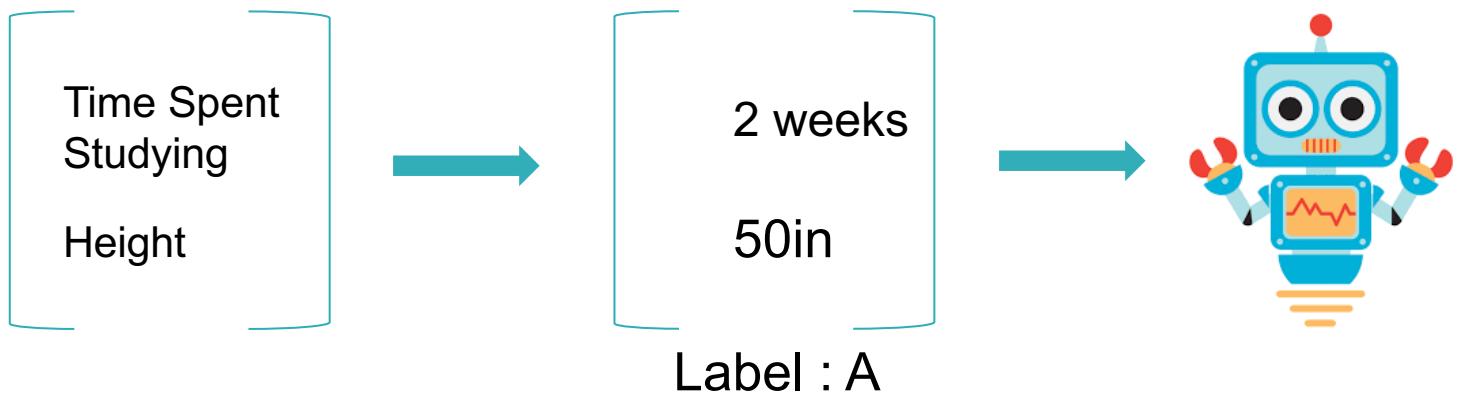
- Time Studying
- Height

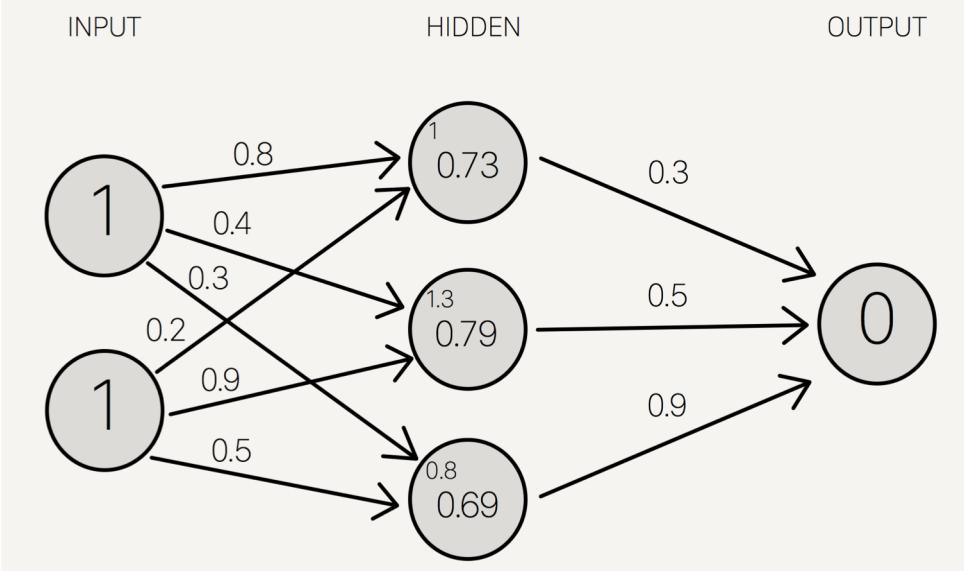


Time Spent

Height

Training Data





FUN MATH!



Keras



TensorFlow™



What are the Buzzy Technology?!

LIVE CODING!!





Thank you
Any Questions?