DS5006 - Deep Learning

Grading

- Assignments/Quizzes 10%
- Project 7%
- Class Participation 3%
- Sessionals 30%
- Final Exam 50%

Deep Learning

Artificial Intelligence

The theory and development of computer systems able to perform tasks normally requiring human intelligence

Machine Learning

Gives computers "the ability to learn without being explicitly programmed"

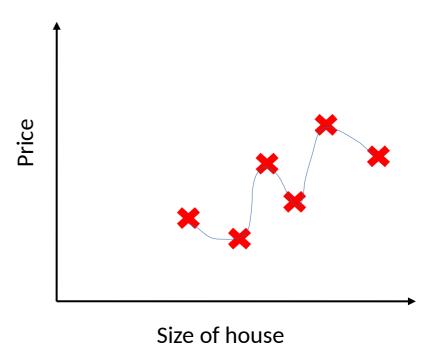
Deep Learning

Machine learning algorithms
with brain-like logical
structure of algorithms
called artificial neural
networks

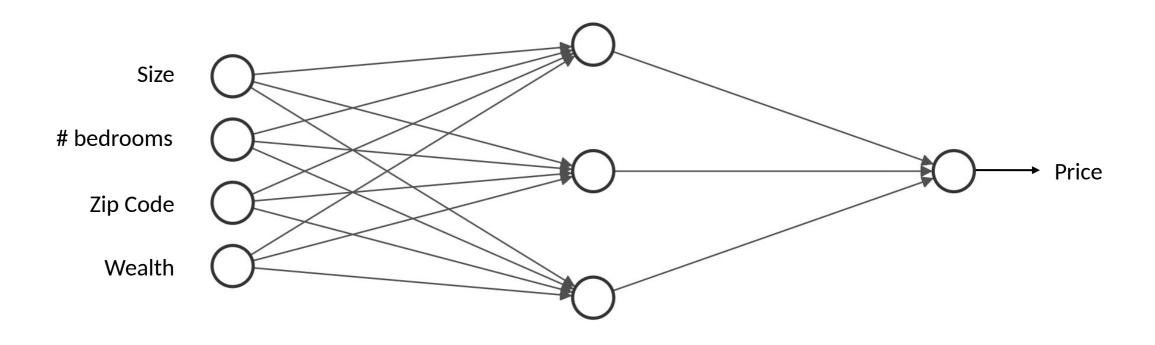
What is a Neural Network?

Housing Price Prediction





Housing Price Prediction

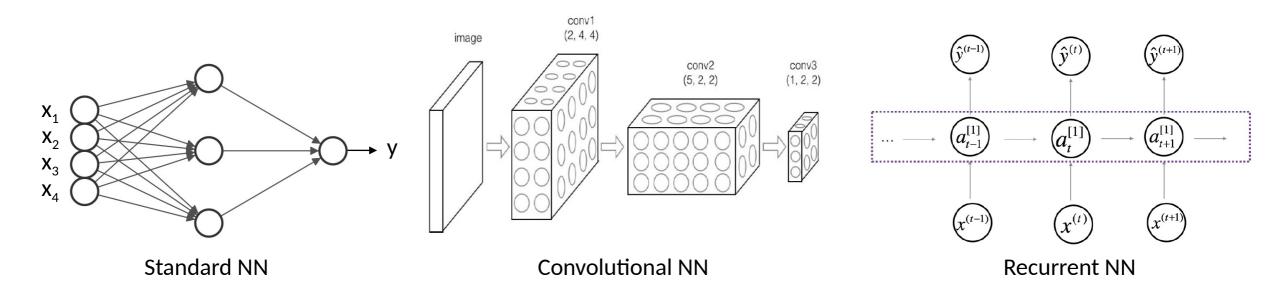


Supervised Learning with Neural Networks

Supervised Learning

Input (x)	Output (y)	Application		
Home Features	Price	Real Estate	-	
Ad, User Info	Clicked on Ad? (0/1)	Online Advertising Stand	ard NN	
Image	Object	Photo Tagging Conv.	NN	
Audio	Text Transcript	Speech Recognition	Recurrent NN	
English	Urdu/Pashto/Any Lang.	Machine Translation Recur		
Image, Radar Info	Position of other cars	Autonomous Driving Custo	m / Hybrid	

Neural Network Examples

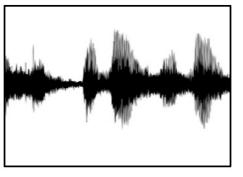


Supervised Learning

Structured Data

Size	# bedrooms	•••	Price
2104	3		400,000
1600	3		330,000
2500	3		372,000
•••	•••		•••
3100	4		540,000

Unstructured Data





Audio

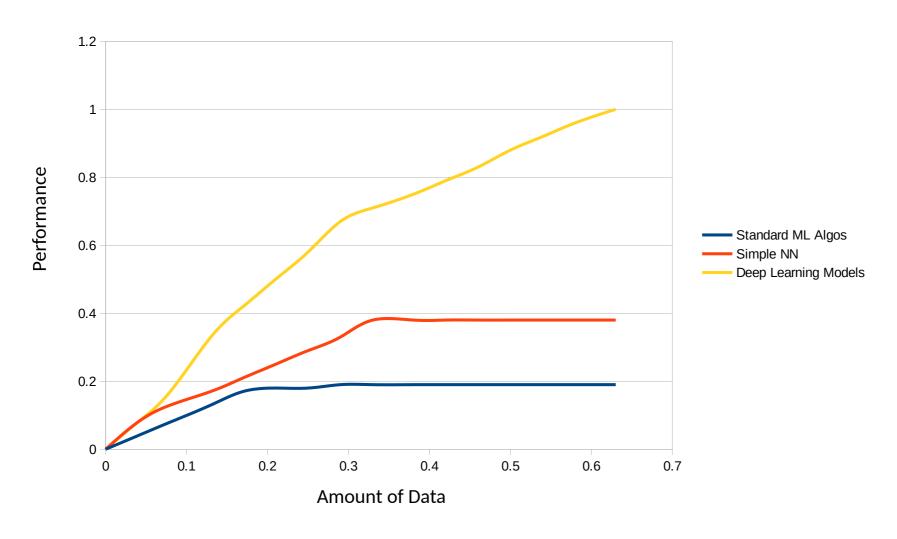
Image

Four scores and seven years ago...

Text

Why is Deep Learning taking off?

Scale drives deep learning progress



Scale drives deep learning progress

• Data

Computations

Algorithms