



deeplearning.ai

Welcome

Introduction to Deep Learning



- AI is the new Electricity
- Electricity had once transformed countless industries: transportation, manufacturing, healthcare, communications, and more
- AI will now bring about an equally big transformation.

What you'll learn

Courses in this sequence (Specialization):

1. Neural Networks and Deep Learning
2. Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
3. Structuring your Machine Learning project train/dev/test
4. Convolutional Neural Networks CNN end-to-end
5. Natural Language Processing: Building sequence models

RNN, LSTM



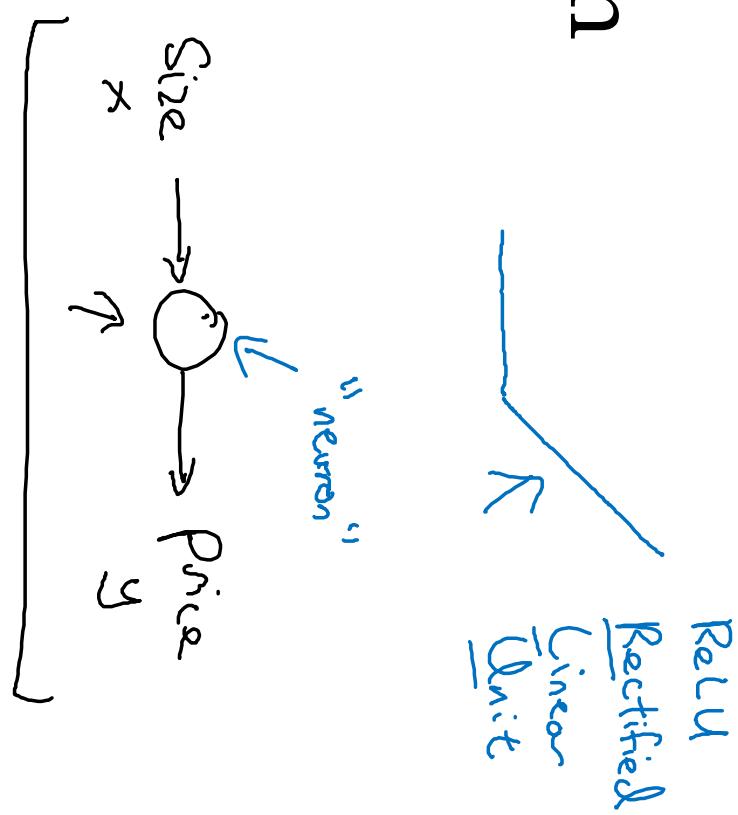
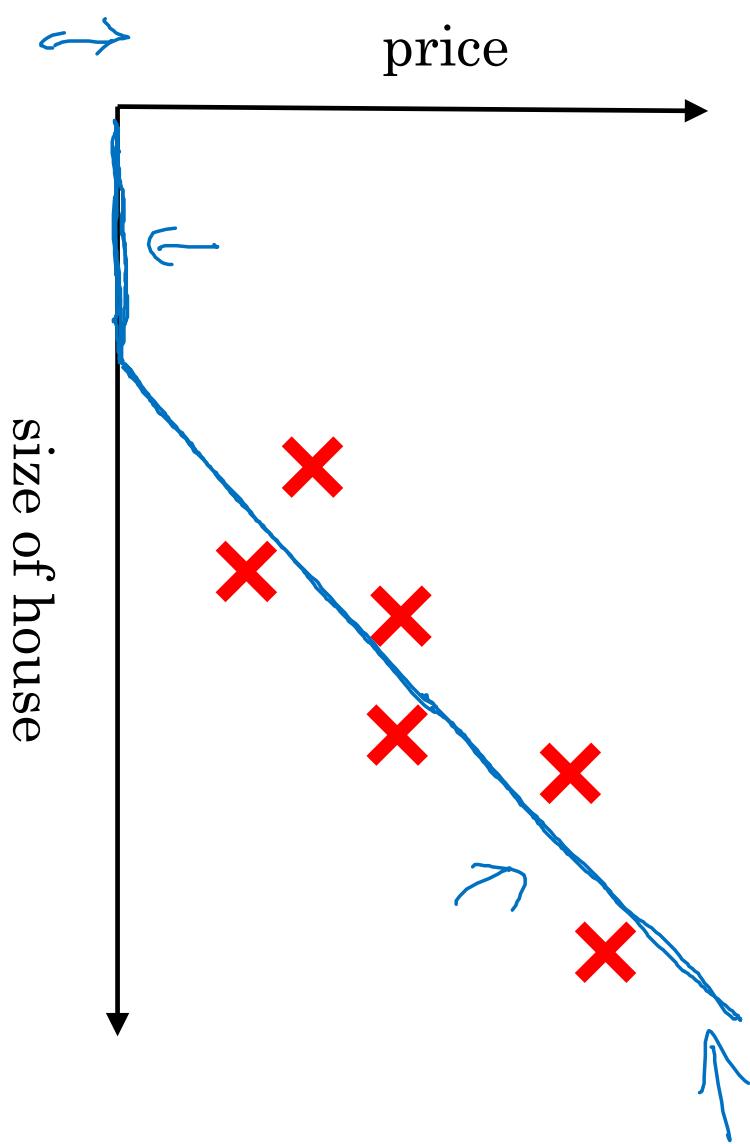


Introduction to Deep Learning

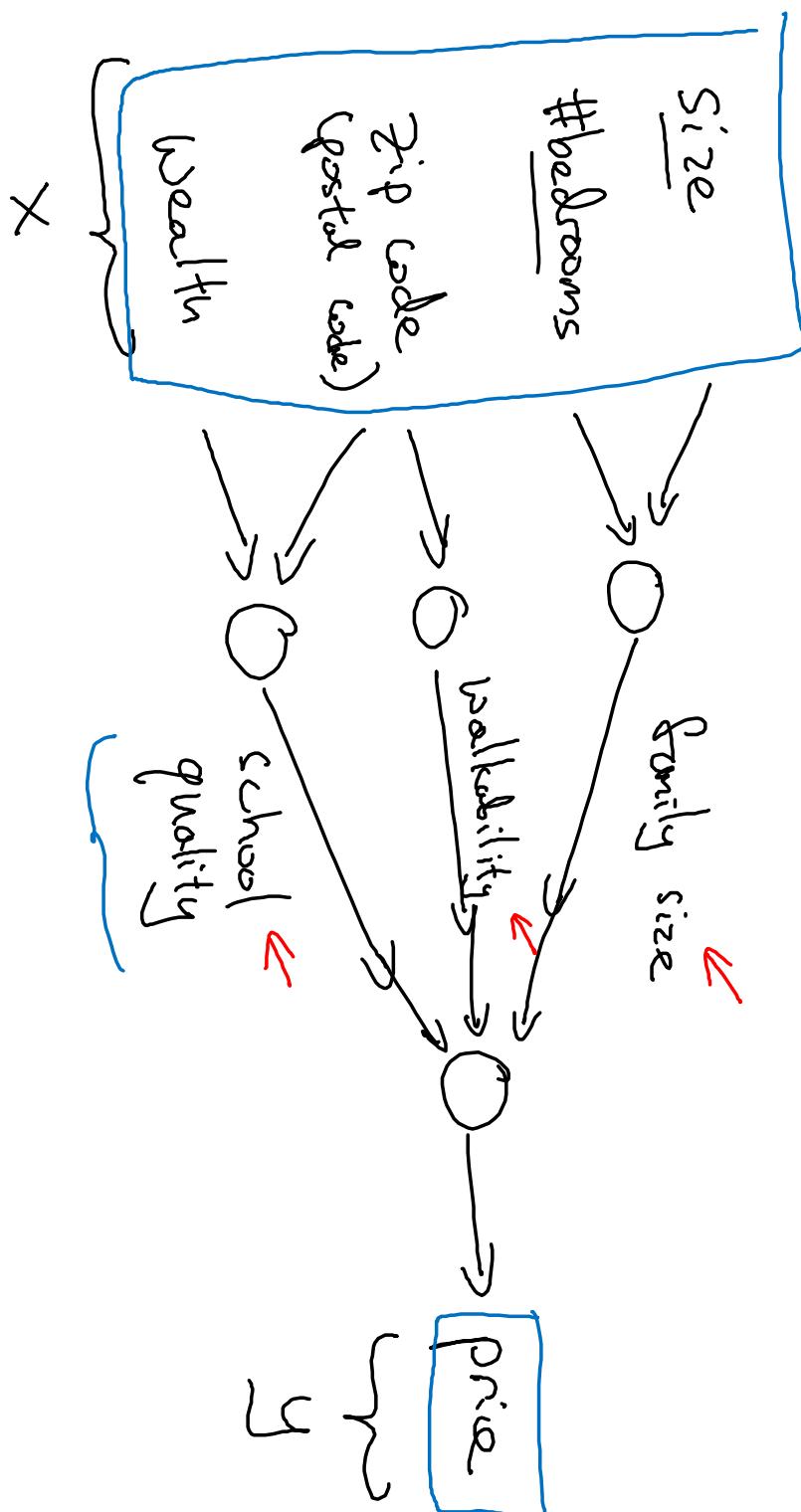
What is a
Neural Network?

deeplearning.ai

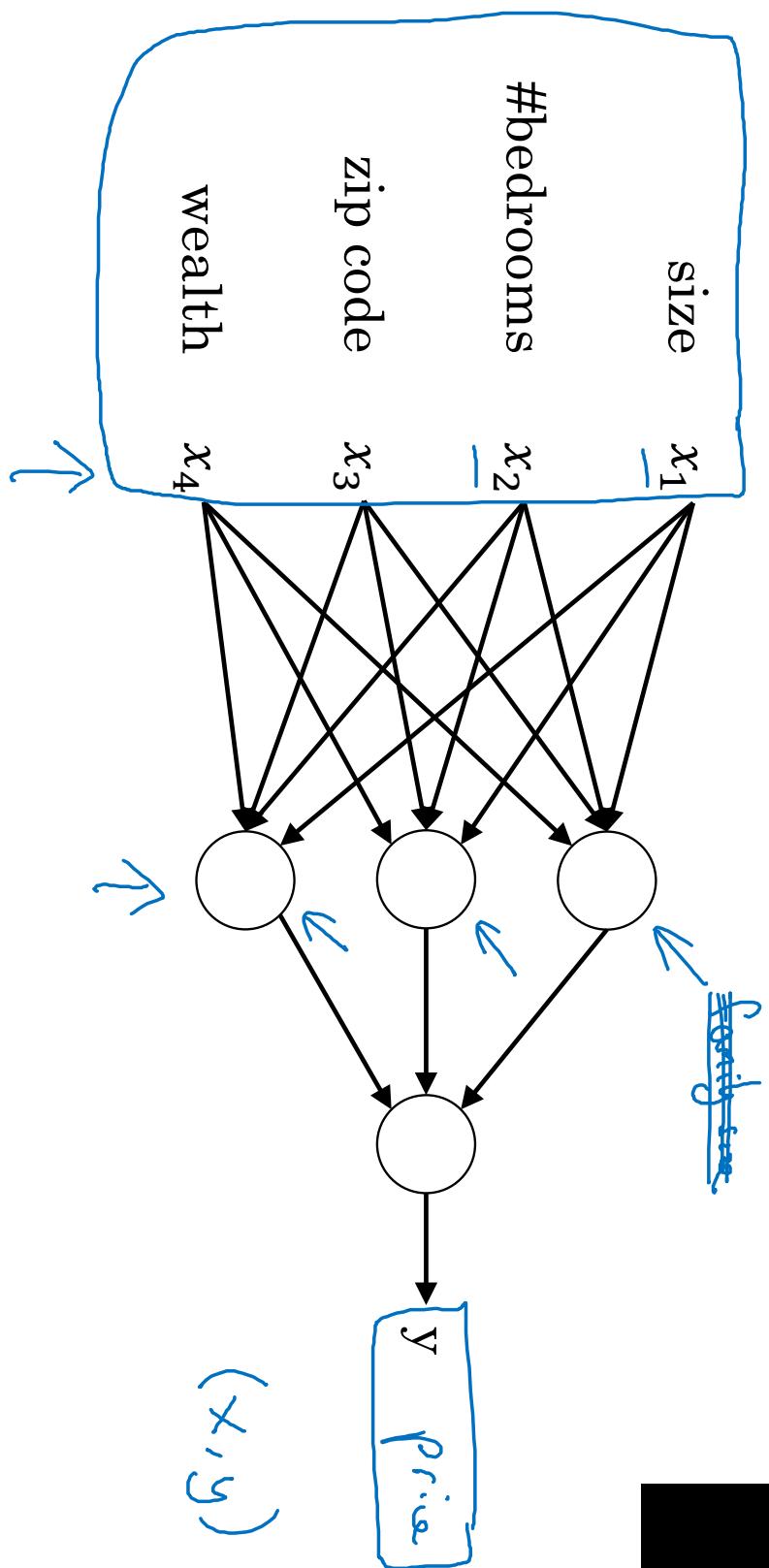
Housing Price Prediction



Housing Price Prediction



Housing Price Prediction



Drawing of
previous image



Introduction to Deep Learning

Supervised Learning with Neural Networks

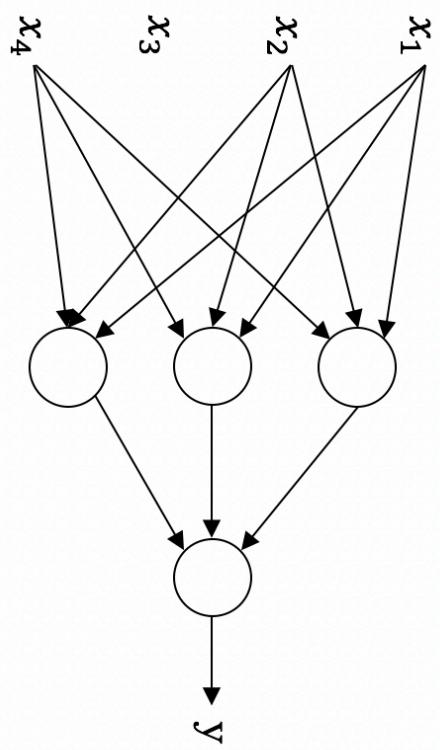
deeplearning.ai

Supervised Learning

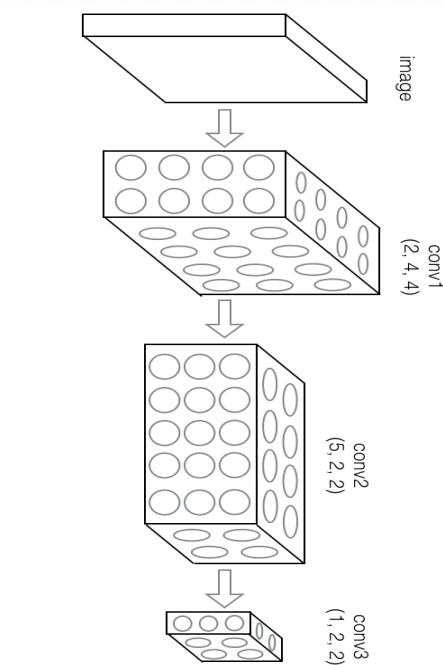
Input(x)	Output(y)	Application
Home features	Price	
Ad, user info	Click on ad? (0/1)	
Image	Object (1,...,1000)	
Audio	Text transcript	
English	Chinese	
Image, Radar info	Position of other cars	
		Standard NN
		CNN
		RNN
		Custom/Hybrid

Neural Network examples

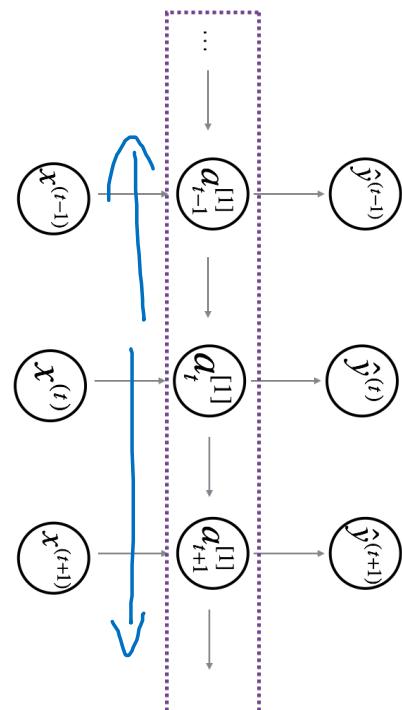
Standard NN



Convolutional NN



Recurrent NN



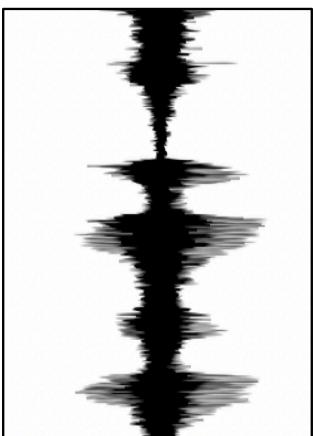
Supervised Learning

Structured Data

Size	#bedrooms	...	Price (1000\$)
2104	3		400
1600	3		330
2400	3		369
:	:		:
3000	4		540



Unstructured Data



Audio



Image

User Age	Ad Id	...	Click
41	93242		1
80	93287		0
18	87312		1
:	:		:
27	71244		1



Four scores and seven years ago...

Text

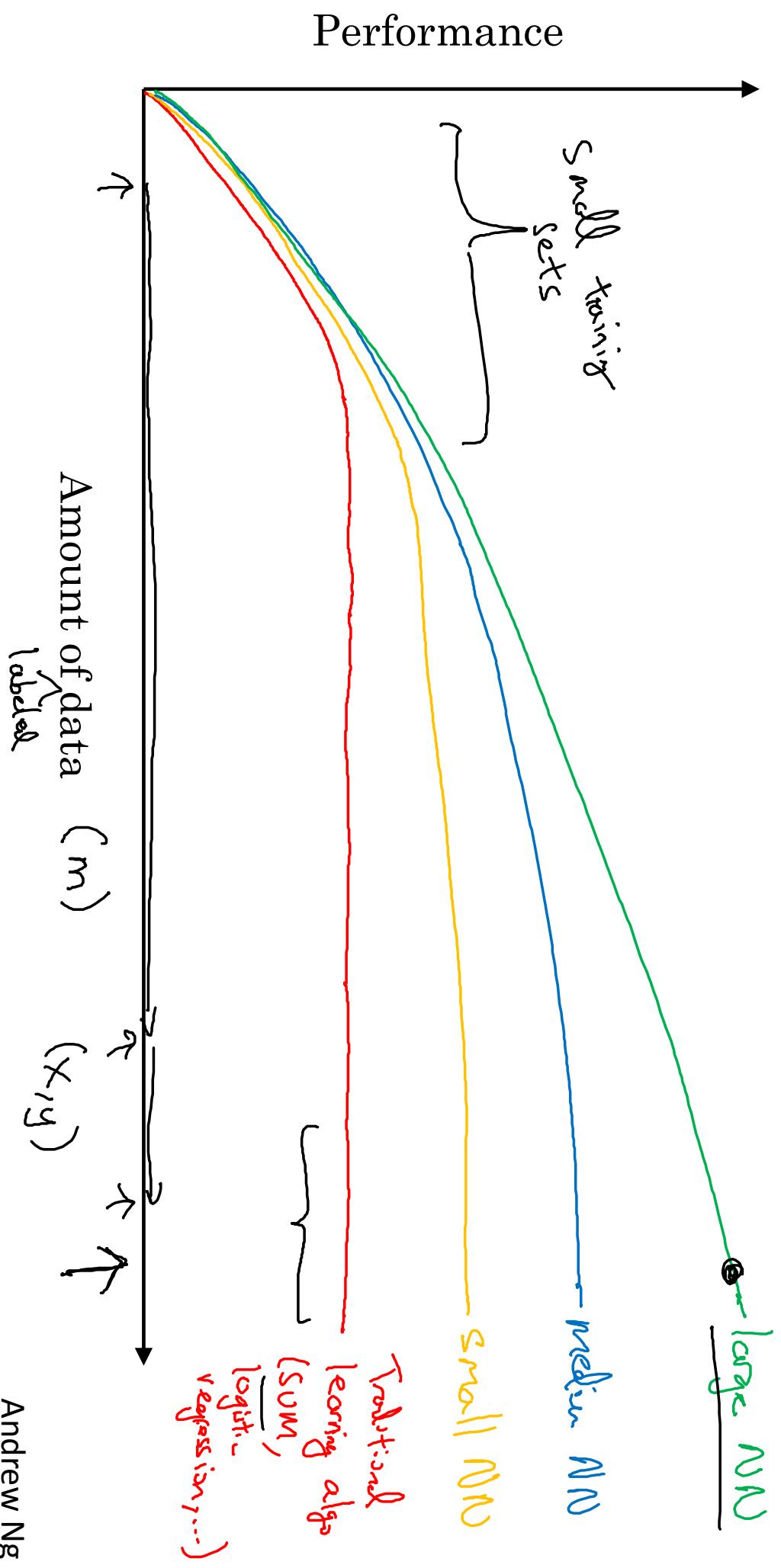


Introduction to Neural Networks

Why is Deep
Learning taking off?

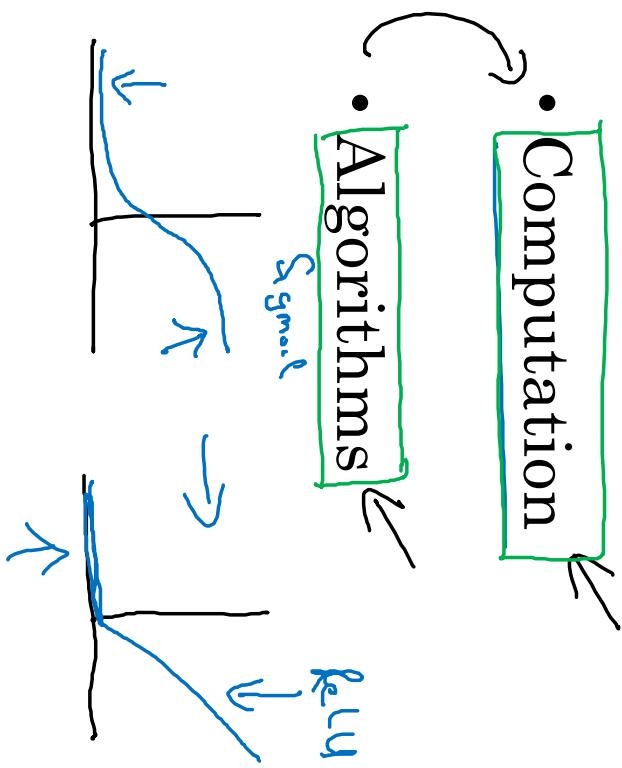
deeplearning.ai

Scale drives deep learning progress



Scale drives deep learning progress

- Data ↗

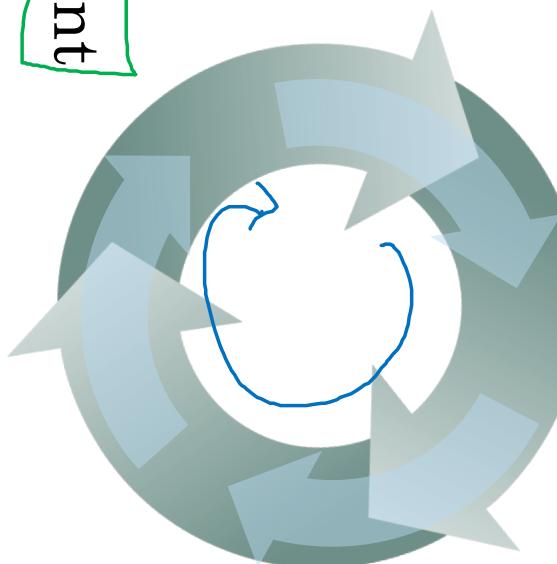


- Idea

- Experiment

10 min ←
1 day ←
1 month

- Code





Introduction to Neural Networks

About this Course

deeplearning.ai

Courses in this Specialization

1. Neural Networks and Deep Learning ←
2. Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
3. Structuring your Machine Learning project
4. Convolutional Neural Networks
5. Natural Language Processing: Building sequence models

Outline of this Course

Week 1: Introduction

Week 2: Basics of Neural Network programming

Week 3: One hidden layer Neural Networks

Week 4: Deep Neural Networks



Introduction to Deep Learning

Supervised Learning with Neural Networks

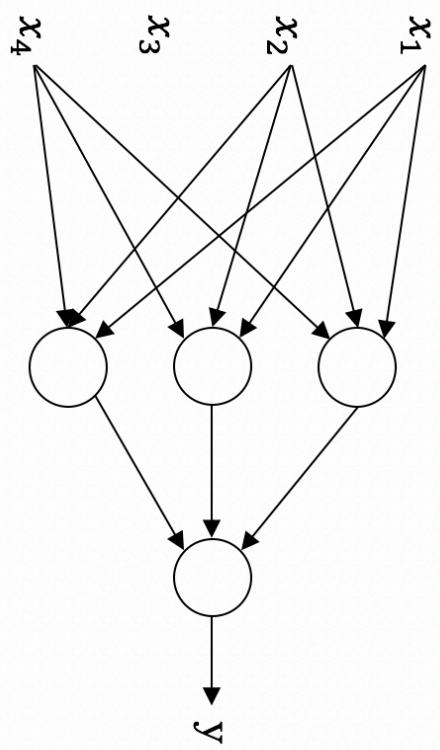
deeplearning.ai

Supervised Learning

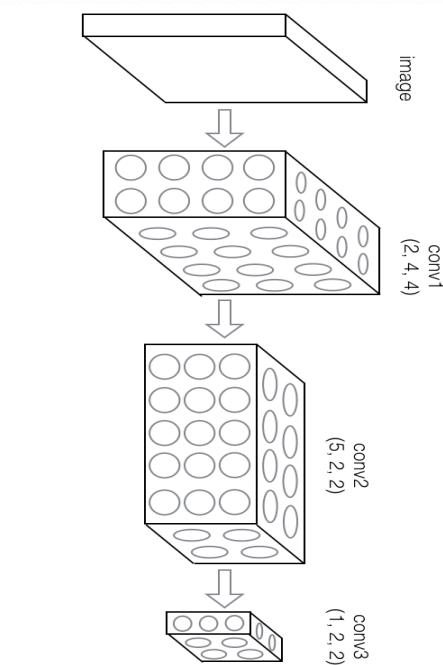
Input(x)	Output(y)	Application
Home features	Price	
Ad, user info	Click on ad? (0/1)	
Image	Object (1,...,1000)	
Audio	Text transcript	
English	Chinese	
Image, Radar info	Position of other cars	
		Standard NN
		CNN
		RNN
		Custom/Hybrid

Neural Network examples

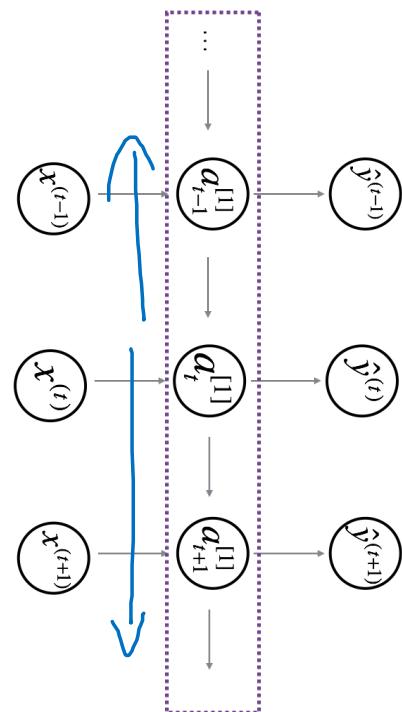
Standard NN



Convolutional NN



Recurrent NN



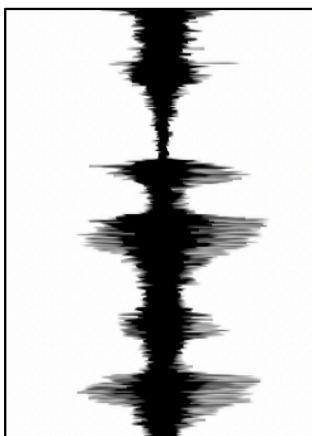
Supervised Learning

Structured Data

Size	#bedrooms	...	Price (1000\$)
2104	3		400
1600	3		330
2400	3		369
:	:		:
3000	4		540



Unstructured Data



Audio



Image

User Age	Ad Id	...	Click
41	93242		1
80	93287		0
18	87312		1
:	:		:
27	71244		1



Four scores and seven years ago...

Text

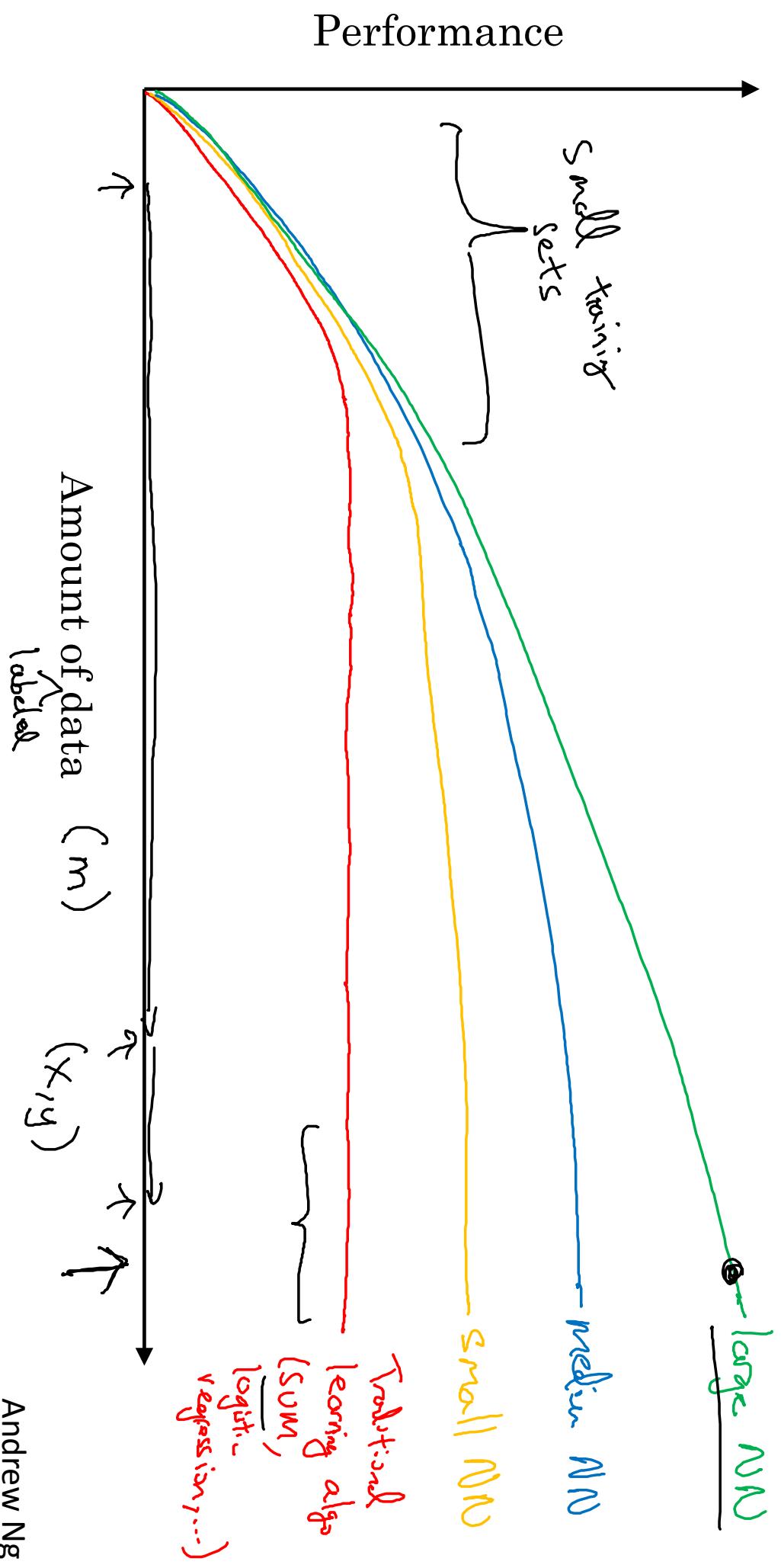


Introduction to Neural Networks

Why is Deep
Learning taking off?

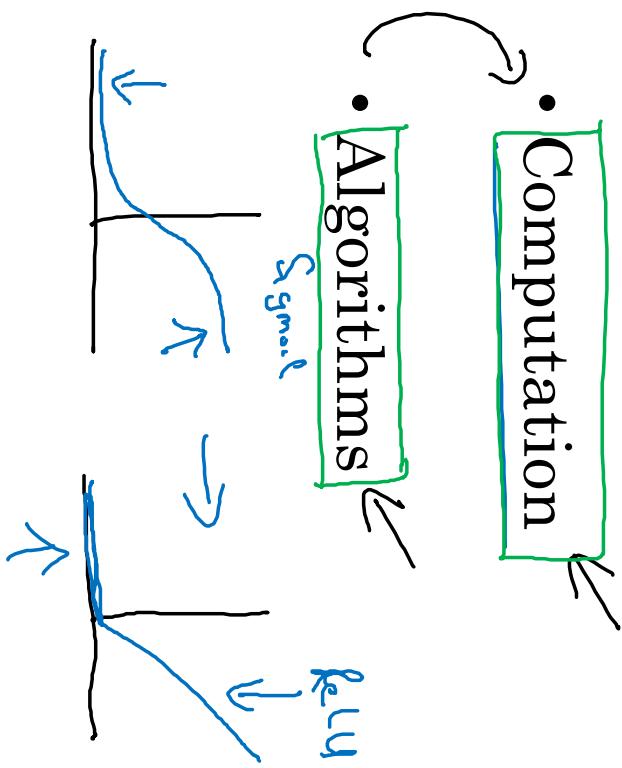
deeplearning.ai

Scale drives deep learning progress



Scale drives deep learning progress

- Data ↗

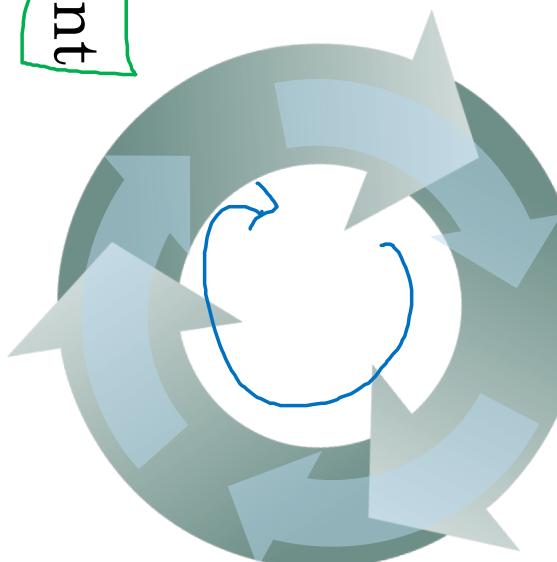


- Idea

- Experiment

10 min ←
1 day ←
1 month

- Code





deeplearning.ai

Introduction to Neural Networks

About this Course

Courses in this Specialization

1. Neural Networks and Deep Learning ←
2. Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
3. Structuring your Machine Learning project
4. Convolutional Neural Networks
5. Natural Language Processing: Building sequence models

Outline of this Course

Week 1: Introduction

Week 2: Basics of Neural Network programming

Week 3: One hidden layer Neural Networks

Week 4: Deep Neural Networks