Deep Neural Networks

Why deep representations?

deeplearning.ai

edge detector/ 比如边像

Intuition about deep representation

featured detector

一般比较早,部分比较特殊...

"Simple"   nose, eye   face   "Complex"

$\hat{y}$

Audio → low level audio waveform → Phonemes C A T → Words → Sentence Phrases

Andrew Ng
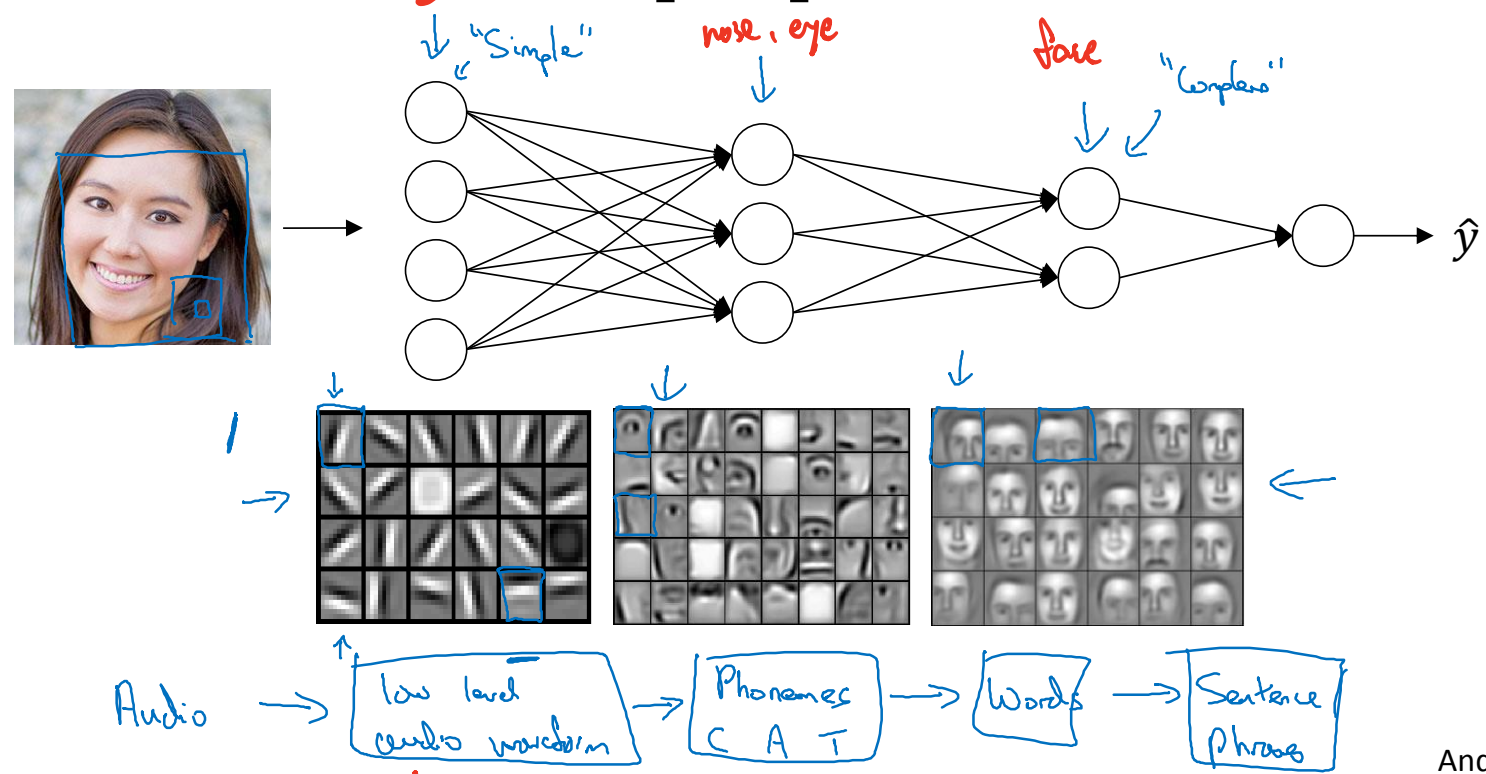
Circuit theory and deep learning

电路

高效波形

hidden
units↑

Informally: There are functions you can compute with a "small" L-layer deep neural network that shallower networks require exponentially more hidden units to compute.

节数据

$$y = x_1 \text{ XOR } x_2 \text{ XOR } x_3 \text{ XOR} \dots \text{ XOR } x_n$$

$O(\log n)$

$O(2^n)$

$\sim 2^{n-1}$

exponentially large

Andrew Ng