Summary of Annotations

Page 1

#1 Underline

Representation learning

#2 Highlight

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speech rec- ognition, visual object recognition, object detection and many other domains such as drug discovery and genomics

#3 Underline

错综复杂

#4 Highlight

Machine-learning systems are used to identify objects in images, transcribe speech into text, match news items, posts or products with users’ interests, and select relevant results of search

#5 Highlight

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these applications make use of a class of techniques called deep learning.

#6 Underline

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pixel

#7 Squiggly

Supervised learning

#8 Underline

‘knobs’

#9 Underline

The most common form of machine learning, deep or not, is super- vised learning

#10 Underline

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layers of features are not designed by human engineers: they are learned from data using a general-purpose learning procedure.

#11 Underline

state-of-the-art

Page 2

#1 Underline

elaborate

#2 Squiggly

stochastic gradient descent (SGD).

#3 Underline

distort

Page 3

#1 Underline

rectangular

#2 Underline (jindongwang)

Recent theoretical and empirical results strongly suggest that local minima are not a serious issue in general

#3 Underline

泛化

#4 Underline

intricate

#5 Underline

respect to

#6 Underline

the ReLU typically learns much faster in networks with many layers

#7 Underline

infeasible.

#8 Underline

combinato- rially

Page 4

#1 Underline (jindongwang)

very large numbers, but almost all of them have very similar values of the objec- tive function

#2 Underline (jindongwang)

Once deep learning had been rehabilitated, it turned out that the pre-training stage was only needed for small data sets.

#3 Underline (jindongwang)

the role of the pooling layer is to merge semantically similar features into one.

#4 Underline

reconstruct

#5 Underline

advent

#6 Highlight

speech recognition

#7 Highlight

sound wave

#8 Underline

‘pre-training’ several layers of progressively more complex feature detectors using this reconstruction objective, the weights of a deep network could be initialized to sensible values

#9 Underline

adjacent

#10 Highlight

ConvNets

#11 Highlight

1D for signals and sequences, including language

#12 Highlight

2D for images or audio spectrograms; and

#13 Highlight

3D for video or volumetric images

#14 Underline

filter bank

#15 Underline

motif

#16 Squiggly

if a motif can appear in one part of the image, it could appear anywhere, hence the idea of units at different locations sharing the same weights and detecting the same pattern in different parts of the array

#17 Underline

semantically

#18 Underline

compositional

#19 Underline

hierarchies,

#20 Underline

cortex

#21 Underline

ventral

#22 Underline

reminiscent

#23 Underline

Since the early 2000s, ConvNets have been applied with great success to the detection

#24 Underline

segmentation

Page 5

#1 Underline

amenable

#2 Underline

halving

#3 Underline

componential

#4 Underline

expo- nential advantages

#5 Underline

Distributed representations

Page 6

#1 Underline

logic-inspired

#2 Underline

paradigm,

#3 Underline

corpora.

#4 Underline

problematic

#5 Underline

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training them has proved to be problematic because the backpropagated gradients either grow or shrink at each time step, so over many time steps they typically explode or vanish

#6 Underline

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after reading an English sentence one word at a time, an English ‘encoder’ network can be trained so that the final state vector of its hidden units is a good representation of the thought expressed by the sentence. This thought vector can then be used as the initial hidden state of (or as extra input to) a jointly trained French ‘decoder’ network, which outputs a prob- ability distribution for the first word of the French translation

Page 7

#1 Underline

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all the layers share the same weights.

#2 Underline (jindongwang)

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combine representation learning with complex reasoning

#3 Underline

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augment

#4 Underline

LSTM networks or related forms of gated units are also currently used for the encoder and decoder networks

#5 Underline

Neural Turing Machine

#6 Underline

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manipulation.

#7 Underline

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catalytic

#8 Underline

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reviving interest

#9 Underline

infancy,

#10 Underline

被动视觉系统

#11 Highlight

Krizhevsky, A., Sutskever, I. & Hinton, G. ImageNet classification with deep convolutional neural networks.