

Deep Learning

The big picture

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History of Deep Learning

Deep Learning Timeline - 1

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Alexey Ivakhnenko and **V. G. Lapa** created the first *working* deep learning networks, applying what had been only theories and ideas up to that point.

Ivakhnenko developed a learning algorithm using deep feedforward multilayer perceptrons. For that reason alone, many consider Ivakhnenko the father of modern deep learning.

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1970 - First AI Winter

AI was subject to critiques and financial setbacks. AI researchers had failed to appreciate the difficulty of the problems they faced.

AI was claimed to only be suitable for solving "toy" versions.

1970

Deep Learning Timeline - 2

Fascination Deep Learning

Turing Tests, Image Recognition, Speech Recognition, Text Mining,
Artful Neural Networks, ...

Why Deep Learning is so Powerful?

Singlelayer Perceptron

Multilayer Perceptron

Convolution

Pooling

Lets Get Deep

Getting More Complex

RNN, LSTM, GAN

Challenges in Deep Learning

→ Transfer learning.

Expensive Training

→ Use server or GPUs.

About Implementations

Keras, PyTorch, mxnet, ...

Tensorflow, Theano, CNTK, ...

Low-Level Implementations

cuda, CUDA, ...

Where to Start in the Deep Learning Jungle

Getting Started with Keras - Installation

Getting Started with Keras - Overview

Oriented on the Notebooks ([link](#))

Getting Started with Keras - First Neural Net

Explain API

Getting Started with Keras - First Neural Net

Some Code

Getting Started with Keras - Getting Deep

Explain API

Getting Started with Keras - Getting Deep

Some Code

Getting Started with Keras - Transfer Learning

Explain API

Getting Started with Keras - Transfer Learning

Some Code

Outlook

Very very short intro how text mining connects to deep learning
(gensim, word vectors, ...)

This is what comes closest to AI as we are thinking of it. Just show examples

