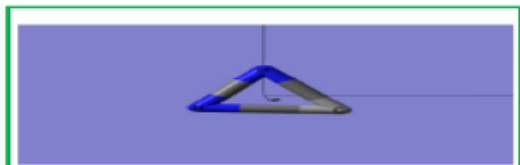
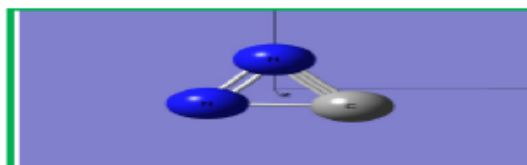




New Chemistry News



New News of Chem (NNC)



ChemNewsNew (CNN)

Deep learning through

**Deep (Mathematical Neural) Networks for
real life tasks using real time computations**

ACS (American Chemical Society)

Drug discovery

Exascale Computing Technology Challenges

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Partnership a lies deep learning to very big data

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DOI: 10.1021/cen-09504-cover3

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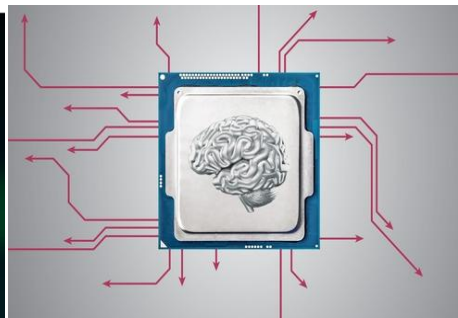
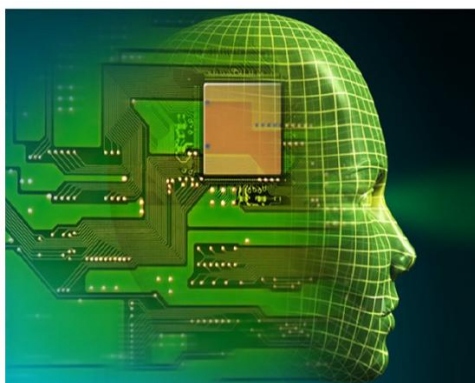
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[evolving NN, cooperative coevolution NN, complex-valued NN, deep learning, extreme learning machine, quantum NN]

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Engineering Appl of Artificial Int
60(2017)97-116

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Courtesy from C&EN, 2017, 95 (4),28

Object Oriented Vocabulary (OOV) of Deep learning (DeepLrn)

Learning	:	[Nature; Machine];
Nature	:	[Science; [Living[Scientist]; Non-Living]]
Science	:	[Measurement; Theory; Computational;]
Computational	:	[Mathematical;Statistical; Fuzzy; Nature Mimicking]
Wick	:	[Wisdom; Intelligence; Computation; Knowledge]
Intelligence	:	[Natural; Artificial(Classical; Advanced); Abstract [Image; semantic;]]
Life	:	[Water [Fresh; Pond; Riverine, Marine]; Land [Surface; Inside]; [Air]; Interfaces]
Living	:	[Human; [Animal, Bird, Insect,...];[Benthos, Plants;]]
Machine learning	:	[Deep; Shallow]
She	:	[Science; Health; Environment;]
It	:	[Information ; technology]
Big data ;	:	[images [satellite;recorded] [NASA[Sun;Mars]]; CERN [Boson; dark matter]] [Drug Discovery; health; environment; materials; [industry [propriety, public], Google; MicroSoft,]]
Deep Networks		[Biological [brain.Human;]; Mathematical Neural Nets]
Deep \$\$\$:	[Learning; architectures]
Applications.	:	[Image (classification; retrieval); Object detection; semantic segmentation Human pose estimation]
Sense perception	:	[Vision (Human Lievel) Sound recognition]]

Methods Base (MB)

Methods	:	[Experimental; Instrumental; Computational]
Implementation	:	[Manual; Automatic [Computer[Offline; Online, Remote]; Robotic]
Architectures	:	[CNN(Convolutional NN) ; Autoencoder; Sparse Coding]
CNN	:	[AlexNet; Clarifai; SPP (Spatial pyramid pooling) VGG; GoogLeNet]
ToolBox	:	[DBNs, LeNet; Theano (f) Caffe (g); TensorFlow (h) ; MXNet (i)] f) http://www.deeplearning.net/software/theano/index.html g) http://caffe.berkeleyvision.org/ h) https://www.tensorflow.org/ i) http://mxnet.io/index.html
RBM (Restricted Boltzmann Machines)	:	[Deep Belief Networks; Deep Boltzmann Machines Deep Energy Models]
Autoencoder	:	[Sparse Autoencoder; DenoisingAutoencoder; Contractive Autoencoder;]
Sparse Coding	:	[Sparse Coding SPM (spatial Pyramid Matching) ; LaplacianSparse Coding; Local Coordinate Coding; Super-Vector Coding]

#Layers		Net	Year
Convolution	Fully connected		
21	1	GoogLeNet	2014
13 to 15	3	VGG	2014
5	3	AlexNet	2012
5	3	SPP	2014
5	3	Clarifai	2013

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