Furthering Your Deep Belief Network Education: Pointers to Relevant Documents

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Extended General Knowledge About Deep Belief Networks

The following Scholarpedia article is written by the creator of deep belief networks, Geoffrey Hinton. It provides an alternative high-level overview of DBNs.

Hinton, Geoffrey E. "Deep belief networks." *Scholarpedia* 4.5 (2009): 5947.
http://www.scholarpedia.org/article/Deep_belief_networks?pagewanted=allhttp://www.scholarpedia.org/article/Deep_belief_networks?pagewanted=all

Implementation Details

This paper details a fast, greedy algorithm for training deep belief networks. Understanding this paper will provide one with a very practical set of knowledge about implementing deep belief networks. This paper is also presents Professor Hinton's original ground breaking research.

Hinton, Geoffrey E., Simon Osindero, and Yee-Whye Teh. "A fast learning algorithm for deep belief nets." *Neural computation* 18.7 (2006): 1527-1554.
http://www.cs.toronto.edu/~hinton/absps/fastnc.pdf

Applications of Deep Belief Networks

Applying DBNs to phoneme recognition, which is an important task in speech recognition.

Mohamed, Abdel-rahman, George Dahl, and Geoffrey Hinton. "Deep belief networks for phone recognition." *NIPS Workshop on Deep Learning for Speech Recognition and Related Applications*. 2009.
http://www.cs.utoronto.ca/~gdahl/papers/dbnPhoneRec.pdf

A short paper describing the use of deep belief networks for document retrieval.

Salakhutdinov, Ruslan, and G. E. Hinton. "Deep Belief Networks." (2007).
http://snowbird.djvuzone.org/2007/abstracts/126.pdf

This paper describes an algorithm for using deep belief networks to perform feature selection.

Hinton, Geoffrey E., and Ruslan R. Salakhutdinov. "Reducing the dimensionality of data with neural networks." *Science* 313.5786 (2006): 504-507.
http://www.lsv.uni-saarland.de/Seminar/ML_for_NLP_SS12/HinSal06.pdf

This paper describes an impressive large scale deep belief network learning algorithm. In this paper, the authors train DBNs on tens of millions of stills from YouTube, which produces DBNs that naturally learn representations of several everyday objects, including human faces and cats.

Le, Quoc V., et al. "Building high-level features using large scale unsupervised learning." *arXiv preprint arXiv:1112.6209* (2011).
http://arxiv.org/pdf/1112.6209