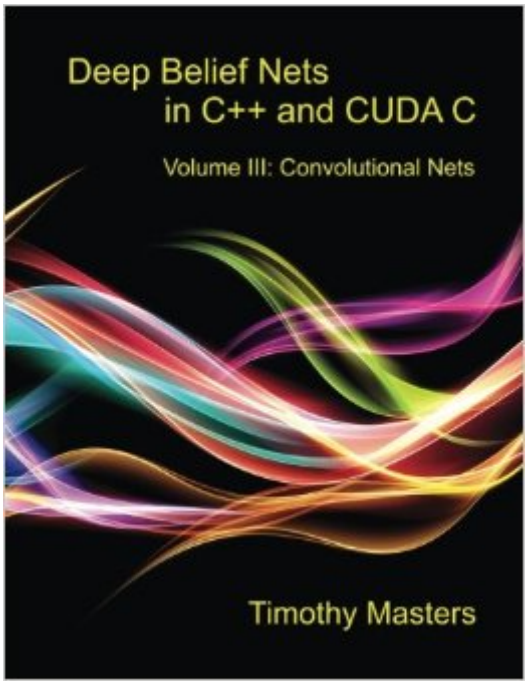
Deep Belief Nets In C++ And CUDA C: Volume III: Convolutional Nets (Volume 3)



Synopsis

Deep belief nets are one of the most exciting recent developments in artificial intelligence. The structure of these elegant models is much closer to that of human brains than traditional neural networks; they have a â ˆthought processâ ™ that is capable of learning abstract concepts built from simpler primitives. A typical deep belief net can learn to recognize complex patterns by optimizing millions of parameters, yet this model can still be resistant to overfitting. This book presents the essential building blocks of a common and powerful form of deep belief net: convolutional nets. These models are especially useful for image processing applications. At each step the text provides intuitive motivation, a summary of the most important equations relevant to the topic, and concludes with highly commented code for threaded computation on modern CPUs as well as massive parallel processing on computers with CUDA-capable video display cards. Source code for all routines presented in the book, and the executable CONVNET program which implements these algorithms, are available for free download from the authorâ ™s website. Source code for the complete CONVNET program is not available, as much of it is highly specialized Windows interface code. Readers are responsible for writing their own main program, with all interface routines. You may freely use all of the core convolutional net routines in this book, as long as you remember that it is experimental code that comes with absolutely no guaranty of correct operation.

Book Information

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Customer Reviews

First, as I stated in my reviews of Volume 1 and 2, I have known Dr. Masters for 20 years and have collaborated with him on various projects including a book we co-authored.(Statistically Sound

Machine Learning for Algorithmic Trading of Financial Instruments), the development of machine learning software TSSB and he was a crucial adviser on my book Evidence Based Technical Analysis. He is also a friend.Given our past relationship, if I had nothing good to say, I would say nothing. But that is far from the case here. permits you to view the contents of the book so I won't take up space doing that. Suffice it to say that if you purchased Volume I and II found them as important as I did hen Volume II is required reading, especially if you are into image processing. First, Deep Belief (Learning) Networks are the most important advance in machine learning in the last decade or two. This is becasue the overcome the key intellectual bottle neck in applying machine learning to any domain - feature engineering. This refers to the task of transforming the raw data characterizing a problem into useful, machine digestible features (predictor variables). Feature engineering is the most important determinate of success. Deep Belief (learning) nets have the ability to synthesize their own features in successive initial layers of the network. Because these layers are trained in a unsupervised fashion (no reference to a target variable) they pose no over fitting risk.Volume III focuses on convolution deep networks which are specific to image processing.

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