

SHARE "GPU" and "open source software" play a key role for advancing deep learning

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Tim Appenzeller described the introduction to special issue, entitled "The scientists' apprentice" published in Science (1). Appenzeller overstated " Unlike earlier attempts at AI, such 'deep learning' systems don't need to be programmed with a human expert's knowledge" (1). Actually, in deep learning systems, we have to examine the performance of possible system candidates by trial-and-error methods with expert's knowledge. In addition to the progress of deep learning algorithms, GPU (graphic processing unit) and open source software have played a key role for advancing deep learning. GPU parallel computing can accelerate the computation of deep learning (2). An inexpensive GPU board with 3584 CUDA cores can be purchased for less than \$1,000 where a CUDA core is most commonly referring to the single-precision floating point units in an SM (streaming multiprocessor). A CUDA core can initiate one single precision floating point instruction per clock cycle. Many of deep learning software (TensorFlow, Theano, Torch,...) are all based on open source and supports parallel executions with enabled CUDA cores (3).

References:

1. Tim Appenzeller, The scientists' apprentice, Science, 07 Jul 2017, Vol. 357, Issue 6346, pp. 16-17
2. Y. Takefuji, GPU parallel computing for machine learning in Python, amazon, June 2017
3. https://en.wikipedia.org/wiki/Comparison_of_deep_learning_software