

Alsadi M., Ghnemat R., Awajan A. 2019. Accelerating Stochastic Gradient Descent using Adaptive Mini-Batch Size. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan. Pages 293-300.

Abstract

Training Artificial Neural Networks takes a long time to converge and achieve acceptable accuracy. The proposed method alternates between two modes: fast-forward mode and normal mode. The fast-forward mode iterates faster than normal mode by using a smaller number of samples in each mini-batch. Cycling between those two modes in an adaptive way is driven by accuracy change, by selectively using faster mode as long as it gives good results. Otherwise, it falls back to normal mode. This way training becomes feasible even on commodity CPUs. Our approach was tested on commodity CPU on Pets-37 dataset obtaining an accuracy of 91% in less than an hour and on the Birds-200 dataset obtaining an accuracy of 72% in less two and a half hours.