Parallel Backpropagation for Multilayer Neural Networks

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Abstract

1. Introduction

Intro: Take from Proposal

2. Problem Description

Description: Take from Proposal
Add details specific to neural nets

3. Conventional Backpropagation

Describe backpropagation serial implementation in detail

4. Parallel Multicore Backpropagation

Describe platform used
Describe backpropagation parallelization using pthreads

5. Parallel GPU Backpropagation

Describe platform
Describe CUDA implementation for GPU

6. Experiments

Describe datasets and classification task
Decribe experimental network sizes
Describe hyperparameter selection
Describe experiments: serial vs pthreads vs cuda vs theano.

7. Results and Analysis

Provide experiment results: serial
Compare serial vs pthreads vs cuda vs theano.
Provide graphs for speedup with increasing problem size
Analyze speedup with number of threads/cores used
Analyze the level of parallelization obtained
Analyze performance bottlenecks
Do overall analysis and compare obtained results with your expectations

8. Future Work

Discuss application of parallel training and future usage of this work

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