

Benchmarks

- [Laptop ram upgrade](#)
- [nvidia apex](#)
- [CFG.jl](#)
- [ROCm pytorch](#)
- [Linpack results](#)

Laptop ram upgrade

before upgrade:

- unigine heaven: - 9.4 fps - 236 score - min 5.4 - max 21.2 - 1920 x 1080
- universe sandbox 37

after upgrade

- unigine heaven
 - 11.1 fps
 - 281 score
 - min 7.0
 - max 25.2
 - 1920 x 1080
- universe sandbox 39

nvidia apex

Scarecrow 1123 wrote a trainer for allennlp that uses nvidia's apex package to enable mixed precision training.

The full gist is available [here](#).

This is a copy of the trainer provided..

I find that my models are more often successful if I specify "O1" instead of "O2" for amp. This uses only a set of whitelisted operations in half precision mode.

[This trainer](#) has the change already made.

To use this during training include a snippet like this in your training json config.

```
{
  // ....
  "trainer": {
    "type": "fp16-trainer",
    "mixed_precision": true,
    // other options
  }
  // ....
}
```

and make sure the trainer is in a directory that you are including using `--include-package`.

For a bert model I was training, it ran out of VRAM on a single GTX 1070 without apex configured. However with apex configured the model was only using 4.5GB. There was no discernable penalty with regard to the number of epochs required though I haven't investigated a ton.

CFG.jl

grammar size: rules: 52 lexicon: 66

parsing execution times on a single thread

size	time
300 sents	1.172 seconds
3,000 sents	2.988 seconds
30,000 sents	22.06 seconds
300,000 sents	208.03 seconds

parsing execution times on two threads

size	time
300 sents	1.000 seconds
3,000 sents	2.216 seconds
30,000 sents	13.874 seconds
300,000 sents	127.376 seconds

ROCm pytorch

Used this tutorial to install pytorch for rocm, however I checked out release 1.5.

<https://github.com/ROCmSoftwarePlatform/pytorch/wiki/Building-PyTorch-for-ROCm> Allennlp was version 0.9.

GRU

BERT

This used bert-base with a batch size of 8.

Vega FE notes

The vega frontier edition results were obtained from a rented gpueater instance.

A batch size of 16 was also tried for the vega frontier edition to see if it would fit in vram and strangely the time per epoch dropped (01:12) with the larger batch size). This was also with thermal throttling as the vega fe was hitting 87 C and the clocks were down to 1.2 Ghz from 1.6 Ghz. The fans were limited to 40% under load on gpueater.com. It would be interesting to see what the performance is like with better thermals.



A word cloud containing various model names and terms. The words are arranged in a grid-like pattern, with some words appearing more frequently than others. The words include: GRU, BERT, pospos-, base, tagtagger, (1- (2- hidhid), regres, emoti, and GPL.

GTX 1070	1:26:00.2	00:24.3	
Tesla M40	1:32:00.0	00:04.3	
RTX 3090	0:20:20.0	00:02.6	
RX580	1:14:00.0	00:08.5	
Vega Frontier	1:29:30.0	00:05.1	
Vega Frontier (90% fans)	1:09:00.0	00:03.0	
Vega frontier (rocm 4.0)	1:07:50.0	00:02.9	
i7- 7800x	00:18:00.0	00:00:23	
i9- 7900x (defective?)	00:19:00.0	00:00:23	
i9- 7900x	00:16:00.0	00:00:20	
i9- 7980xe	00:15:00.0	00:00:18	
e5- 2680v3	00:20:00.0	00:00:34	

using rocm apex gave no discernable performance improvement (with use_apex = true) However, it did reduce memory consumption by ~1GB for a batch of 16.

The RTX 3090 was tested with cuda 11, all other nvidia gpus were using cuda 10.2 (the RTX 3090 is not supported in this earlier version of cuda).

Linpack results

Instance	Processor	RAM size	RAM speed	GFLOPS	Notes
					No
e5-2690v4	48	133GB	33.3	1333	avx2
	48	400GB	11.5	4000	avx2
	48	2690GB	x4	2690	this cpu
					limited by memory
e5-2680v3	16	213GB	33.3	2133	size.
	16	300GB	11.5	3000	Not the peak performance
	16	2680GB	x4	2680	
					4.1
					3200Ghz
7835v4	32	7835GB	11.5	7835	avx2
	32	500GB	x4	500	512 clock
					4.1
					322933
79400	32	79400GB	11.5	79400	No
	32	500GB	x2	500	overclock
					323200
79400	32	79400GB	11.5	79400	No
	32	500GB	x4	500	overclock
					3200
79400	128	79400GB	11.5	79400	Rented from vast.ai
	128	500GB	x4	500	