

A variety of deep learning

Comparison execution time performance on CPU, GPU, TPU of different network

Baekeun Park

parkbae@iu.edu

In the observation of a variety of deep learning model, it shows the best time performance when executed with GPU. In detail, sometimes CPU or TPU shows the best performance in the data-load process or compile process. However, GPU execution shows results that are incomparably faster than others. Especially in the CNN model, GPU results can be seen to perform more than 30x as CPU execution. The following are the results of each model's execution. The execution time for each process is indicated in the yellow box.

1. MLP(Multi-Layer Perceptron)

Type	Time (Total)	Results									
CPU	66.419s	Name	Status	Time	Sum	Start	tag	Node	User	OS	Version
		data-load	failed	0.622	0.622	2021-03-01 07:34:41		94e65651e74e	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		compile	failed	0.122	0.122	2021-03-01 07:34:42		94e65651e74e	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		train	failed	64.847	64.847	2021-03-01 07:34:42		94e65651e74e	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		test	failed	0.828	0.828	2021-03-01 07:35:47		94e65651e74e	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
GPU	10.310s	Name	Status	Time	Sum	Start	tag	Node	User	OS	Version
		data-load	failed	1.238	1.238	2021-03-01 07:42:24		2769f12cf868	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		compile	failed	0.099	0.099	2021-03-01 07:42:31		2769f12cf868	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		train	failed	8.631	8.631	2021-03-01 07:42:31		2769f12cf868	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		test	failed	0.342	0.342	2021-03-01 07:42:40		2769f12cf868	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
TPU	77.527s	Name	Status	Time	Sum	Start	tag	Node	User	OS	Version
		data-load	failed	0.63	0.63	2021-03-01 07:44:01		eca7c268870a	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		compile	failed	0.125	0.125	2021-03-01 07:44:03		eca7c268870a	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		train	failed	75.824	75.824	2021-03-01 07:44:03		eca7c268870a	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		test	failed	0.948	0.948	2021-03-01 07:45:18		eca7c268870a	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020

2. CNN(Convolutional Neural Networks)

Type	Time (Total)	Results																																																																					
CPU	1,310.075s	<table><tr><th>Name</th><th>Status</th><th>Time</th><th>Sum</th><th>Start</th><th>tag</th><th>Node</th><th>User</th><th>OS</th><th>Version</th></tr><tr><td>data-load</td><td>failed</td><td>0.373</td><td>0.373</td><td>2021-03-01 09:42:20</td><td></td><td>2d4c487ae1ab</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>data-pre-process</td><td>failed</td><td>0.121</td><td>0.121</td><td>2021-03-01 09:42:20</td><td></td><td>2d4c487ae1ab</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>compile</td><td>failed</td><td>0.276</td><td>0.276</td><td>2021-03-01 09:42:20</td><td></td><td>2d4c487ae1ab</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>train</td><td>failed</td><td>1303.4</td><td>1303.4</td><td>2021-03-01 09:42:21</td><td></td><td>2d4c487ae1ab</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>test</td><td>failed</td><td>5.905</td><td>5.905</td><td>2021-03-01 10:04:04</td><td></td><td>2d4c487ae1ab</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr></table>										Name	Status	Time	Sum	Start	tag	Node	User	OS	Version	data-load	failed	0.373	0.373	2021-03-01 09:42:20		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	data-pre-process	failed	0.121	0.121	2021-03-01 09:42:20		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	compile	failed	0.276	0.276	2021-03-01 09:42:20		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	train	failed	1303.4	1303.4	2021-03-01 09:42:21		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	test	failed	5.905	5.905	2021-03-01 10:04:04		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		Name	Status	Time	Sum	Start	tag	Node	User	OS	Version																																																												
		data-load	failed	0.373	0.373	2021-03-01 09:42:20		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		data-pre-process	failed	0.121	0.121	2021-03-01 09:42:20		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		compile	failed	0.276	0.276	2021-03-01 09:42:20		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		train	failed	1303.4	1303.4	2021-03-01 09:42:21		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
test	failed	5.905	5.905	2021-03-01 10:04:04		2d4c487ae1ab	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																														
GPU	43.841s	<table><tr><th>Name</th><th>Status</th><th>Time</th><th>Sum</th><th>Start</th><th>tag</th><th>Node</th><th>User</th><th>OS</th><th>Version</th></tr><tr><td>data-load</td><td>failed</td><td>0.471</td><td>0.471</td><td>2021-03-01 09:19:12</td><td></td><td>a29afb9ef3e2</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>data-pre-process</td><td>failed</td><td>0.076</td><td>0.076</td><td>2021-03-01 09:19:12</td><td></td><td>a29afb9ef3e2</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>compile</td><td>failed</td><td>5.735</td><td>5.735</td><td>2021-03-01 09:19:13</td><td></td><td>a29afb9ef3e2</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>train</td><td>failed</td><td>37.058</td><td>37.058</td><td>2021-03-01 09:19:19</td><td></td><td>a29afb9ef3e2</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>test</td><td>failed</td><td>0.501</td><td>0.501</td><td>2021-03-01 09:19:56</td><td></td><td>a29afb9ef3e2</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr></table>										Name	Status	Time	Sum	Start	tag	Node	User	OS	Version	data-load	failed	0.471	0.471	2021-03-01 09:19:12		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	data-pre-process	failed	0.076	0.076	2021-03-01 09:19:12		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	compile	failed	5.735	5.735	2021-03-01 09:19:13		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	train	failed	37.058	37.058	2021-03-01 09:19:19		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	test	failed	0.501	0.501	2021-03-01 09:19:56		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		Name	Status	Time	Sum	Start	tag	Node	User	OS	Version																																																												
		data-load	failed	0.471	0.471	2021-03-01 09:19:12		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		data-pre-process	failed	0.076	0.076	2021-03-01 09:19:12		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		compile	failed	5.735	5.735	2021-03-01 09:19:13		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		train	failed	37.058	37.058	2021-03-01 09:19:19		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
test	failed	0.501	0.501	2021-03-01 09:19:56		a29afb9ef3e2	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																														
TPU	1,260.536s	<table><tr><th>Name</th><th>Status</th><th>Time</th><th>Sum</th><th>Start</th><th>tag</th><th>Node</th><th>User</th><th>OS</th><th>Version</th></tr><tr><td>data-load</td><td>failed</td><td>0.358</td><td>0.358</td><td>2021-03-01 09:41:34</td><td></td><td>3c1aaa71e891</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>data-pre-process</td><td>failed</td><td>0.079</td><td>0.079</td><td>2021-03-01 09:41:35</td><td></td><td>3c1aaa71e891</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>compile</td><td>failed</td><td>0.251</td><td>0.251</td><td>2021-03-01 09:41:35</td><td></td><td>3c1aaa71e891</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>train</td><td>failed</td><td>1254.02</td><td>1254.02</td><td>2021-03-01 09:41:35</td><td></td><td>3c1aaa71e891</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>test</td><td>failed</td><td>5.828</td><td>5.828</td><td>2021-03-01 10:02:29</td><td></td><td>3c1aaa71e891</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr></table>										Name	Status	Time	Sum	Start	tag	Node	User	OS	Version	data-load	failed	0.358	0.358	2021-03-01 09:41:34		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	data-pre-process	failed	0.079	0.079	2021-03-01 09:41:35		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	compile	failed	0.251	0.251	2021-03-01 09:41:35		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	train	failed	1254.02	1254.02	2021-03-01 09:41:35		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	test	failed	5.828	5.828	2021-03-01 10:02:29		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		Name	Status	Time	Sum	Start	tag	Node	User	OS	Version																																																												
		data-load	failed	0.358	0.358	2021-03-01 09:41:34		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		data-pre-process	failed	0.079	0.079	2021-03-01 09:41:35		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		compile	failed	0.251	0.251	2021-03-01 09:41:35		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		train	failed	1254.02	1254.02	2021-03-01 09:41:35		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
test	failed	5.828	5.828	2021-03-01 10:02:29		3c1aaa71e891	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																														

3. RNN(Recurrent Neural Networks)

Type	Time (Total)	Results																																																																					
CPU	116.17s	<table><tr><th>Name</th><th>Status</th><th>Time</th><th>Sum</th><th>Start</th><th>tag</th><th>Node</th><th>User</th><th>OS</th><th>Version</th></tr><tr><td>data-load</td><td>failed</td><td>0.746</td><td>0.746</td><td>2021-03-01 08:36:48</td><td></td><td>e79c39137a21</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>data-pre-process</td><td>failed</td><td>0.063</td><td>0.063</td><td>2021-03-01 08:36:49</td><td></td><td>e79c39137a21</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>compile</td><td>failed</td><td>0.95</td><td>0.95</td><td>2021-03-01 08:36:53</td><td></td><td>e79c39137a21</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>train</td><td>failed</td><td>108.505</td><td>108.505</td><td>2021-03-01 08:36:56</td><td></td><td>e79c39137a21</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>evaluate</td><td>failed</td><td>5.906</td><td>5.906</td><td>2021-03-01 08:38:45</td><td></td><td>e79c39137a21</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr></table>										Name	Status	Time	Sum	Start	tag	Node	User	OS	Version	data-load	failed	0.746	0.746	2021-03-01 08:36:48		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	data-pre-process	failed	0.063	0.063	2021-03-01 08:36:49		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	compile	failed	0.95	0.95	2021-03-01 08:36:53		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	train	failed	108.505	108.505	2021-03-01 08:36:56		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	evaluate	failed	5.906	5.906	2021-03-01 08:38:45		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		Name	Status	Time	Sum	Start	tag	Node	User	OS	Version																																																												
		data-load	failed	0.746	0.746	2021-03-01 08:36:48		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		data-pre-process	failed	0.063	0.063	2021-03-01 08:36:49		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		compile	failed	0.95	0.95	2021-03-01 08:36:53		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		train	failed	108.505	108.505	2021-03-01 08:36:56		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
evaluate	failed	5.906	5.906	2021-03-01 08:38:45		e79c39137a21	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																														
GPU	39.286s	<table><tr><th>Name</th><th>Status</th><th>Time</th><th>Sum</th><th>Start</th><th>tag</th><th>Node</th><th>User</th><th>OS</th><th>Version</th></tr><tr><td>data-load</td><td>failed</td><td>0.836</td><td>0.836</td><td>2021-03-01 08:40:24</td><td></td><td>9d719cf26da7</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>data-pre-process</td><td>failed</td><td>0.073</td><td>0.073</td><td>2021-03-01 08:40:25</td><td></td><td>9d719cf26da7</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>compile</td><td>failed</td><td>6.185</td><td>6.185</td><td>2021-03-01 08:40:25</td><td></td><td>9d719cf26da7</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>train</td><td>failed</td><td>31.317</td><td>31.317</td><td>2021-03-01 08:40:31</td><td></td><td>9d719cf26da7</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>evaluate</td><td>failed</td><td>0.875</td><td>0.875</td><td>2021-03-01 08:41:02</td><td></td><td>9d719cf26da7</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr></table>										Name	Status	Time	Sum	Start	tag	Node	User	OS	Version	data-load	failed	0.836	0.836	2021-03-01 08:40:24		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	data-pre-process	failed	0.073	0.073	2021-03-01 08:40:25		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	compile	failed	6.185	6.185	2021-03-01 08:40:25		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	train	failed	31.317	31.317	2021-03-01 08:40:31		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	evaluate	failed	0.875	0.875	2021-03-01 08:41:02		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		Name	Status	Time	Sum	Start	tag	Node	User	OS	Version																																																												
		data-load	failed	0.836	0.836	2021-03-01 08:40:24		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		data-pre-process	failed	0.073	0.073	2021-03-01 08:40:25		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		compile	failed	6.185	6.185	2021-03-01 08:40:25		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		train	failed	31.317	31.317	2021-03-01 08:40:31		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
evaluate	failed	0.875	0.875	2021-03-01 08:41:02		9d719cf26da7	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																														
TPU	134.918s	<table><tr><th>Name</th><th>Status</th><th>Time</th><th>Sum</th><th>Start</th><th>tag</th><th>Node</th><th>User</th><th>OS</th><th>Version</th></tr><tr><td>data-load</td><td>failed</td><td>0.625</td><td>0.625</td><td>2021-03-01 08:41:48</td><td></td><td>d546f98da4e0</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>data-pre-process</td><td>failed</td><td>0.103</td><td>0.103</td><td>2021-03-01 08:41:48</td><td></td><td>d546f98da4e0</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>compile</td><td>failed</td><td>0.902</td><td>0.902</td><td>2021-03-01 08:41:49</td><td></td><td>d546f98da4e0</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>train</td><td>failed</td><td>126.378</td><td>126.378</td><td>2021-03-01 08:41:50</td><td></td><td>d546f98da4e0</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr><tr><td>evaluate</td><td>failed</td><td>6.91</td><td>6.91</td><td>2021-03-01 08:43:56</td><td></td><td>d546f98da4e0</td><td>collab</td><td>Linux</td><td>#1 SMP Thu Jul 23 08:00:38 PDT 2020</td></tr></table>										Name	Status	Time	Sum	Start	tag	Node	User	OS	Version	data-load	failed	0.625	0.625	2021-03-01 08:41:48		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	data-pre-process	failed	0.103	0.103	2021-03-01 08:41:48		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	compile	failed	0.902	0.902	2021-03-01 08:41:49		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	train	failed	126.378	126.378	2021-03-01 08:41:50		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020	evaluate	failed	6.91	6.91	2021-03-01 08:43:56		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		Name	Status	Time	Sum	Start	tag	Node	User	OS	Version																																																												
		data-load	failed	0.625	0.625	2021-03-01 08:41:48		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		data-pre-process	failed	0.103	0.103	2021-03-01 08:41:48		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		compile	failed	0.902	0.902	2021-03-01 08:41:49		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
		train	failed	126.378	126.378	2021-03-01 08:41:50		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																												
evaluate	failed	6.91	6.91	2021-03-01 08:43:56		d546f98da4e0	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020																																																														

4. LSTM(Long Short Term Memory networks)

Type	Time (Total)	Results									
CPU	295.822s	Name	Status	Time	Sum	Start	tag	Node	User	OS	Version
		data-load	failed	0.458	0.458	2021-03-01 08:44:29		1a2813829790	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		data-pre-process	failed	0.092	0.092	2021-03-01 08:44:30		1a2813829790	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		compile	failed	1.229	1.229	2021-03-01 08:44:30		1a2813829790	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		train	failed	277.667	277.667	2021-03-01 08:44:31		1a2813829790	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		evaluate	failed	16.376	16.376	2021-03-01 08:49:09		1a2813829790	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
GPU	25.386s	Name	Status	Time	Sum	Start	tag	Node	User	OS	Version
		data-load	failed	0.461	0.461	2021-03-01 08:50:45		89fd165a3858	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		data-pre-process	failed	0.076	0.076	2021-03-01 08:50:46		89fd165a3858	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		compile	failed	6.452	6.452	2021-03-01 08:50:46		89fd165a3858	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		train	failed	16.989	16.989	2021-03-01 08:50:52		89fd165a3858	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		evaluate	failed	1.408	1.408	2021-03-01 08:51:09		89fd165a3858	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
TPU	394.701s	Name	Status	Time	Sum	Start	tag	Node	User	OS	Version
		data-load	failed	0.657	0.657	2021-03-01 08:51:14		c6290864f66f	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		data-pre-process	failed	0.1	0.1	2021-03-01 08:51:15		c6290864f66f	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		compile	failed	1.605	1.605	2021-03-01 08:51:15		c6290864f66f	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		train	failed	370.495	370.495	2021-03-01 08:51:16		c6290864f66f	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		evaluate	failed	21.844	21.844	2021-03-01 08:57:27		c6290864f66f	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020

5. Autoencoder

Type	Time (Total)	Results									
CPU	130.768s	Name	Status	Time	Sum	Start	tag	Node	User	OS	Version
		data-load	failed	0.891	0.891	2021-03-01 08:58:45		525f9a3a38ff	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		data-pre-process	failed	0.092	0.092	2021-03-01 08:58:46		525f9a3a38ff	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		compile	failed	0.828	0.828	2021-03-01 08:58:46		525f9a3a38ff	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		train	failed	128.957	128.957	2021-03-01 08:58:47		525f9a3a38ff	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		evaluate	failed	5.274	5.274	2021-03-01 09:00:56		525f9a3a38ff	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
GPU	18.528s	Name	Status	Time	Sum	Start	tag	Node	User	OS	Version
		data-load	failed	0.476	0.476	2021-03-01 08:56:15		f47b4dde3b5e	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		data-pre-process	failed	0.068	0.068	2021-03-01 08:56:15		f47b4dde3b5e	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		compile	failed	5.99	5.99	2021-03-01 08:56:18		f47b4dde3b5e	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		train	failed	10.896	10.896	2021-03-01 08:56:27		f47b4dde3b5e	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		evaluate	failed	1.098	2.311	2021-03-01 08:57:04		f47b4dde3b5e	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
TPU	153.158s	Name	Status	Time	Sum	Start	tag	Node	User	OS	Version
		data-load	failed	0.674	0.674	2021-03-01 08:58:16		b11780348ef3	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		data-pre-process	failed	0.106	0.106	2021-03-01 08:58:16		b11780348ef3	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		compile	failed	1.258	1.258	2021-03-01 08:58:16		b11780348ef3	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		train	failed	144.81	144.81	2021-03-01 08:58:18		b11780348ef3	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020
		evaluate	failed	6.31	6.31	2021-03-01 09:00:43		b11780348ef3	collab	Linux	#1 SMP Thu Jul 23 08:00:38 PDT 2020