tide kmeans

Lucy Score = Throughput x Availability x Acc / 10,000. LPD condenses live-fit vs Acc-champ RAM.
[T]=Tween [S]=Split [FP]=FastProxy [L]=Linear [HP]=HeadProxy
done - epoch 1/1 (1 left, 100% overall) - lr unset - 2026-08-23 13:33:01 -
This epoch 2346 / 2346 cells. Recorded 2346 results. Learning rate unset.
Score 0 usually means the cell finished before a Lucy pulse (Acc never sampled). Score is live-fit: Throughput x Availability x Acc.
SGD that blocks serve dies on Availability. SoftAcc is serve-confidence only.
pi_collection - kmeans - offline report

Lucy champions (this tide)

Axis	Cell	Score	Soft	Acc	Thru	Avail
hard acc	binary|none|[T][S][HP]Async|single|simd	893.80	25.2	32.4	9139.5	38.8
throughput	int32|none|sgd|single|simd	3885.13	24.3	23.7	38114.2	41.9
availability	int4|none|Mesh[T][S]Sparse|tricameral|simd	156.42	25.0	23.9	1256.9	49.8
lucy score	int32|none|sgd|single|simd	3885.13	24.3	23.7	38114.2	41.9
mobile score (trap)	binary|none|sgd|single|simd	3884.53	25.0	26.3	36790.1	42.3
t->50%	float16|none|step_sgd|single|simd	2068.29	22.9	24.8	27554.7	32.8
acc/sec	int2|none|sgd|single|simd	3808.08	25.0	25.5	37339.8	40.7

Lucy axis champions (this tide)

Axis	Mode	DType	Arch	Value
hard_acc	Step[T]Alt	int32	tricameralx3	39.77
throughput	sgd	int32	singlex1	38114.20
availability	Mesh[T][S]Sparse	int4	tricameralx3	49.78
score	sgd	int32	singlex1	3885.13
soft_acc	[T][S][HP]Async	binary	singlex1	25.18
acc_thru	sgd	int4	singlex1	9860.36
realtime	sgd	int32	singlex1	15974.07
adapt	step_sgd	float32	singlex1	25.08
keep_learn	tween	int6	tricameralx3	16.41
acc_per_sec	sgd	int2	singlex1	12.50
time_to_50	step_sgd	float16	singlex1	0.27
consistency	sgd	uint8	singlex1	100.00
stability	tween	fp4	singlex1	100.00
mobile_score	sgd	binary	singlex1	10183060~
lpd	sgd	int4	singlex1	27.15
mspeed	sgd	int4	singlex1	1.00
mavail	Mesh[T][S][FP]	ternary	singlex1	1.00
mix	sgd	int4	singlex1	0.85
gold_std	[T][S][HP]Async	binary	singlex1	0.00

Best settings per train mode

Mode	DType	Format	Score	Soft	Acc	Avail	n
sgd	int32	none	3885.1	24.3	23.7	41.9	102
tween	uint16	none	3490.0	25.0	25.5	40.6	102
tween_chain	uint4	none	3270.8	25.0	23.3	47.0	102
MeshBP	int3	none	3266.2	25.0	24.3	40.9	102
step_sgd	nf4	none	3265.5	25.0	26.5	41.8	102
[T][S]	float32	none	3213.9	25.0	25.9	46.5	102
step_tween_chain	fp4	none	2721.2	25.0	25.1	37.9	102
step_tween	int5	none	2685.2	25.0	23.5	38.3	102
Mesh[T]Chain	int4	none	2680.9	25.0	26.2	41.3	102

Step[T][S]	bfloat16	none	2606.4	25.0	26.6	36.9	102
Mesh[T]	float64	none	2481.5	25.0	25.1	37.6	102
[T]Alt	float16	none	2100.9	25.0	28.8	43.3	102
[T][S][HP]	int4	none	1994.3	25.0	15.5	44.2	102
Step[T]Alt	uint2	none	1750.2	25.0	22.4	38.9	102
[T][S][FP]	int16	none	1422.6	25.0	27.7	46.2	102
[T][S][L]	uint2	none	1417.3	25.0	27.9	41.3	102
[T][S][L]Cache	fp4	none	1298.4	25.0	26.7	44.6	102
[T][S][HP]Async	fp8e5m2	none	992.5	25.0	29.7	38.7	102
[T][S]Sparse	binary	none	970.9	25.0	26.2	42.6	102
Mesh[T][S]	uint64	none	828.6	25.1	37.2	40.9	102
Mesh[T][S][FP]	fp4	none	659.7	25.0	25.3	41.8	102
Mesh[T]Alt	int8	none	630.0	25.1	30.7	37.6	102
Mesh[T][S]Sparse	fp4	none	614.1	25.0	24.7	38.8	102

Best dtype per mode

Mode	Winner dtype	Score	Soft	Acc
sgd	int32	3885.1	24.3	23.7
tween	uint16	3490.0	25.0	25.5
tween_chain	uint4	3270.8	25.0	23.3
MeshBP	int3	3266.2	25.0	24.3
step_sgd	nf4	3265.5	25.0	26.5
[T][S]	float32	3213.9	25.0	25.9
step_tween_chain	fp4	2721.2	25.0	25.1
step_tween	int5	2685.2	25.0	23.5
Mesh[T]Chain	int4	2680.9	25.0	26.2
Step[T][S]	bfloat16	2606.4	25.0	26.6
Mesh[T]	float64	2481.5	25.0	25.1
[T]Alt	float16	2100.9	25.0	28.8
[T][S][HP]	int4	1994.3	25.0	15.5
Step[T]Alt	uint2	1750.2	25.0	22.4
[T][S][FP]	int16	1422.6	25.0	27.7
[T][S][L]	uint2	1417.3	25.0	27.9
[T][S][L]Cache	fp4	1298.4	25.0	26.7
[T][S][HP]Async	fp8e5m2	992.5	25.0	29.7
[T][S]Sparse	binary	970.9	25.0	26.2
Mesh[T][S]	uint64	828.6	25.1	37.2
Mesh[T][S][FP]	fp4	659.7	25.0	25.3
Mesh[T]Alt	int8	630.0	25.1	30.7
Mesh[T][S]Sparse	fp4	614.1	25.0	24.7

Best mode per dtype

DType	Winner mode	Score	Soft	Acc
int32	sgd	3885.1	24.3	23.7
binary	sgd	3884.5	25.0	26.3
int2	sgd	3808.1	25.0	25.5
int4	sgd	3592.7	25.0	28.1
uint16	tween	3490.0	25.0	25.5
bfloat16	sgd	3391.0	24.3	26.7
uintptr	tween	3304.0	25.0	26.0
uint32	sgd	3286.6	23.7	23.5
uint64	sgd	3283.9	24.3	24.8

uint4	tween_chain	3270.8	25.0	23.3
int3	MeshBP	3266.2	25.0	24.3
nf4	step_sgd	3265.5	25.0	26.5
uint8	sgd	3238.9	25.0	28.0
float32	[T][S]	3213.9	25.0	25.9
fp8e4m3	step_sgd	3210.3	24.3	22.9
int16	tween	3187.9	25.0	23.9
int64	sgd	3087.6	23.7	25.2
int8	[T][S]	3063.8	25.0	25.2
float64	sgd	2994.9	24.3	25.1
fp8e5m2	tween	2957.0	25.0	26.4
int	[T][S]	2954.4	25.0	28.5
uint5	step_sgd	2919.8	24.3	25.1
uint3	MeshBP	2898.4	25.0	27.4
uint2	[T][S]	2796.3	25.0	28.1
uint6	sgd	2778.0	23.7	23.4
fp4	[T][S]	2763.0	25.0	23.6
ternary	step_sgd	2752.0	24.2	21.0
complex64	step_tween_chain	2687.4	25.0	26.0
int5	step_tween	2685.2	25.0	23.5
int6	MeshBP	2674.7	25.0	16.8
float16	step_tween_chain	2521.1	25.0	29.4
complex128	tween_chain	2512.4	25.0	23.9
uint	step_tween_chain	2409.5	25.0	27.5
fp6	[T][S]	2349.4	25.0	24.1

Leaderboard (Lucy Score)

#	Cell	Score	Soft	Acc	Thru	Avail
1	int32|none|sgd|single|simd	3885.1	24.3	23.7	38114.2	41.9
2	binary|none|sgd|single|simd	3884.5	25.0	26.3	36790.1	42.3
3	int2|none|sgd|single|simd	3808.1	25.0	25.5	37339.8	40.7
4	int4|none|sgd|single|simd	3592.7	25.0	28.1	35048.0	41.0
5	uint16|none|tween|single|simd	3490.0	25.0	25.5	34419.1	40.6
6	bfloat16|none|sgd|single|simd	3391.0	24.3	26.7	34516.5	40.5
7	uintptr|none|tween|single|simd	3304.0	25.0	26.0	32751.5	40.3
8	uint32|none|sgd|single|simd	3286.6	23.7	23.5	35478.8	39.1
9	uint64|none|sgd|single|simd	3283.9	24.3	24.8	33556.2	40.2
10	uint4|none|tween_chain|single|simd	3270.8	25.0	23.3	27867.0	47.0
11	int3|none|MeshBP|single|simd	3266.2	25.0	24.3	31951.7	40.9
12	nf4|none|step_sgd|single|simd	3265.5	25.0	26.5	31262.9	41.8
13	uint8|none|sgd|single|simd	3238.9	25.0	28.0	34016.2	38.1
14	float32|none|[T][S]|single|simd	3213.9	25.0	25.9	27654.8	46.5
15	fp8e4m3|none|step_sgd|single|simd	3210.3	24.3	22.9	33588.8	39.3
16	int16|none|tween|single|simd	3187.9	25.0	23.9	33613.1	38.0
17	nf4|none|sgd|single|simd	3146.5	23.1	19.0	34679.6	39.3
18	binary|none|MeshBP|single|simd	3142.3	25.1	28.6	28104.7	44.6
19	int16|none|[T][S]|single|simd	3134.4	25.0	23.1	30614.3	40.9
20	uint4|none|[T][S]|single|simd	3128.4	25.0	27.8	32120.2	38.9

Leaderboard (SoftAcc)

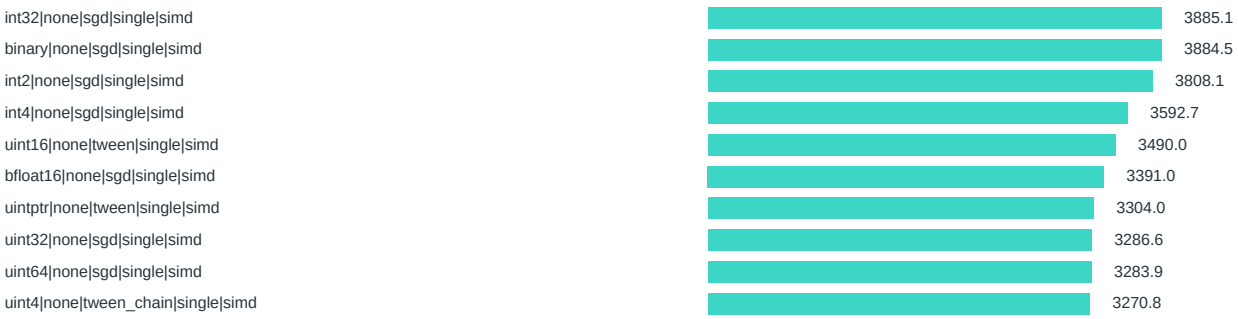
#	Cell	Score	Soft	Acc	Thru	Avail
1	binary|none|MeshBP|single|simd	3142.3	25.1	28.6	28104.7	44.6

2	uint4|none|[T][S]|single|simd	3128.4	25.0	27.8	32120.2	38.9
3	uintptr|none|tween|single|simd	3304.0	25.0	26.0	32751.5	40.3
4	uint32|none|tween_chain|single|simd	3079.1	25.0	30.9	30808.5	39.9
5	int2|none|sgd|single|simd	3808.1	25.0	25.5	37339.8	40.7
6	int16|none|[T][S]|single|simd	3134.4	25.0	23.1	30614.3	40.9
7	int3|none|MeshBP|single|simd	3266.2	25.0	24.3	31951.7	40.9
8	uint8|none|sgd|single|simd	3238.9	25.0	28.0	34016.2	38.1
9	int64|none|tween_chain|single|simd	2989.6	25.0	25.3	29655.1	40.3
10	uint6|none|tween_chain|single|simd	2777.3	25.0	28.4	29013.2	38.3
11	bfloat16|none|tween|single|simd	2913.9	25.0	25.1	29327.0	39.7
12	int|none|[T][S]|single|simd	2954.4	25.0	28.5	29325.9	40.3
13	uint3|none|MeshBP|single|simd	2898.4	25.0	27.4	30533.5	38.0
14	uint16|none|tween|single|simd	3490.0	25.0	25.5	34419.1	40.6
15	nf4|none|step_sgd|single|simd	3265.5	25.0	26.5	31262.9	41.8
16	uint2|none|[T][S]|single|simd	2796.3	25.0	28.1	26305.3	42.5
17	int4|none|sgd|single|simd	3592.7	25.0	28.1	35048.0	41.0
18	float32|none|[T][S]|single|simd	3213.9	25.0	25.9	27654.8	46.5
19	fp8e5m2|none|tween|single|simd	2957.0	25.0	26.4	29226.6	40.5
20	binary|none|sgd|single|simd	3884.5	25.0	26.3	36790.1	42.3

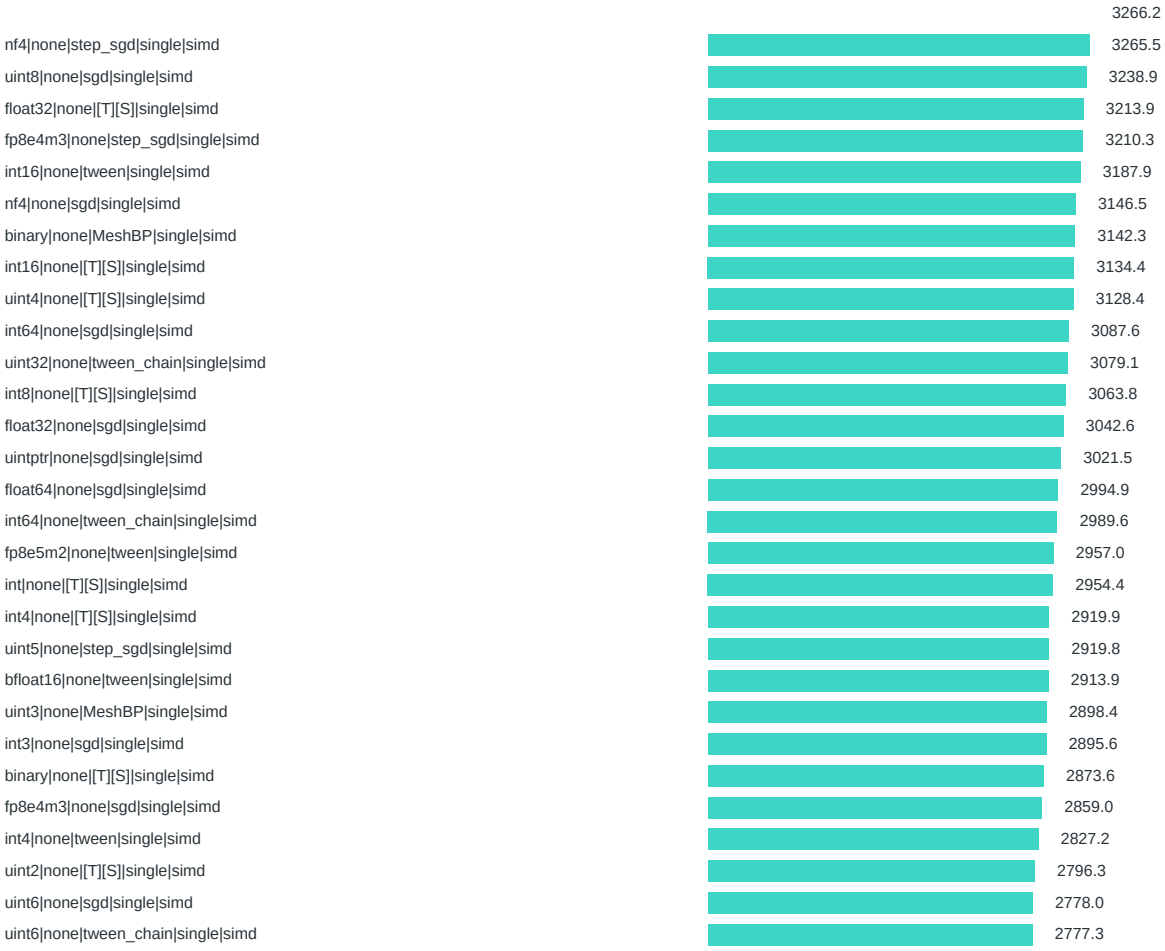
Leaderboard (hard Acc)

#	Cell	Score	Soft	Acc	Thru	Avail
1	uint32|none|tween_chain|single|simd	3079.1	25.0	30.9	30808.5	39.9
2	binary|none|MeshBP|single|simd	3142.3	25.1	28.6	28104.7	44.6
3	int|none|[T][S]|single|simd	2954.4	25.0	28.5	29325.9	40.3
4	uint6|none|tween_chain|single|simd	2777.3	25.0	28.4	29013.2	38.3
5	int4|none|sgd|single|simd	3592.7	25.0	28.1	35048.0	41.0
6	uint2|none|[T][S]|single|simd	2796.3	25.0	28.1	26305.3	42.5
7	uint8|none|sgd|single|simd	3238.9	25.0	28.0	34016.2	38.1
8	uint4|none|[T][S]|single|simd	3128.4	25.0	27.8	32120.2	38.9
9	uint3|none|MeshBP|single|simd	2898.4	25.0	27.4	30533.5	38.0
10	bfloat16|none|sgd|single|simd	3391.0	24.3	26.7	34516.5	40.5
11	nf4|none|step_sgd|single|simd	3265.5	25.0	26.5	31262.9	41.8
12	fp8e5m2|none|tween|single|simd	2957.0	25.0	26.4	29226.6	40.5
13	binary|none|sgd|single|simd	3884.5	25.0	26.3	36790.1	42.3
14	uintptr|none|tween|single|simd	3304.0	25.0	26.0	32751.5	40.3
15	uintptr|none|sgd|single|simd	3021.5	24.4	25.9	33066.0	37.5
16	float32|none|[T][S]|single|simd	3213.9	25.0	25.9	27654.8	46.5
17	uint16|none|tween|single|simd	3490.0	25.0	25.5	34419.1	40.6
18	int2|none|sgd|single|simd	3808.1	25.0	25.5	37339.8	40.7
19	int64|none|tween_chain|single|simd	2989.6	25.0	25.3	29655.1	40.3
20	int8|none|[T][S]|single|simd	3063.8	25.0	25.2	29221.9	42.0

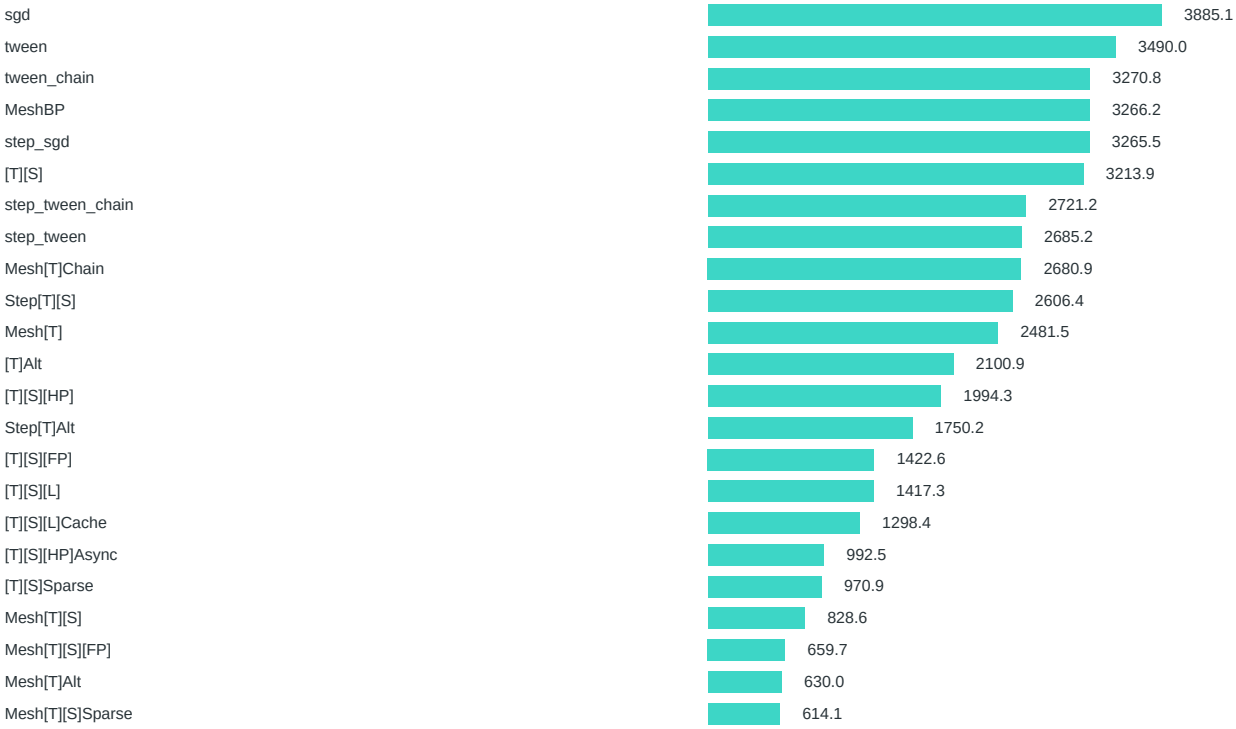
Top scores







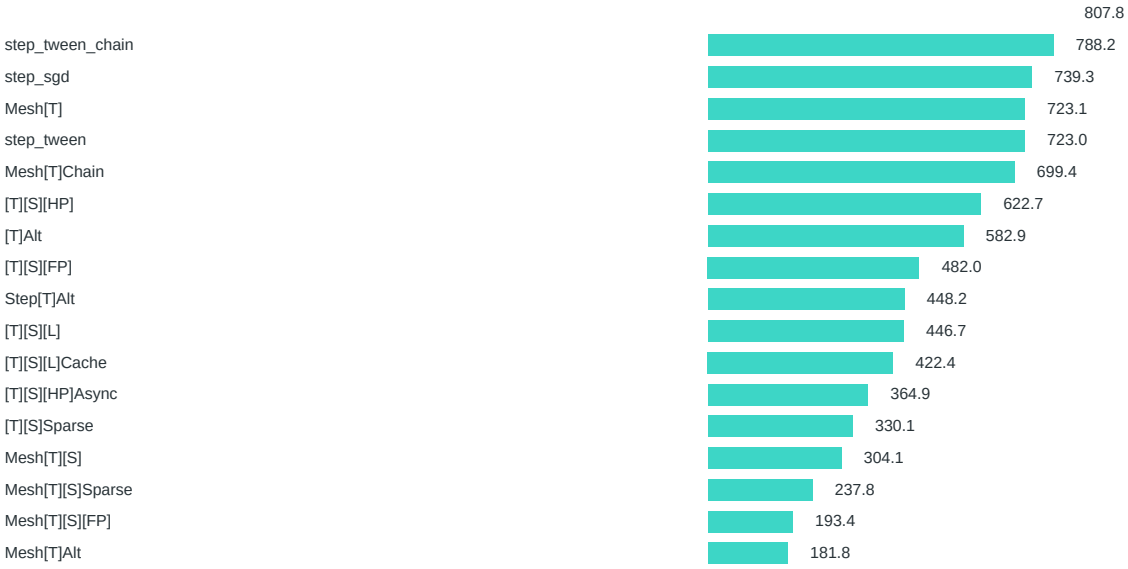
Best settings per mode



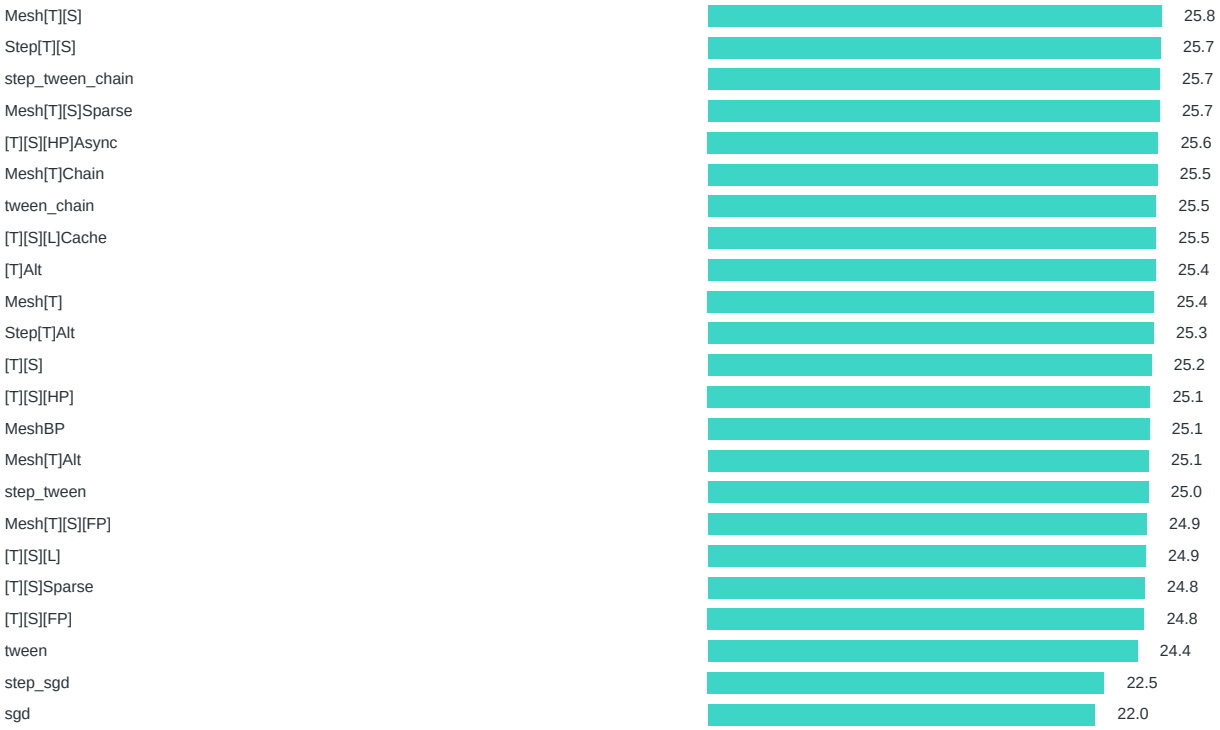
Mean Score by train mode



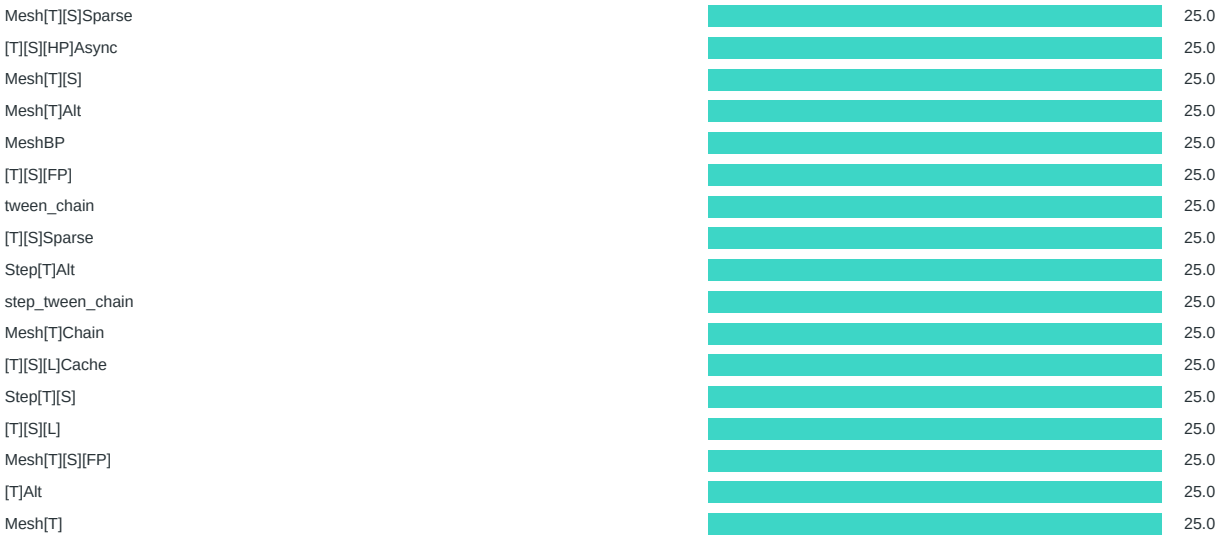




Mean hard Acc by train mode



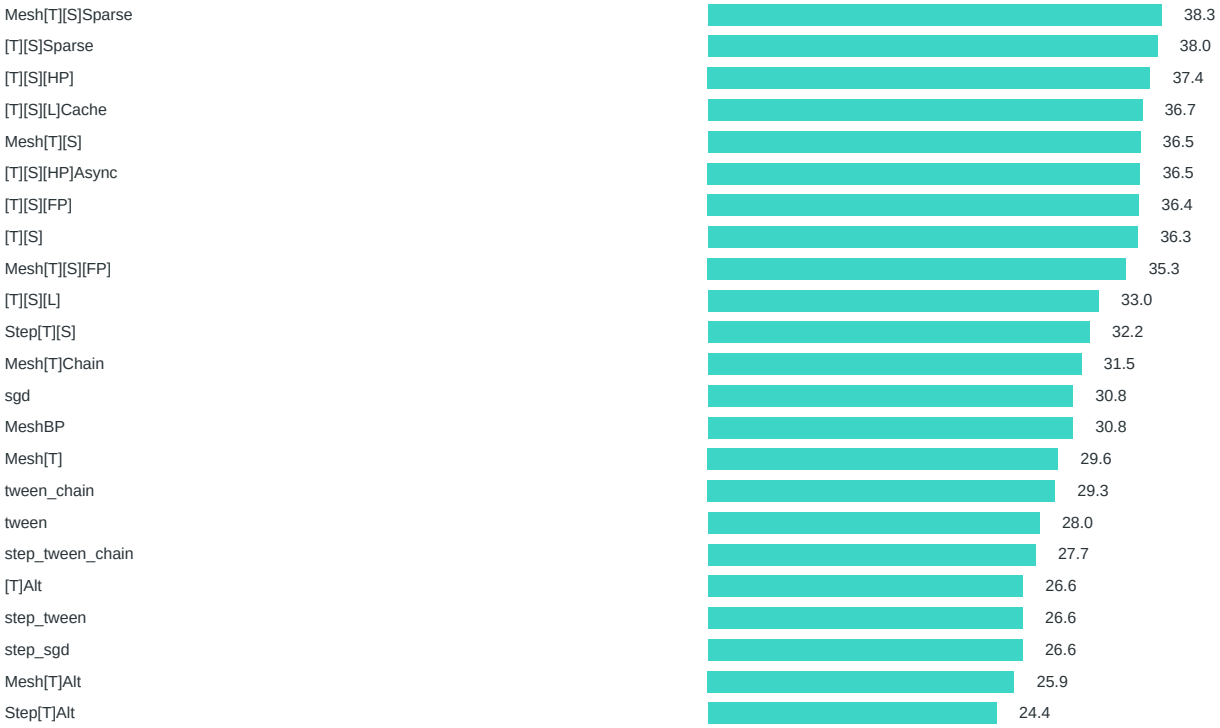
Mean SoftAcc by train mode



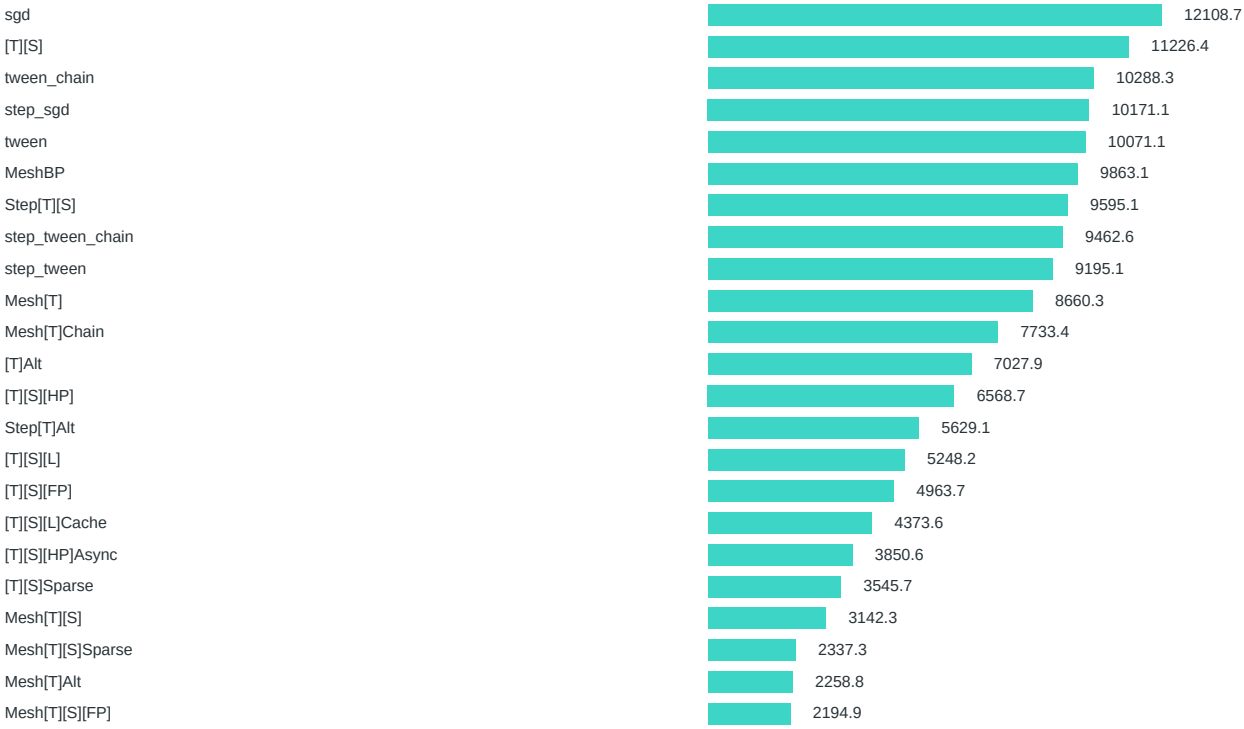
[T][S]



Mean Availability by train mode



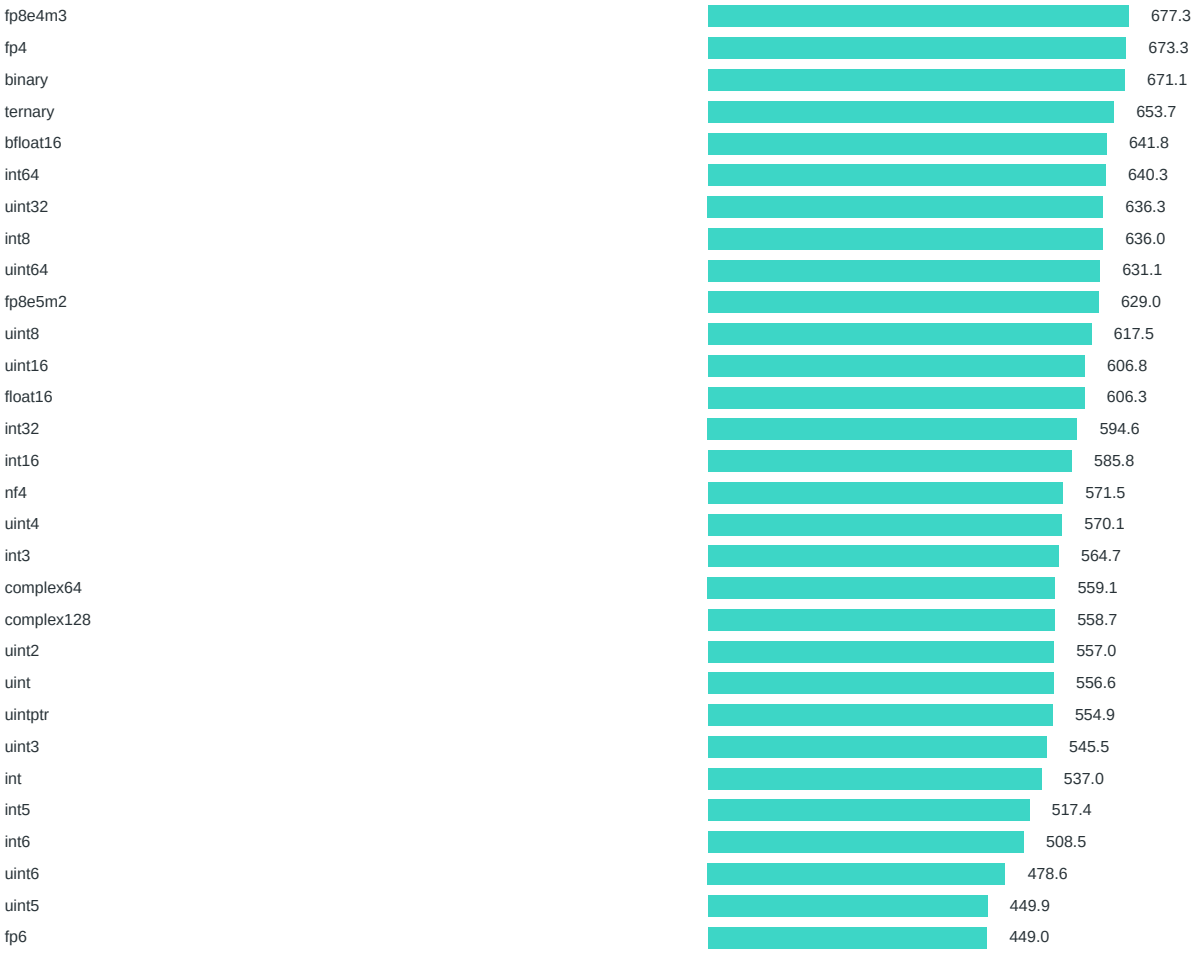
Mean Throughput by train mode



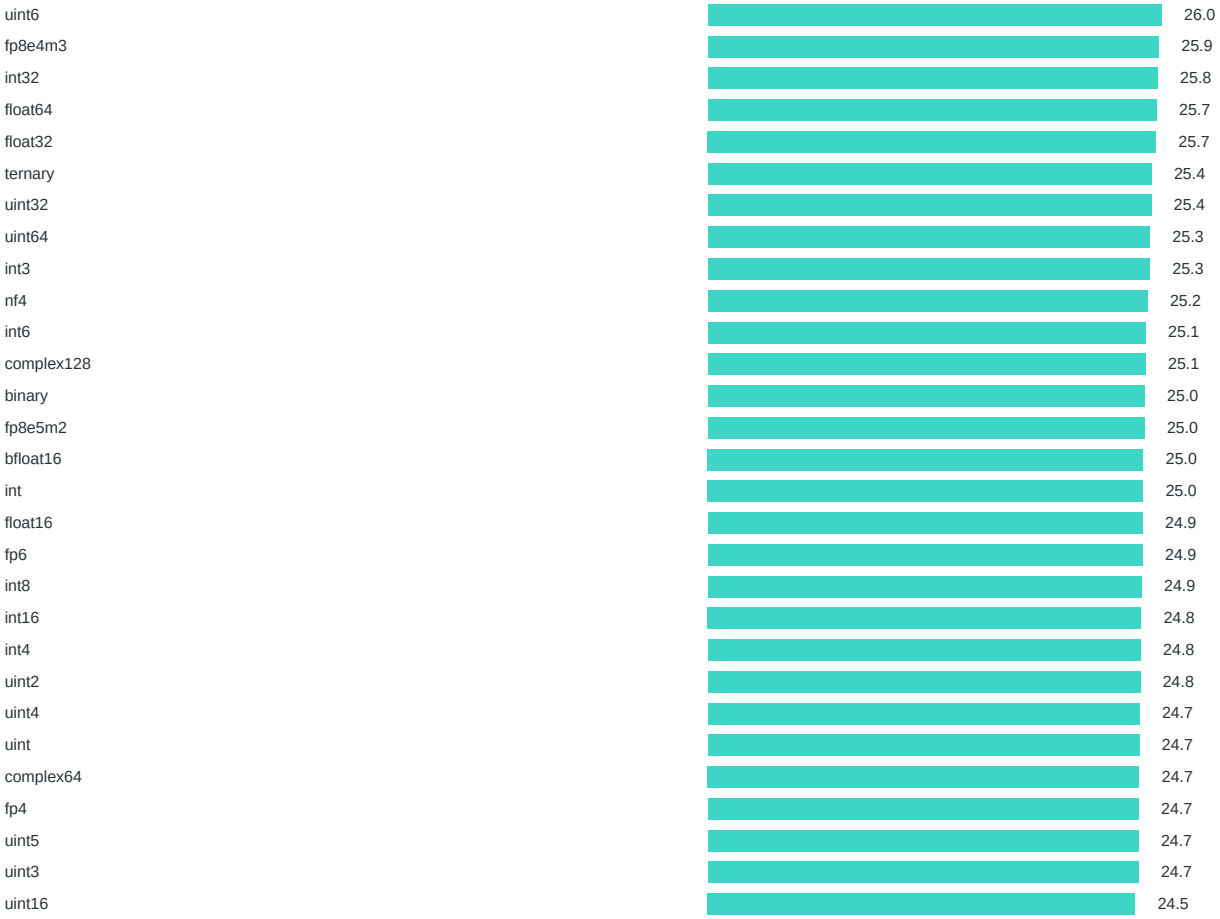
Mean Score by dtype



Mean Score by dtype



Mean hard Acc by dtype



Mean hard Acc by dtype



Mean Score by arch



Honesty - mean Score, every mode x dtype (cols 1-12)

	bfloat16	binary	complex128	complex64	float16	float32	float64	fp4	fp6	fp8e4m3	fp8e5m2	int
MeshBP	1092	1400	866	876	964	827	1004	750	817	843	1024	765
Mesh[T]	676	555	730	715	545	898	1048	603	553	1020	479	675
Mesh[T]Alt	155	160	144	178	289	248	201	197	102	279	200	207
Mesh[T]Chain	750	733	766	478	611	1034	682	866	281	604	901	652
Mesh[T][S]	392	271	327	191	318	397	467	381	229	357	305	203
Mesh[T][S][FP]	265	218	189	159	228	282	191	290	186	191	167	188
Mesh[T][S]Sparse	274	297	269	166	249	355	237	306	220	190	231	221
Step[T]Alt	514	383	364	331	353	450	483	484	502	579	453	413
Step[T][S]	1150	1048	797	701	782	955	982	1082	473	1253	1183	748
[T]Alt	514	643	465	526	874	811	674	585	449	326	656	874
[T][S]	1001	1243	699	789	900	1603	1534	1219	911	1356	1200	1365
[T][S][FP]	485	544	601	525	398	641	466	527	406	548	655	361
[T][S][HP]	765	646	665	845	666	832	871	601	336	576	558	485
[T][S][HP]Async	302	493	400	368	341	436	371	401	267	393	502	218
[T][S][L]	525	322	390	394	343	621	600	515	407	351	489	379
[T][S][L]Cache	365	490	419	345	385	401	480	588	301	470	544	356
[T][S]Sparse	316	489	382	263	344	469	359	439	311	374	426	304
sgd	1369	1550	759	805	756	1548	1140	1117	474	1289	782	626
step_sgd	731	1091	694	826	955	603	1053	494	504	1222	815	390
step_tween	466	1064	459	851	967	531	1002	1051	604	747	614	470
step_tween_chain	823	935	579	1063	1101	836	816	1098	622	955	553	532
tween	1184	252	909	861	561	924	590	892	594	833	1265	810
tween_chain	649	607	974	602	1014	1108	1020	1001	777	819	465	1108

Honesty - mean Score, every mode x dtype (cols 13-24)

Honesty - mean Score, every mode x dtype (cols 13-24)

	int16	int2	int3	int32	int4	int5	int6	int64	int8	nf4	ternary	uint
MeshBP	814	641	1170	1030	1040	735	668	927	878	753	482	885
Mesh[T]	763	894	717	585	730	873	902	969	570	664	1072	661
Mesh[T]Alt	135	220	143	192	219	94	180	159	291	166	165	219
Mesh[T]Chain	799	820	613	541	1118	487	948	821	838	470	690	607
Mesh[T][S]	314	315	244	285	405	214	144	209	437	207	308	271
Mesh[T][S][FP]	186	181	144	206	231	171	124	143	203	180	335	171
Mesh[T][S]Sparse	157	219	271	279	281	226	202	255	338	246	268	204
Step[T]Alt	414	498	302	412	668	394	310	431	386	549	521	346
Step[T][S]	836	1015	897	869	901	849	761	1011	686	837	852	1046
[T]Alt	446	608	292	814	889	449	467	527	473	463	776	497
[T][S]	1305	1012	1069	1192	1083	966	797	815	1624	893	1116	717
[T][S][FP]	638	438	466	425	389	372	367	565	548	329	510	535
[T][S][HP]	442	804	470	490	684	442	538	778	839	558	944	492
[T][S][HP]Async	283	487	482	492	448	235	264	345	397	259	465	431
[T][S][L]	484	523	458	506	389	427	266	323	495	474	533	355
[T][S][L]Cache	345	533	400	467	426	546	233	388	650	422	532	290
[T][S]Sparse	290	307	277	374	381	244	155	290	316	335	428	296
sgd	727	1441	877	1529	1497	951	519	1227	582	1010	861	824
step_sgd	309	1013	326	682	1013	250	766	531	1115	1224	884	1090
step_tween	985	556	1032	499	1021	888	900	930	523	709	469	925
step_tween_chain	727	927	787	536	932	796	906	971	742	893	584	968
tween	1116	1133	852	607	1210	668	815	851	606	895	1103	451
tween_chain	957	1193	698	662	763	623	461	1260	1089	606	1139	519

Honesty - mean Score, every mode x dtype (cols 25-34)

Honesty - mean Score, every mode x dtype (cols 25-34)

	uint16	uint2	uint3	uint32	uint4	uint5	uint6	uint64	uint8	uintptr
MeshBP	819	1022	1153	877	595	750	625	1080	754	580
Mesh[T]	736	304	696	860	561	651	450	973	924	533
Mesh[T]Alt	180	195	179	156	170	151	117	194	165	132
Mesh[T]Chain	737	706	612	699	771	537	586	473	822	723
Mesh[T][S]	388	270	263	406	305	189	322	480	264	265
Mesh[T][S][FP]	211	143	160	162	155	226	132	195	233	129
Mesh[T][S]Sparse	161	176	265	270	192	149	179	193	294	246
Step[T]Alt	500	570	488	589	584	235	429	277	405	619
Step[T][S]	858	714	1071	1358	654	626	632	561	879	596
[T]Alt	477	734	716	420	633	365	624	674	612	464
[T][S]	685	1322	859	911	1505	614	568	735	865	747
[T][S][FP]	601	265	317	495	546	447	345	628	536	472
[T][S][HP]	487	468	388	804	548	657	563	708	515	706
[T][S][HP]Async	383	277	402	391	176	282	279	454	324	358
[T][S][L]	378	632	455	503	333	381	490	428	453	564
[T][S][L]Cache	467	403	247	384	424	350	424	455	499	331
[T][S]Sparse	363	322	281	379	280	182	225	289	336	393
sgd	639	636	644	1193	650	457	967	1373	1537	1235
step_sgd	680	442	738	577	861	1051	539	766	419	485
step_tween	882	851	659	718	534	410	388	894	652	328
step_tween_chain	985	925	517	572	635	582	605	624	920	751
tween	1353	416	377	584	843	266	397	1093	867	1287
tween_chain	985	1019	1060	1326	1161	790	1121	968	924	821

Honesty - mean hard Acc, every mode x dtype (cols 1-12)

Honesty - mean hard Acc, every mode x dtype (cols 1-12)

	bfloat16	binary	complex128	complex64	float16	float32	float64	fp4	fp6	fp8e4m3	fp8e5m2	int
MeshBP	24	25	28	27	25	24	24	26	26	24	25	25
Mesh[T]	27	26	26	23	22	28	25	25	27	26	26	25
Mesh[T]Alt	23	23	22	25	35	28	23	25	21	28	24	27
Mesh[T]Chain	26	23	25	27	23	27	24	23	27	27	24	26
Mesh[T][S]	26	25	28	24	25	27	30	26	25	24	27	26
Mesh[T][S][FP]	26	23	25	27	25	25	26	26	27	26	22	28
Mesh[T][S]Sparse	27	29	22	23	30	28	25	25	26	27	25	24
Step[T]Alt	28	27	29	21	23	22	26	26	28	32	26	24
Step[T][S]	26	33	22	25	23	24	28	25	20	31	25	27
[T]Alt	26	30	23	24	24	28	31	26	23	27	30	25
[T][S]	24	25	25	27	28	25	26	24	26	27	29	24
[T][S][FP]	24	24	26	27	24	26	23	23	27	25	26	24
[T][S][HP]	25	24	25	24	25	27	29	27	19	22	22	21
[T][S][HP]Async	22	24	28	26	24	24	25	25	27	29	26	26
[T][S][L]	25	24	26	24	24	28	27	25	27	23	25	24
[T][S][L]Cache	27	23	27	25	23	25	26	25	27	25	25	23
[T][S]Sparse	23	23	25	23	23	28	25	24	26	26	23	26
sgd	21	22	22	22	24	26	20	21	20	23	23	23
step_sgd	23	26	25	24	24	19	24	22	23	23	24	21
step_tween	25	27	27	24	27	24	28	25	26	23	23	25
step_tween_chain	25	25	24	26	26	26	26	26	24	27	24	25
tween	25	22	25	24	22	25	26	25	26	25	26	28
tween_chain	26	24	25	28	25	28	25	25	27	23	25	27

Honesty - mean hard Acc, every mode x dtype (cols 13-24)

Honesty - mean hard Acc, every mode x dtype (cols 13-24)

	int16	int2	int3	int32	int4	int5	int6	int64	int8	nf4	ternary	uint
MeshBP	25	26	24	26	27	24	22	27	26	29	21	27
Mesh[T]	26	25	26	25	26	26	31	25	26	22	25	22
Mesh[T]Alt	22	23	21	27	27	26	25	22	29	29	25	26
Mesh[T]Chain	28	26	25	24	24	29	28	28	23	25	25	24
Mesh[T][S]	27	24	23	25	27	24	25	23	28	23	23	22
Mesh[T][S][FP]	23	19	24	27	25	21	23	19	25	25	30	24
Mesh[T][S]Sparse	28	27	30	25	25	23	25	27	26	30	27	21
Step[T]Alt	29	22	29	30	24	21	24	27	22	25	25	24
Step[T][S]	28	25	25	25	26	25	28	27	19	29	23	29
[T]Alt	24	23	22	29	30	26	23	26	25	23	30	27
[T][S]	27	25	25	25	21	22	26	26	27	25	27	27
[T][S][FP]	27	24	30	25	23	22	25	28	26	24	25	26
[T][S][HP]	24	30	28	22	21	26	26	23	28	26	28	25
[T][S][HP]Async	25	26	33	32	25	23	24	24	26	22	26	30
[T][S][L]	25	25	27	27	22	26	20	20	23	26	27	21
[T][S][L]Cache	25	28	27	30	25	31	23	25	26	26	27	22
[T][S]Sparse	25	22	22	27	29	24	25	22	23	26	26	21
sgd	17	20	22	24	22	22	22	20	23	21	20	24
step_sgd	21	23	23	21	22	20	28	20	24	23	22	23
step_tween	26	26	27	25	26	23	26	26	23	24	23	26
step_tween_chain	25	23	24	23	26	24	27	27	24	26	27	26
tween	24	26	25	24	22	25	27	23	25	24	25	24
tween_chain	23	26	22	25	25	24	24	26	25	27	27	28

Honesty - mean hard Acc, every mode x dtype (cols 25-34)

Honesty - mean hard Acc, every mode x dtype (cols 25-34)

	uint16	uint2	uint3	uint32	uint4	uint5	uint6	uint64	uint8	uintptr
MeshBP	22	27	25	24	25	24	26	26	23	23
Mesh[T]	27	26	25	26	25	26	25	25	24	24
Mesh[T]Alt	23	28	27	22	28	22	22	26	27	22
Mesh[T]Chain	24	30	25	26	25	26	28	25	25	24
Mesh[T][S]	30	25	23	28	26	27	29	29	27	24
Mesh[T][S][FP]	27	26	24	26	23	28	25	30	23	27
Mesh[T][S]Sparse	21	25	27	31	24	22	26	21	24	26
Step[T]Alt	26	24	23	26	23	21	29	22	25	28
Step[T][S]	25	25	30	33	23	22	24	25	23	27
[T]Alt	24	21	28	24	28	26	25	27	23	15
[T][S]	22	25	21	24	26	27	29	21	26	23
[T][S][FP]	27	22	24	23	24	24	22	28	23	23
[T][S][HP]	20	23	20	28	32	28	25	27	24	29
[T][S][HP]Async	26	23	26	26	21	27	26	28	21	25
[T][S][L]	21	25	28	26	25	25	31	25	23	27
[T][S][L]Cache	26	27	24	23	23	24	29	25	27	23
[T][S]Sparse	22	23	23	25	26	28	26	26	27	27
sgd	24	23	22	21	25	21	21	23	24	24
step_sgd	21	22	22	21	21	22	24	21	22	21
step_tween	26	25	22	27	24	24	26	26	21	23
step_tween_chain	28	26	27	25	26	27	28	25	29	27
tween	23	24	23	23	20	23	25	25	26	25
tween_chain	26	25	25	28	26	23	28	26	23	26

Honesty - mean SoftAcc, every mode x dtype (cols 1-12)

Honesty - mean SoftAcc, every mode x dtype (cols 1-12)

	bfloat16	binary	complex128	complex64	float16	float32	float64	fp4	fp6	fp8e4m3	fp8e5m2	int
MeshBP	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T]	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T]Alt	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T]Chain	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T][S]	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T][S][FP]	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T][S]Sparse	25	25	25	25	25	25	25	25	25	25	25	25
Step[T]Alt	25	25	25	25	25	25	25	25	25	25	25	25
Step[T][S]	25	25	25	25	25	25	25	25	25	25	25	25
[T]Alt	25	25	25	25	25	25	25	25	25	25	25	25
[T][S]	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][FP]	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][HP]	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][HP]Async	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][L]	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][L]Cache	25	25	25	25	25	25	25	25	25	25	25	25
[T][S]Sparse	25	25	25	25	25	25	25	25	25	25	25	25
sgd	21	23	21	20	24	23	21	21	19	22	21	22
step_sgd	21	24	24	23	23	20	24	22	23	24	22	20
step_tween	25	25	25	25	25	25	25	25	25	25	25	25
step_tween_chain	25	25	25	25	25	25	25	25	25	25	25	25
tween	25	23	25	25	24	24	25	25	24	25	25	24
tween_chain	25	25	25	25	25	25	25	25	25	25	25	25

Honesty - mean SoftAcc, every mode x dtype (cols 13-24)

Honesty - mean SoftAcc, every mode x dtype (cols 13-24)

	int16	int2	int3	int32	int4	int5	int6	int64	int8	nf4	ternary	uint
MeshBP	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T]	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T]Alt	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T]Chain	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T][S]	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T][S][FP]	25	25	25	25	25	25	25	25	25	25	25	25
Mesh[T][S]Sparse	25	25	25	25	25	25	25	25	25	25	25	25
Step[T]Alt	25	25	25	25	25	25	25	25	25	25	25	25
Step[T][S]	25	25	25	25	25	25	25	25	25	25	25	25
[T]Alt	25	25	25	25	25	25	25	25	25	25	25	25
[T][S]	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][FP]	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][HP]	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][HP]Async	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][L]	25	25	25	25	25	25	25	25	25	25	25	25
[T][S][L]Cache	25	25	25	25	25	25	25	25	25	25	25	25
[T][S]Sparse	25	25	25	25	25	25	25	25	25	25	25	25
sgd	19	21	23	23	21	21	22	22	22	21	22	21
step_sgd	21	22	22	22	23	23	23	22	24	22	22	24
step_tween	25	25	25	25	25	25	25	25	25	25	25	25
step_tween_chain	25	25	25	25	25	25	25	25	25	25	25	25
tween	24	25	25	25	24	25	24	23	23	25	25	25
tween_chain	25	25	25	25	25	25	25	25	25	25	25	25

Honesty - mean SoftAcc, every mode x dtype (cols 25-34)

Honesty - mean SoftAcc, every mode x dtype (cols 25-34)

	uint16	uint2	uint3	uint32	uint4	uint5	uint6	uint64	uint8	uintptr
MeshBP	25	25	25	25	25	25	25	25	25	25
Mesh[T]	25	25	25	25	25	25	25	25	25	25
Mesh[T]Alt	25	25	25	25	25	25	25	25	25	25
Mesh[T]Chain	25	25	25	25	25	25	25	25	25	25
Mesh[T][S]	25	25	25	25	25	25	25	25	25	25
Mesh[T][S][FP]	25	25	25	25	25	25	25	25	25	25
Mesh[T][S]Sparse	25	25	25	25	25	25	25	25	25	25
Step[T]Alt	25	25	25	25	25	25	25	25	25	25
Step[T][S]	25	25	25	25	25	25	25	25	25	25
[T]Alt	25	25	25	25	25	25	25	25	25	25
[T][S]	25	25	25	25	25	25	25	25	25	25
[T][S][FP]	25	25	25	25	25	25	25	25	25	25
[T][S][HP]	25	25	25	25	25	25	25	25	25	25
[T][S][HP]Async	25	25	25	25	25	25	25	25	25	25
[T][S][L]	25	25	25	25	25	25	25	25	25	25
[T][S][L]Cache	25	25	25	25	25	25	25	25	25	25
[T][S]Sparse	25	25	25	25	25	25	25	25	25	25
sgd	22	23	22	21	23	20	21	23	23	22
step_sgd	20	23	23	22	22	23	23	20	22	21
step_tween	25	25	22	25	25	25	25	25	25	25
step_tween_chain	25	25	25	25	25	25	25	25	25	25
tween	24	24	25	24	25	25	25	25	24	25
tween_chain	25	25	25	25	25	25	25	25	25	25

Honesty - mean Avail, every mode x dtype (cols 1-12)

Honesty - mean Avail, every mode x dtype (cols 1-12)

	bfloat16	binary	complex128	complex64	float16	float32	float64	fp4	fp6	fp8e4m3	fp8e5m2	int
MeshBP	34	35	30	33	31	32	34	28	30	34	31	31
Mesh[T]	30	28	32	31	32	28	33	27	28	31	29	30
Mesh[T]Alt	24	26	23	28	28	26	29	25	22	30	25	27
Mesh[T]Chain	31	33	33	32	31	32	33	35	26	30	34	31
Mesh[T][S]	41	38	35	37	38	36	38	35	34	39	36	34
Mesh[T][S][FP]	32	37	38	34	38	40	35	34	36	32	35	34
Mesh[T][S]Sparse	39	39	43	33	37	39	38	39	36	39	37	38
Step[T]Alt	24	27	23	24	25	29	26	23	21	25	24	25
Step[T][S]	31	30	33	34	32	34	33	33	30	33	33	32
[T]Alt	26	28	28	28	29	27	26	25	27	29	23	27
[T][S]	39	37	35	35	35	41	38	35	35	37	33	38
[T][S][FP]	37	37	36	35	34	38	36	37	37	40	38	36
[T][S][HP]	36	37	35	39	38	37	39	34	36	41	38	37
[T][S][HP]Async	37	37	35	39	37	38	36	36	36	35	37	32
[T][S][L]	33	31	32	36	33	33	32	32	33	31	30	36
[T][S][L]Cache	35	38	35	40	36	38	37	38	34	38	38	35
[T][S]Sparse	38	43	39	37	40	38	38	40	39	39	41	37
sgd	30	33	29	28	31	35	29	30	26	33	31	31
step_sgd	25	30	29	27	30	23	31	25	24	32	28	23
step_tween	25	28	20	29	30	26	29	31	22	29	27	25
step_tween_chain	32	30	25	30	27	27	27	30	27	32	28	26
tween	30	21	30	27	27	30	30	29	26	28	32	26
tween_chain	33	28	31	25	31	33	28	31	28	32	28	30

Honesty - mean Avail, every mode x dtype (cols 13-24)

Honesty - mean Avail, every mode x dtype (cols 13-24)

	int16	int2	int3	int32	int4	int5	int6	int64	int8	nf4	ternary	uint
MeshBP	28	29	32	33	29	28	31	31	32	27	29	34
Mesh[T]	28	32	32	27	31	26	28	34	28	31	29	32
Mesh[T]Alt	25	28	27	29	27	20	25	24	28	24	28	26
Mesh[T]Chain	35	31	32	32	35	27	31	33	34	30	32	30
Mesh[T][S]	35	37	39	36	36	36	34	35	38	33	36	40
Mesh[T][S][FP]	39	38	35	34	36	36	35	34	35	35	40	34
Mesh[T][S]Sparse	35	39	36	40	44	39	39	38	39	38	37	40
Step[T]Alt	23	26	22	26	27	23	24	23	26	25	26	24
Step[T][S]	32	34	33	34	33	32	30	31	32	33	34	33
[T]Alt	26	28	24	28	27	26	25	25	27	25	29	25
[T][S]	37	36	35	35	37	38	35	35	40	36	38	35
[T][S][FP]	39	35	37	37	34	34	36	37	37	34	34	37
[T][S][HP]	37	37	33	37	42	39	35	39	38	36	36	36
[T][S][HP]Async	36	40	38	36	40	35	35	36	36	35	35	36
[T][S][L]	34	33	34	33	33	32	30	32	32	33	33	32
[T][S][L]Cache	35	39	38	35	36	38	35	32	42	36	37	36
[T][S]Sparse	39	39	37	37	38	37	33	38	38	35	39	39
sgd	26	31	31	36	30	30	29	32	29	32	31	32
step_sgd	24	27	21	28	30	23	24	26	32	30	25	31
step_tween	28	26	27	24	29	27	28	27	28	26	25	28
step_tween_chain	28	27	27	25	29	27	27	30	30	28	25	29
tween	27	31	27	29	32	29	27	28	27	26	29	27
tween_chain	33	29	29	28	28	23	22	34	28	27	29	30

Honesty - mean Avail, every mode x dtype (cols 25-34)

Honesty - mean Avail, every mode x dtype (cols 25-34)

	uint16	uint2	uint3	uint32	uint4	uint5	uint6	uint64	uint8	uintptr
MeshBP	31	34	32	31	27	29	26	32	31	29
Mesh[T]	33	25	28	31	28	31	23	34	32	25
Mesh[T]Alt	27	25	26	28	25	25	21	26	25	26
Mesh[T]Chain	35	30	31	32	32	31	26	29	33	33
Mesh[T][S]	38	36	38	37	36	36	36	36	37	35
Mesh[T][S][FP]	37	34	34	30	35	38	34	32	36	31
Mesh[T][S]Sparse	36	37	39	38	37	39	41	37	40	39
Step[T]Alt	26	27	27	24	24	20	24	22	24	22
Step[T][S]	32	32	32	34	31	28	29	30	35	34
[T]Alt	28	28	25	27	27	26	25	26	28	26
[T][S]	34	38	35	34	38	36	35	36	36	37
[T][S][FP]	40	36	37	40	31	37	34	35	39	37
[T][S][HP]	38	38	35	38	39	38	37	37	38	39
[T][S][HP]Async	38	38	35	37	36	35	36	39	37	37
[T][S][L]	33	37	33	33	36	33	31	33	34	35
[T][S][L]Cache	38	37	35	35	37	37	37	37	37	36
[T][S]Sparse	39	39	39	37	39	33	36	37	36	38
sgd	30	33	31	30	31	27	29	36	33	33
step_sgd	22	26	26	26	28	27	24	26	25	25
step_tween	30	29	27	26	26	21	24	28	27	24
step_tween_chain	30	29	25	27	26	27	25	27	26	28
tween	32	26	25	26	30	24	26	31	26	30
tween_chain	29	35	30	27	34	29	29	34	25	27

Mean Score, every mode x arch

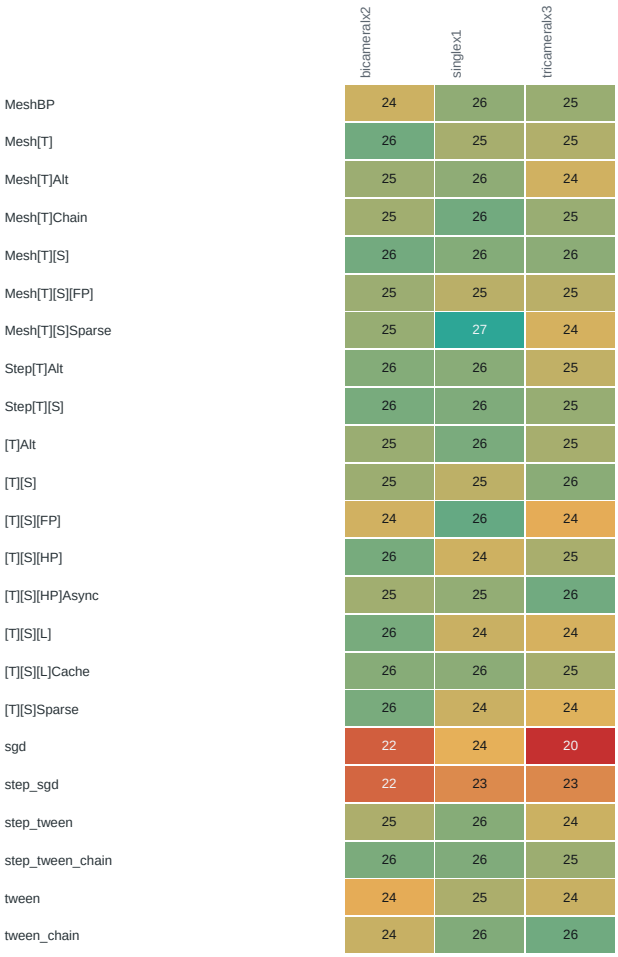
Mean Score, every mode x arch



	bicameralx2	singlex1	tricameralx3
MeshBP	305	2080	218
Mesh[T]	237	1757	176
Mesh[T]Alt	44	472	29
Mesh[T]Chain	244	1696	159
Mesh[T][S]	141	672	99
Mesh[T][S][FP]	101	409	70
Mesh[T][S]Sparse	114	516	84
Step[T]Alt	100	1184	60
Step[T][S]	329	2081	207
[T]Alt	154	1494	101
[T][S]	529	2181	397
[T][S][FP]	179	1115	152
[T][S][HP]	304	1357	208
[T][S][HP]Async	173	801	121
[T][S][L]	186	1024	130
[T][S][L]Cache	197	937	133
[T][S]Sparse	177	689	124
sgd	334	2403	227
step_sgd	209	1842	167
step_tween	243	1778	147
step_tween_chain	201	1995	168
tween	288	1939	196
tween_chain	296	2148	228

Mean hard Acc, every mode x arch

Mean hard Acc, every mode x arch



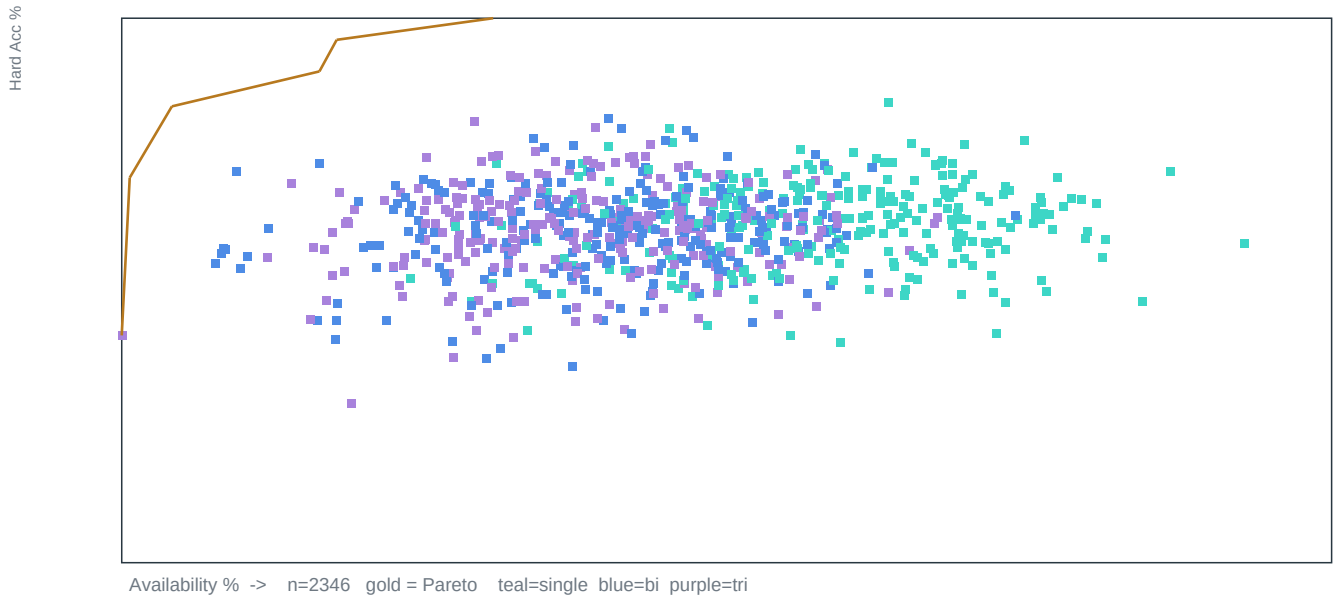
	bicameralx2	singlex1	tricameralx3
MeshBP	24	26	25
Mesh[T]	26	25	25
Mesh[T]Alt	25	26	24
Mesh[T]Chain	25	26	25
Mesh[T][S]	26	26	26
Mesh[T][S][FP]	25	25	25
Mesh[T][S]Sparse	25	27	24
Step[T]Alt	26	26	25
Step[T][S]	26	26	25
[T]Alt	25	26	25
[T][S]	25	25	26
[T][S][FP]	24	26	24
[T][S][HP]	26	24	25
[T][S][HP]Async	25	25	26
[T][S][L]	26	24	24
[T][S][L]Cache	26	26	25
[T][S]Sparse	26	24	24
sgd	22	24	20
step_sgd	22	23	23
step_tween	25	26	24
step_tween_chain	26	26	25
tween	24	25	24
tween_chain	24	26	26

Mean Avail, every mode x arch

Mean Avail, every mode x arch

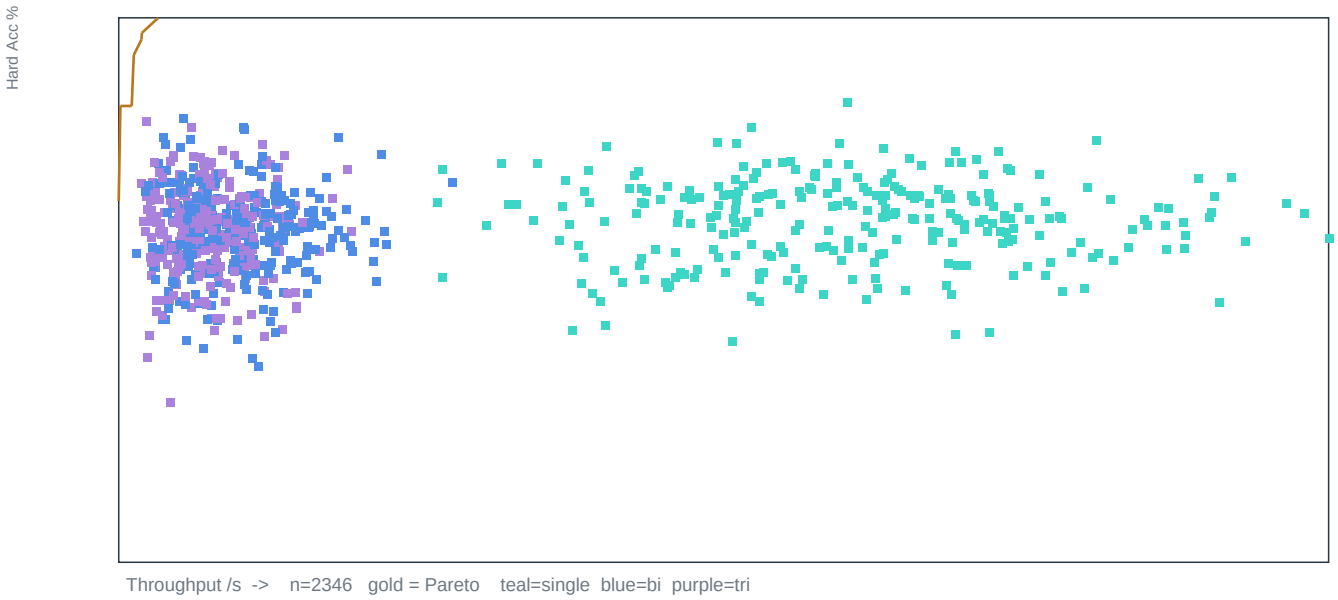
	bicamerarx2	singlex1	tricamerarx3
MeshBP	29	36	27
Mesh[T]	27	34	27
Mesh[T]Alt	23	33	21
Mesh[T]Chain	31	36	28
Mesh[T][S]	37	37	35
Mesh[T][S][FP]	36	35	35
Mesh[T][S]Sparse	38	38	39
Step[T]Alt	21	33	19
Step[T][S]	31	37	29
[T]Alt	24	33	23
[T][S]	37	37	35
[T][S][FP]	35	38	36
[T][S][HP]	37	39	36
[T][S][HP]Async	37	37	35
[T][S][L]	32	35	32
[T][S][L]Cache	37	38	35
[T][S]Sparse	39	37	38
sgd	29	35	28
step_sgd	24	32	24
step_tween	25	31	23
step_tween_chain	24	34	25
tween	27	32	25
tween_chain	27	35	27

Pillars - Availability vs hard Acc

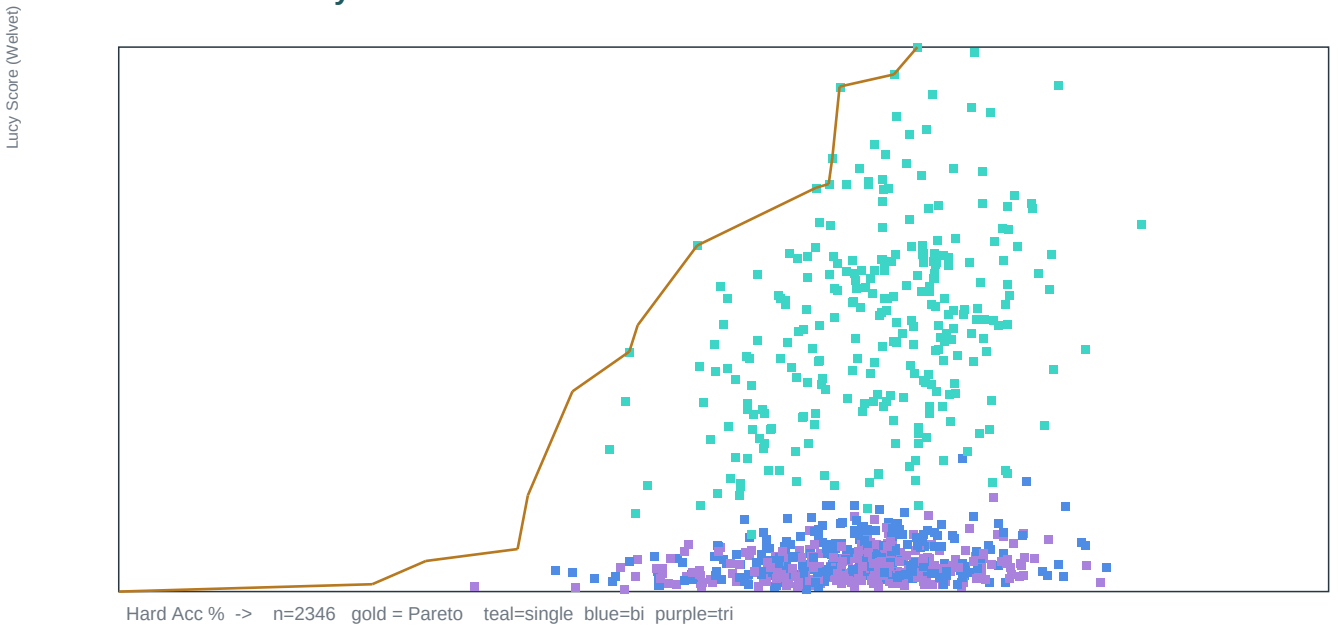


Pillars - Throughput vs hard Acc

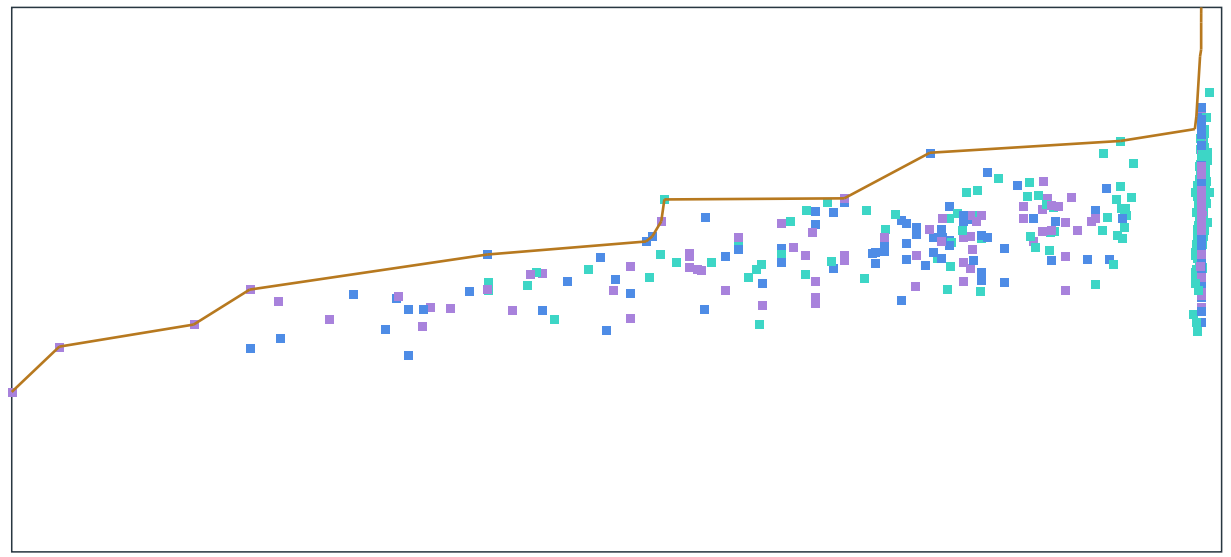
Pillars - Throughput vs hard Acc



Pareto - hard Acc vs Lucy Score

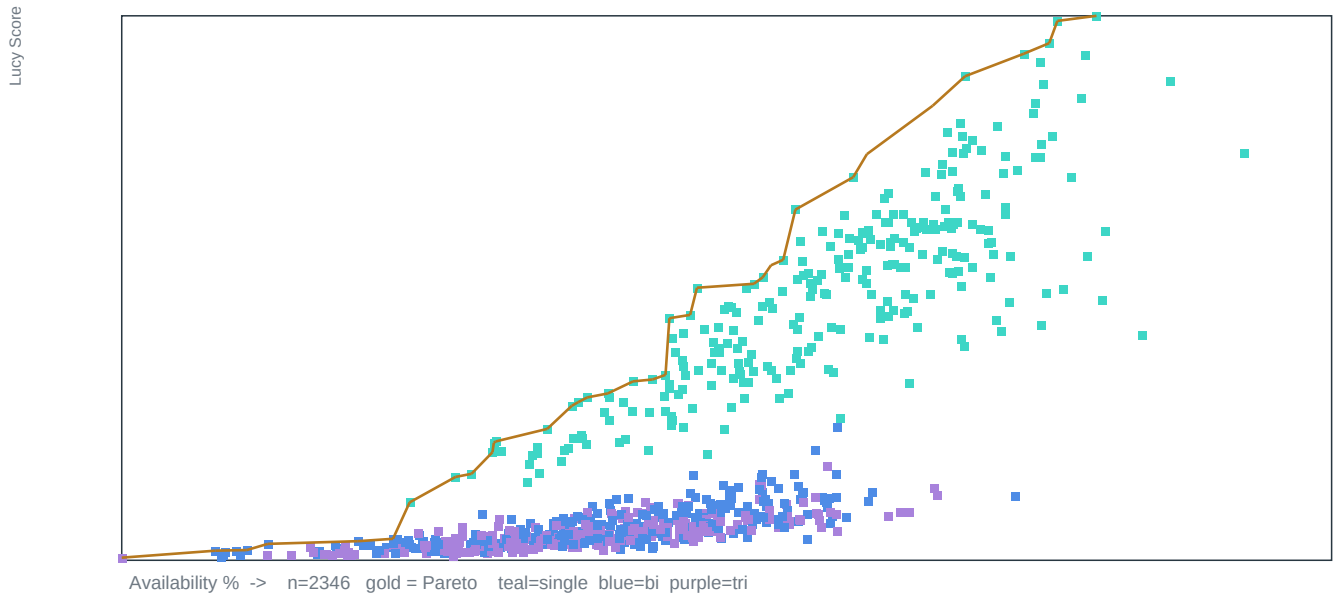


SoftAcc (serve-confidence) vs hard Acc

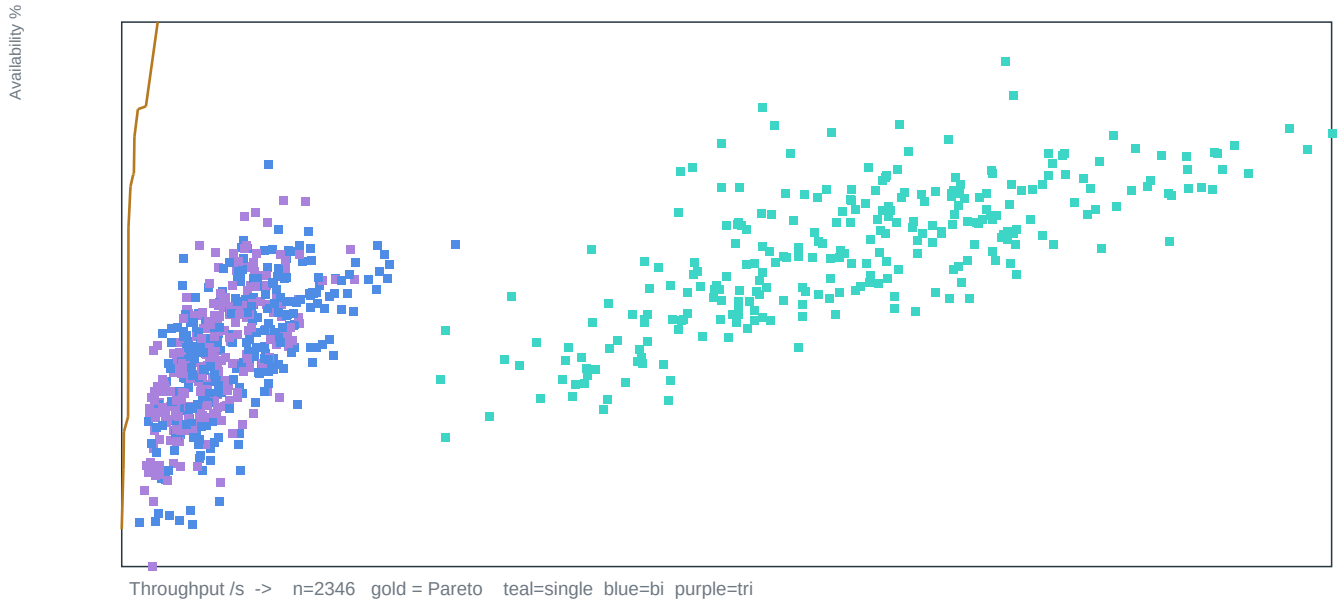



SoftAcc % -> n=2346 gold = Pareto teal=single blue=bi purple=tri
Hard Acc %

Avail vs Lucy Score (duty clock)



Pillars - Throughput vs Availability



AdaptPct vs hard Acc



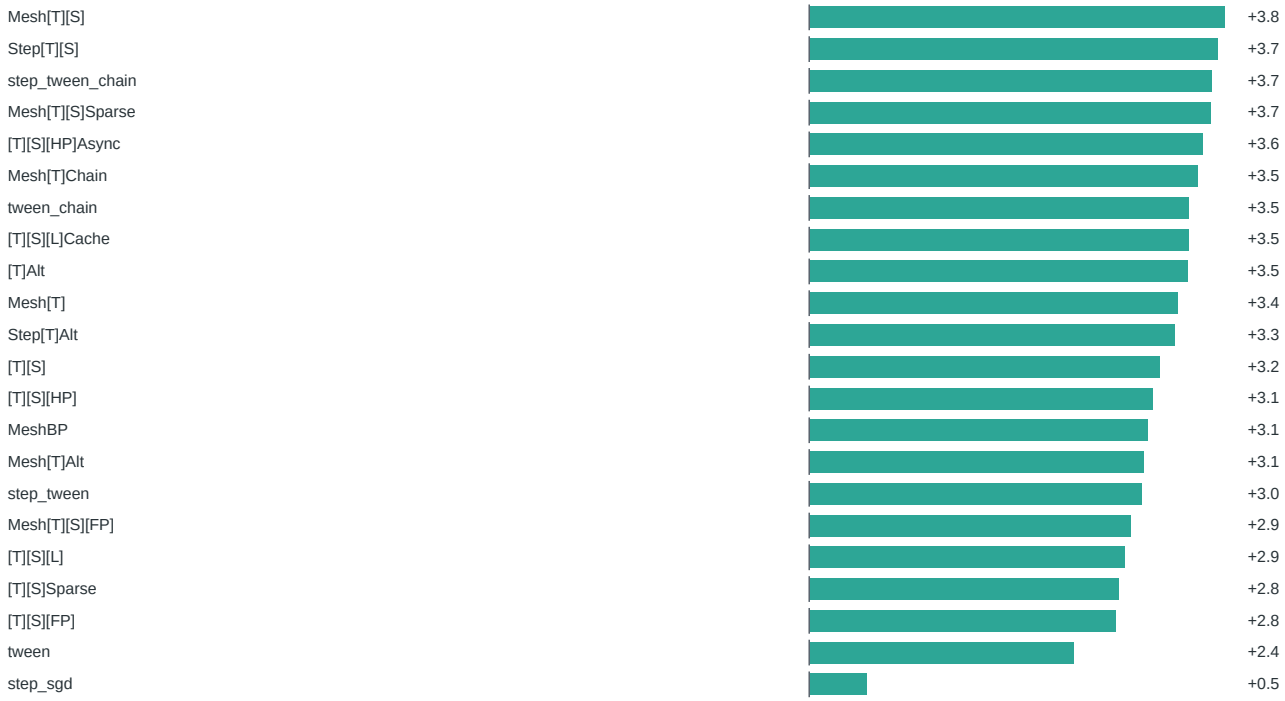

AdaptPct % -> n=2346 gold = Pareto teal=single blue=bi purple=tri
Hard Acc %

vs sgd - matched dtype x format x arch

AccDelta is the honest column. ScoreDelta is usually Availability (duty clock), not a better chain rule. Acc win = AccDelta > 0.5. Score win = ScoreDelta > 1. Baseline is discovered from the board, not a frozen StepBP list.

mode	n	AccD	Acc win%	SoftD	AvailD	ThruD	ScoreD	Score win%
Mesh[T][S]	102	+3.8	74	+3.3	+5.7	-8966	-683.8	6
Step[T][S]	102	+3.7	69	+3.3	+1.4	-2514	-115.5	43
step_tween_chain	102	+3.7	80	+3.3	-3.2	-2646	-199.7	29
Mesh[T][S]Sparse	102	+3.7	66	+3.3	+7.5	-9771	-750.1	4
[T][S][HP]Async	102	+3.6	69	+3.3	+5.7	-8258	-623.1	13
Mesh[T]Chain	102	+3.5	73	+3.3	+0.7	-4375	-288.6	30
tween_chain	102	+3.5	76	+3.3	-1.5	-1820	-97.1	40
[T][S][L]Cache	102	+3.5	73	+3.3	+5.8	-7735	-565.6	15
[T]Alt	102	+3.5	65	+3.3	-4.2	-5081	-405.1	18
Mesh[T]	102	+3.4	78	+3.3	-1.3	-3448	-264.8	29
Step[T]Alt	102	+3.3	69	+3.3	-6.4	-6480	-539.8	6
[T][S]	102	+3.2	75	+3.3	+5.5	-882	+47.9	75
[T][S][HP]	102	+3.1	74	+3.3	+6.5	-5540	-365.2	35
MeshBP	102	+3.1	71	+3.3	-0.0	-2246	-120.2	45
Mesh[T]Alt	102	+3.1	64	+3.3	-5.0	-9850	-806.2	0
step_tween	102	+3.0	74	+3.2	-4.2	-2914	-265.0	31
Mesh[T][S][FP]	102	+2.9	65	+3.3	+4.5	-9914	-794.6	3
[T][S][L]	102	+2.9	71	+3.3	+2.2	-6860	-541.3	16
[T][S]Sparse	102	+2.8	63	+3.3	+7.1	-8563	-657.9	12
[T][S][FP]	102	+2.8	64	+3.3	+5.6	-7145	-506.0	22
tween	102	+2.4	67	+2.9	-2.8	-2038	-180.2	36
step_sgd	102	+0.5	45	+0.6	-4.3	-1938	-248.6	29

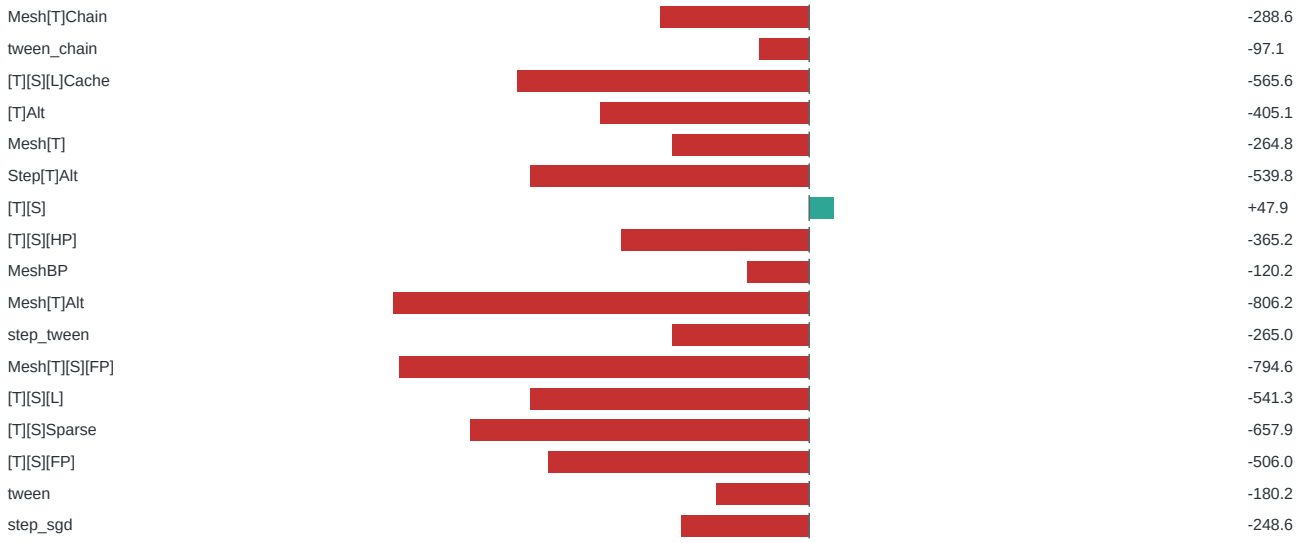
mean AccD vs sgd



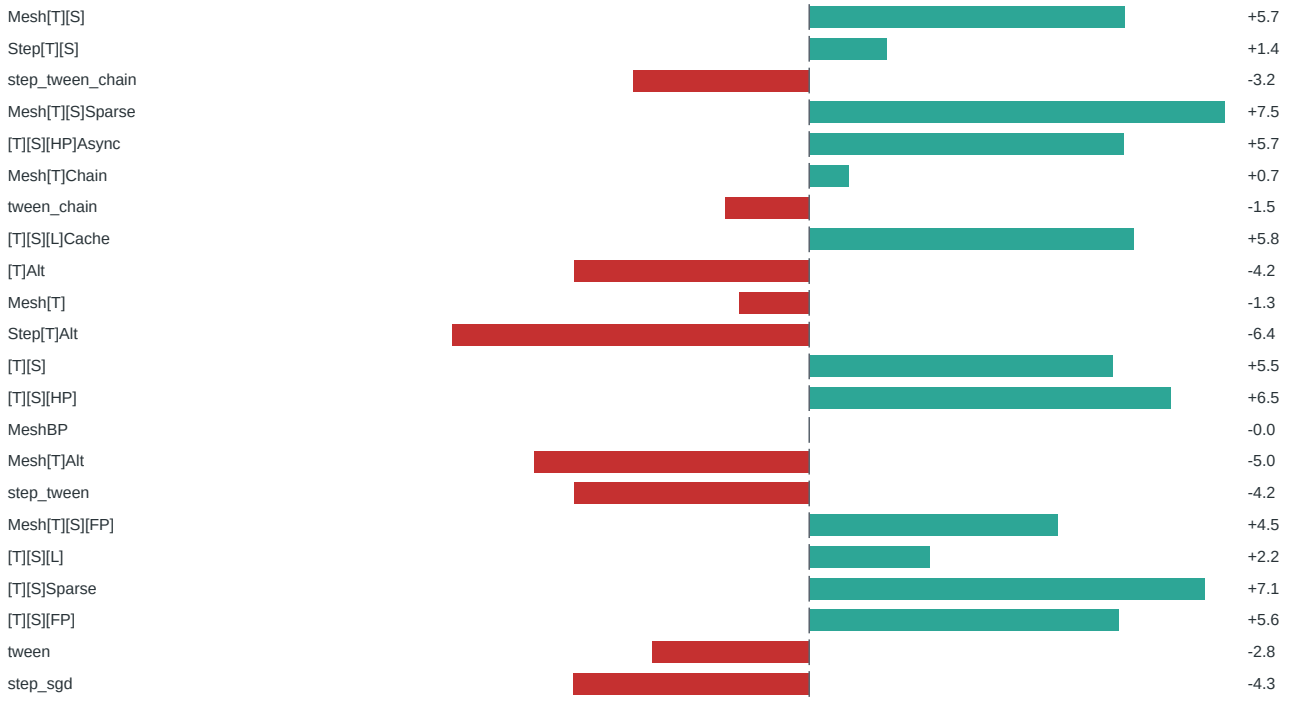
mean ScoreD vs sgd (duty clock)



mean ScoreD vs sgd (duty clock)



mean AvailD vs sgd



AccD vs sgd, every mode x dtype (cols 1-12)

AccD vs sgd, every mode x dtype (cols 1-12)

	bfloat16	binary	complex128	complex64	float16	float32	float64	fp4	fp6	fp8e4m3	fp8e5m2	int
MeshBP	+3	+3	+6	+5	+1	-2	+3	+5	+6	+1	+2	+2
Mesh[T]	+5	+4	+4	+1	-2	+2	+5	+4	+7	+3	+4	+2
Mesh[T]Alt	+2	+2	+0	+3	+11	+3	+3	+4	+1	+5	+1	+4
Mesh[T]Chain	+5	+1	+3	+5	-1	+1	+3	+2	+8	+4	+1	+3
Mesh[T][S]	+5	+3	+6	+2	+1	+2	+10	+5	+6	+1	+4	+3
Mesh[T][S][FP]	+4	+2	+3	+5	+1	-0	+5	+5	+7	+3	-1	+5
Mesh[T][S]Sparse	+6	+7	+0	+1	+6	+3	+4	+4	+7	+4	+2	+2
Step[T]Alt	+7	+5	+8	-1	-1	-4	+6	+5	+8	+9	+3	+1
Step[T][S]	+4	+11	+1	+3	-1	-1	+8	+4	-0	+8	+2	+5
[T]Alt	+5	+8	+1	+2	+0	+3	+11	+5	+4	+4	+7	+2
[T][S]	+3	+4	+3	+5	+5	-1	+5	+3	+6	+4	+6	+2
[T][S][FP]	+2	+2	+5	+5	+1	+1	+2	+2	+7	+2	+3	+1
[T][S][HP]	+3	+3	+3	+2	+2	+1	+9	+6	-0	-1	-1	-2
[T][S][HP]Async	+0	+3	+6	+4	+0	-1	+5	+4	+7	+6	+3	+3
[T][S][L]	+3	+2	+4	+2	-0	+2	+7	+4	+7	+0	+3	+2
[T][S][L]Cache	+5	+2	+5	+3	-1	-1	+5	+4	+7	+2	+2	+1
[T][S]Sparse	+1	+1	+4	+2	-1	+3	+4	+3	+6	+3	+1	+3
step_sgd	+1	+4	+3	+2	-0	-6	+4	+1	+3	-0	+2	-2
step_tween	+4	+6	+6	+2	+3	-1	+7	+4	+6	+1	+0	+2
step_tween_chain	+4	+3	+2	+4	+2	+1	+6	+5	+5	+4	+1	+2
tween	+4	+0	+3	+2	-2	-0	+6	+4	+6	+2	+3	+5
tween_chain	+4	+3	+3	+6	+1	+2	+5	+4	+7	+0	+3	+4

AccD vs sgd, every mode x dtype (cols 13-24)

AccD vs sgd, every mode x dtype (cols 13-24)

	int16	int2	int3	int32	int4	int5	int6	int64	int8	nf4	ternary	uint
MeshBP	+8	+7	+2	+2	+5	+2	+0	+7	+3	+8	+1	+3
Mesh[T]	+9	+5	+4	+1	+4	+5	+9	+4	+3	+1	+5	-2
Mesh[T]Alt	+5	+3	-1	+2	+5	+4	+3	+2	+6	+8	+5	+2
Mesh[T]Chain	+11	+7	+3	+0	+2	+7	+6	+8	+0	+4	+5	+0
Mesh[T][S]	+10	+4	+1	+1	+5	+3	+3	+3	+5	+2	+3	-1
Mesh[T][S][FP]	+6	-1	+2	+3	+3	-0	+1	-2	+2	+4	+10	+0
Mesh[T][S]Sparse	+11	+7	+8	+1	+3	+1	+3	+6	+4	+9	+7	-3
Step[T]Alt	+12	+3	+7	+6	+2	-0	+2	+7	-1	+4	+5	+0
Step[T][S]	+11	+6	+3	+1	+4	+4	+7	+7	-4	+8	+3	+6
[T]Alt	+7	+4	+0	+5	+7	+5	+1	+5	+3	+2	+10	+3
[T][S]	+10	+5	+3	+1	-1	+1	+5	+5	+4	+4	+7	+3
[T][S][FP]	+10	+5	+8	+1	+1	+1	+3	+7	+3	+3	+5	+2
[T][S][HP]	+7	+10	+6	-2	-1	+4	+4	+3	+6	+5	+8	+1
[T][S][HP]Async	+8	+6	+11	+8	+3	+2	+2	+3	+3	+1	+6	+6
[T][S][L]	+8	+5	+5	+3	-1	+5	-2	-0	-0	+5	+7	-3
[T][S][L]Cache	+8	+8	+5	+6	+3	+9	+1	+4	+4	+5	+7	-2
[T][S]Sparse	+8	+2	+0	+3	+7	+3	+3	+2	+0	+5	+6	-3
step_sgd	+4	+3	+1	-3	+0	-2	+6	-0	+2	+2	+2	-1
step_tween	+9	+6	+5	+1	+4	+2	+4	+5	+0	+3	+3	+2
step_tween_chain	+8	+3	+2	-1	+4	+2	+6	+7	+1	+5	+7	+2
tween	+7	+6	+4	-0	-0	+3	+5	+2	+3	+3	+5	+1
tween_chain	+6	+7	-0	+1	+3	+2	+2	+6	+2	+6	+7	+4

AccD vs sgd, every mode x dtype (cols 25-34)

AccD vs sgd, every mode x dtype (cols 25-34)

	uint16	uint2	uint3	uint32	uint4	uint5	uint6	uint64	uint8	uintptr
MeshBP	-2	+4	+4	+3	+1	+3	+5	+3	-1	-0
Mesh[T]	+2	+2	+4	+5	+0	+6	+4	+2	+0	+1
Mesh[T]Alt	-1	+5	+6	+1	+3	+1	+1	+3	+3	-2
Mesh[T]Chain	+0	+6	+4	+6	+0	+5	+7	+2	+1	+1
Mesh[T][S]	+6	+2	+2	+7	+2	+6	+8	+6	+3	+0
Mesh[T][S][FP]	+3	+3	+3	+5	-2	+7	+4	+7	-1	+4
Mesh[T][S]Sparse	-3	+1	+5	+11	-0	+1	+5	-2	+0	+2
Step[T]Alt	+2	+1	+1	+5	-1	+1	+8	-1	+1	+4
Step[T][S]	+1	+1	+8	+13	-2	+1	+3	+2	-1	+4
[T]Alt	-0	-2	+7	+3	+4	+6	+4	+4	-1	-9
[T][S]	-2	+2	-1	+3	+2	+7	+9	-2	+2	-1
[T][S][FP]	+3	-2	+3	+2	-1	+3	+1	+5	-1	-0
[T][S][HP]	-4	+0	-2	+7	+7	+7	+5	+5	+0	+6
[T][S][HP]Async	+2	-1	+4	+6	-4	+6	+5	+5	-3	+1
[T][S][L]	-3	+2	+6	+5	+0	+4	+10	+2	-1	+4
[T][S][L]Cache	+2	+4	+3	+3	-1	+3	+8	+2	+3	-1
[T][S]Sparse	-2	+0	+2	+4	+1	+7	+6	+3	+3	+3
step_sgd	-3	-1	+1	+0	-3	+1	+4	-2	-2	-2
step_tween	+2	+2	+1	+6	-1	+4	+5	+3	-3	-0
step_tween_chain	+4	+3	+5	+4	+1	+6	+8	+2	+5	+3
tween	-1	+1	+2	+2	-4	+3	+5	+2	+2	+1
tween_chain	+2	+2	+4	+7	+2	+2	+7	+3	-1	+3

ScoreD vs sgd, every mode x dtype (cols 1-12)

ScoreD vs sgd, every mode x dtype (cols 1-12)

	bfloat16	binary	complex128	complex64	float16	float32	float64	fp4	fp6	fp8e4m3	fp8e5m2	int
MeshBP	-277	-150	+107	+71	+208	-721	-136	-367	+343	-446	+243	+139
Mesh[T]	-694	-995	-30	-90	-211	-650	-92	-514	+79	-269	-303	+50
Mesh[T]Alt	-1214	-1390	-616	-627	-467	-1299	-939	-920	-372	-1010	-581	-419
Mesh[T]Chain	-619	-817	+6	-327	-145	-514	-459	-250	-193	-685	+120	+27
Mesh[T][S]	-978	-1279	-432	-614	-438	-1150	-674	-735	-245	-932	-476	-423
Mesh[T][S][FP]	-1105	-1332	-570	-646	-528	-1266	-949	-827	-288	-1098	-615	-437
Mesh[T][S]Sparse	-1095	-1253	-491	-639	-507	-1193	-903	-811	-254	-1099	-551	-404
Step[T]Alt	-856	-1167	-395	-474	-403	-1097	-658	-633	+28	-710	-329	-213
Step[T][S]	-220	-502	+37	-104	+26	-593	-158	-34	-1	-36	+401	+122
[T]Alt	-855	-907	-294	-279	+118	-737	-466	-531	-25	-963	-126	+249
[T][S]	-368	-307	-60	-17	+144	+55	+393	+103	+437	+67	+419	+739
[T][S][FP]	-884	-1006	-158	-281	-358	-907	-674	-590	-68	-741	-127	-264
[T][S][HP]	-604	-904	-95	+40	-90	-716	-269	-516	-138	-713	-224	-141
[T][S][HP]Async	-1067	-1057	-359	-437	-415	-1112	-769	-716	-207	-896	-279	-408
[T][S][L]	-845	-1228	-369	-412	-413	-927	-540	-602	-67	-938	-292	-247
[T][S][L]Cache	-1005	-1060	-340	-460	-371	-1147	-661	-528	-173	-819	-238	-270
[T][S]Sparse	-1053	-1061	-377	-542	-412	-1079	-781	-677	-162	-915	-355	-322
step_sgd	-638	-459	-65	+20	+199	-945	-87	-623	+30	-67	+33	-236
step_tween	-903	-486	-300	+46	+212	-1017	-138	-66	+131	-543	-167	-156
step_tween_chain	-547	-615	-180	+258	+345	-712	-325	-18	+148	-334	-229	-94
tween	-186	-1298	+149	+56	-195	-623	-551	-225	+120	-456	+483	+185
tween_chain	-720	-943	+215	-203	+258	-440	-121	-116	+303	-470	-317	+482

ScoreD vs sgd, every mode x dtype (cols 13-24)

ScoreD vs sgd, every mode x dtype (cols 13-24)

	int16	int2	int3	int32	int4	int5	int6	int64	int8	nf4	ternary	uint
MeshBP	+87	-800	+293	-499	-457	-217	+148	-300	+296	-257	-379	+61
Mesh[T]	+36	-547	-160	-944	-767	-78	+383	-257	-12	-345	+211	-163
Mesh[T]Alt	-591	-1221	-734	-1337	-1278	-857	-339	-1068	-291	-844	-696	-605
Mesh[T]Chain	+72	-621	-264	-988	-378	-464	+429	-406	+256	-539	-171	-217
Mesh[T][S]	-413	-1126	-633	-1244	-1091	-738	-376	-1018	-145	-802	-553	-554
Mesh[T][S][FP]	-540	-1260	-733	-1324	-1266	-781	-396	-1084	-379	-830	-526	-653
Mesh[T][S]Sparse	-570	-1222	-607	-1250	-1216	-725	-317	-972	-244	-764	-593	-620
Step[T]Alt	-312	-943	-575	-1117	-829	-558	-209	-796	-196	-460	-340	-478
Step[T][S]	+110	-426	+19	-660	-596	-102	+241	-216	+104	-172	-9	+222
[T]Alt	-280	-833	-585	-715	-608	-502	-52	-699	-108	-547	-85	-328
[T][S]	+578	-429	+192	-337	-414	+15	+278	-412	+1042	-117	+255	-107
[T][S][FP]	-89	-1003	-411	-1104	-1108	-579	-152	-662	-34	-680	-351	-290
[T][S][HP]	-285	-637	-407	-1039	-812	-509	+19	-449	+257	-452	+83	-332
[T][S][HP]Async	-443	-954	-395	-1037	-1049	-717	-255	-881	-185	-751	-396	-393
[T][S][L]	-242	-918	-419	-1024	-1108	-524	-254	-904	-87	-535	-328	-469
[T][S][L]Cache	-382	-908	-477	-1062	-1071	-405	-286	-839	+68	-587	-329	-534
[T][S]Sparse	-436	-1134	-600	-1155	-1116	-708	-364	-937	-266	-675	-433	-528
step_sgd	-417	-428	-551	-847	-483	-702	+247	-696	+534	+214	+23	+266
step_tween	+258	-885	+155	-1030	-476	-64	+380	-297	-59	-300	-392	+101
step_tween_chain	+0	-514	-91	-993	-565	-155	+387	-256	+160	-116	-277	+144
tween	+389	-308	-25	-922	-287	-284	+296	-375	+24	-115	+242	-373
tween_chain	+231	-248	-179	-868	-734	-328	-58	+33	+507	-403	+278	-305

ScoreD vs sgd, every mode x dtype (cols 25-34)

ScoreD vs sgd, every mode x dtype (cols 25-34)

	uint16	uint2	uint3	uint32	uint4	uint5	uint6	uint64	uint8	uintptr
MeshBP	+181	+386	+510	-316	-55	+293	-342	-293	-783	-655
Mesh[T]	+97	-332	+52	-333	-89	+194	-517	-400	-613	-702
Mesh[T]Alt	-459	-441	-465	-1037	-480	-307	-850	-1179	-1372	-1103
Mesh[T]Chain	+98	+70	-32	-494	+121	+79	-381	-900	-714	-511
Mesh[T][S]	-251	-366	-381	-788	-345	-269	-645	-893	-1273	-970
Mesh[T][S][FP]	-428	-493	-484	-1031	-495	-231	-835	-1178	-1304	-1106
Mesh[T][S]Sparse	-477	-460	-378	-923	-458	-309	-788	-1181	-1243	-988
Step[T]Alt	-138	-66	-156	-604	-66	-222	-538	-1096	-1132	-616
Step[T][S]	+220	+78	+427	+165	+4	+169	-335	-812	-658	-639
[T]Alt	-162	+98	+72	-774	-17	-93	-343	-699	-925	-771
[T][S]	+46	+686	+215	-283	+855	+157	-399	-638	-672	-488
[T][S][FP]	-38	-371	-327	-699	-104	-11	-622	-745	-1001	-763
[T][S][HP]	-152	-168	-256	-389	-102	+200	-404	-665	-1022	-529
[T][S][HP]Async	-255	-359	-242	-803	-474	-175	-688	-919	-1213	-877
[T][S][L]	-261	-4	-188	-690	-317	-76	-477	-945	-1084	-671
[T][S][L]Cache	-172	-233	-396	-809	-226	-107	-543	-918	-1038	-903
[T][S]Sparse	-276	-314	-362	-814	-370	-275	-742	-1084	-1201	-842
step_sgd	+41	-194	+94	-617	+211	+594	-428	-607	-1118	-750
step_tween	+244	+215	+16	-475	-116	-48	-579	-479	-885	-907
step_tween_chain	+346	+289	-127	-621	-15	+125	-362	-749	-617	-484
tween	+714	-220	-267	-609	+193	-191	-571	-280	-669	+52
tween_chain	+346	+383	+417	+133	+511	+332	+154	-405	-613	-414

AvailD vs sgd, every mode x dtype (cols 1-12)

AvailD vs sgd, every mode x dtype (cols 1-12)

	bfloat16	binary	complex128	complex64	float16	float32	float64	fp4	fp6	fp8e4m3	fp8e5m2	int
MeshBP	+4	+3	+2	+4	+1	-3	+5	-1	+4	+0	-1	-0
Mesh[T]	+0	-4	+4	+3	+1	-7	+4	-3	+1	-3	-2	-0
Mesh[T]Alt	-5	-6	-6	-1	-2	-9	-0	-5	-4	-4	-6	-3
Mesh[T]Chain	+1	+0	+5	+3	+0	-3	+4	+5	-1	-3	+2	-0
Mesh[T][S]	+11	+5	+7	+9	+8	+2	+8	+6	+8	+5	+5	+3
Mesh[T][S][FP]	+2	+5	+9	+6	+8	+6	+6	+4	+10	-1	+4	+3
Mesh[T][S]Sparse	+9	+6	+14	+5	+7	+4	+9	+9	+10	+5	+6	+8
Step[T]Alt	-6	-5	-5	-5	-6	-6	-4	-7	-5	-9	-8	-6
Step[T][S]	+2	-3	+4	+6	+2	-1	+4	+3	+4	-0	+2	+1
[T]Alt	-4	-4	-1	-1	-2	-7	-3	-5	+1	-4	-8	-4
[T][S]	+9	+5	+7	+7	+4	+7	+8	+6	+9	+4	+1	+7
[T][S][FP]	+7	+4	+7	+7	+4	+3	+7	+7	+11	+6	+7	+5
[T][S][HP]	+7	+5	+7	+11	+7	+2	+10	+4	+10	+7	+7	+6
[T][S][HP]Async	+7	+5	+6	+11	+6	+3	+7	+7	+10	+1	+6	+1
[T][S][L]	+4	-1	+3	+7	+3	-1	+2	+2	+7	-2	-1	+5
[T][S][L]Cache	+6	+6	+7	+11	+5	+3	+7	+8	+8	+4	+7	+4
[T][S]Sparse	+9	+10	+10	+9	+9	+3	+9	+10	+13	+5	+10	+6
step_sgd	-5	-3	+0	-1	-0	-12	+2	-4	-2	-1	-3	-7
step_tween	-5	-5	-8	+0	-0	-9	-0	+2	-4	-5	-4	-6
step_tween_chain	+2	-2	-3	+2	-4	-8	-3	-0	+1	-2	-4	-4
tween	+0	-11	+1	-1	-4	-5	+0	-1	-0	-5	+1	-4
tween_chain	+3	-5	+3	-3	+0	-1	-1	+1	+2	-2	-3	-1

AvailD vs sgd, every mode x dtype (cols 13-24)

AvailD vs sgd, every mode x dtype (cols 13-24)

	int16	int2	int3	int32	int4	int5	int6	int64	int8	nf4	ternary	uint
MeshBP	+2	-2	+0	-3	-1	-2	+2	-1	+3	-5	-2	+2
Mesh[T]	+2	+1	+0	-9	+1	-4	-1	+2	-1	-1	-2	+0
Mesh[T]Alt	-1	-2	-5	-6	-2	-10	-4	-8	-1	-8	-3	-6
Mesh[T]Chain	+9	-0	+1	-4	+5	-3	+2	+1	+6	-2	+1	-2
Mesh[T][S]	+9	+7	+8	-0	+6	+6	+5	+3	+9	+1	+5	+8
Mesh[T][S][FP]	+13	+8	+3	-2	+7	+7	+6	+2	+6	+3	+9	+2
Mesh[T][S]Sparse	+9	+8	+5	+4	+14	+9	+10	+5	+11	+6	+6	+8
Step[T]Alt	-3	-5	-10	-10	-2	-7	-5	-9	-2	-7	-6	-8
Step[T][S]	+6	+4	+2	-2	+3	+2	+1	-1	+4	+1	+3	+1
[T]Alt	+0	-3	-7	-7	-3	-3	-4	-7	-2	-6	-3	-7
[T][S]	+11	+5	+3	-0	+7	+8	+6	+3	+11	+4	+7	+3
[T][S][FP]	+13	+4	+5	+1	+4	+4	+7	+5	+8	+2	+3	+5
[T][S][HP]	+11	+7	+2	+1	+12	+9	+6	+7	+9	+4	+5	+4
[T][S][HP]Async	+10	+10	+7	+0	+10	+6	+6	+3	+7	+3	+4	+4
[T][S][L]	+8	+2	+3	-3	+3	+2	+1	-1	+4	+1	+2	-0
[T][S][L]Cache	+9	+8	+6	-0	+6	+8	+6	+0	+13	+4	+6	+4
[T][S]Sparse	+13	+9	+5	+1	+8	+7	+4	+6	+9	+3	+8	+7
step_sgd	-2	-3	-10	-8	-0	-7	-5	-7	+3	-2	-6	-1
step_tween	+2	-5	-4	-12	-1	-3	-1	-5	-0	-6	-7	-4
step_tween_chain	+2	-4	-4	-11	-1	-3	-2	-3	+1	-4	-6	-3
tween	+1	+1	-4	-7	+2	-1	-2	-4	-1	-6	-2	-6
tween_chain	+7	-1	-3	-8	-2	-7	-7	+2	-1	-5	-2	-2

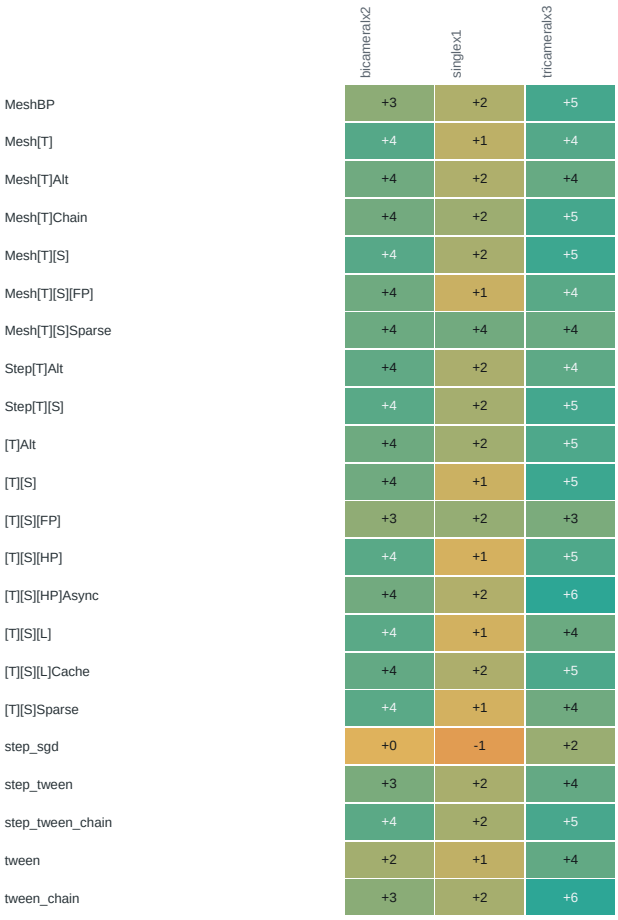
AvailD vs sgd, every mode x dtype (cols 25-34)

AvailD vs sgd, every mode x dtype (cols 25-34)

	uint16	uint2	uint3	uint32	uint4	uint5	uint6	uint64	uint8	uintptr
MeshBP	+1	+1	+1	+1	-4	+2	-3	-5	-2	-4
Mesh[T]	+3	-8	-3	+1	-3	+3	-6	-3	-1	-8
Mesh[T]Alt	-3	-8	-5	-2	-6	-2	-8	-11	-8	-7
Mesh[T]Chain	+4	-2	-0	+2	+1	+4	-3	-8	+0	-0
Mesh[T][S]	+8	+3	+7	+7	+6	+9	+7	-0	+3	+3
Mesh[T][S][FP]	+7	+1	+3	-1	+4	+11	+5	-4	+3	-1
Mesh[T][S]Sparse	+6	+5	+8	+8	+6	+12	+12	+0	+7	+6
Step[T]Alt	-5	-6	-4	-6	-7	-7	-5	-15	-9	-10
Step[T][S]	+2	-0	+1	+4	+0	+1	-1	-7	+2	+1
[T]Alt	-3	-5	-6	-4	-4	-1	-4	-10	-5	-7
[T][S]	+4	+5	+4	+4	+7	+9	+5	-0	+3	+4
[T][S][FP]	+10	+3	+6	+10	+0	+10	+5	-1	+6	+4
[T][S][HP]	+8	+5	+4	+8	+8	+10	+8	+1	+5	+6
[T][S][HP]Async	+7	+5	+4	+7	+5	+7	+7	+3	+4	+4
[T][S][L]	+3	+4	+2	+3	+5	+5	+2	-3	+1	+2
[T][S][L]Cache	+8	+5	+3	+5	+6	+9	+8	+0	+4	+3
[T][S]Sparse	+9	+6	+8	+7	+8	+6	+6	+1	+3	+6
step_sgd	-8	-7	-5	-4	-3	-1	-5	-10	-8	-7
step_tween	-1	-4	-5	-4	-5	-6	-6	-8	-6	-9
step_tween_chain	-0	-4	-7	-3	-5	-0	-4	-9	-7	-5
tween	+2	-7	-6	-4	-1	-4	-3	-6	-7	-2
tween_chain	-1	+2	-1	-3	+3	+1	-0	-2	-9	-6

AccD vs sgd, every mode x arch

AccD vs sgd, every mode x arch



Family collapse - Step* vs non-Step

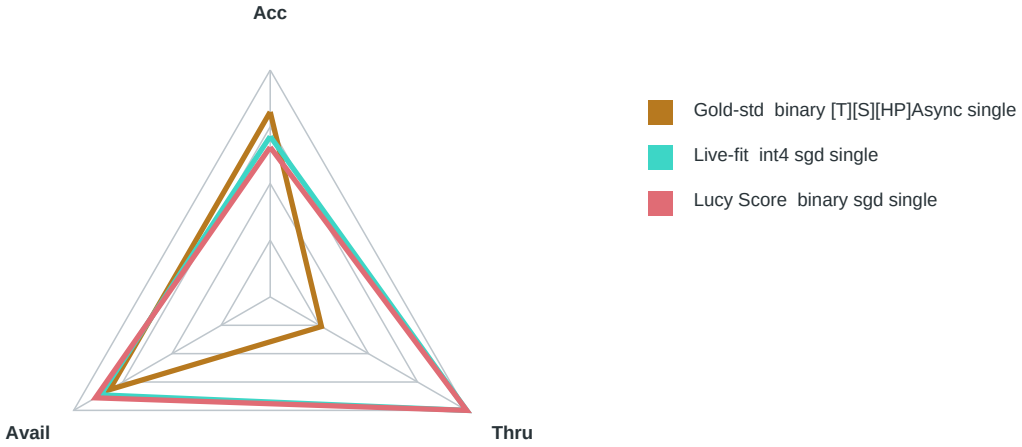
Step* is a 1D pipe (one sample enters layer 0 per tick; output is the sample that entered depth ticks ago). Non-Step of the same family is a full-chain update. AccD is a real scheduler split, not leftover warm-up forwards.

step	plain	n	mean |AccD|
Step[T]Alt	[T]Alt	102	6.23
Step[T][S]	[T][S]	102	5.63
step_sgd	sgd	102	3.53
step_tween	tween	102	3.06
step_tween_chain	tween_chain	102	2.70

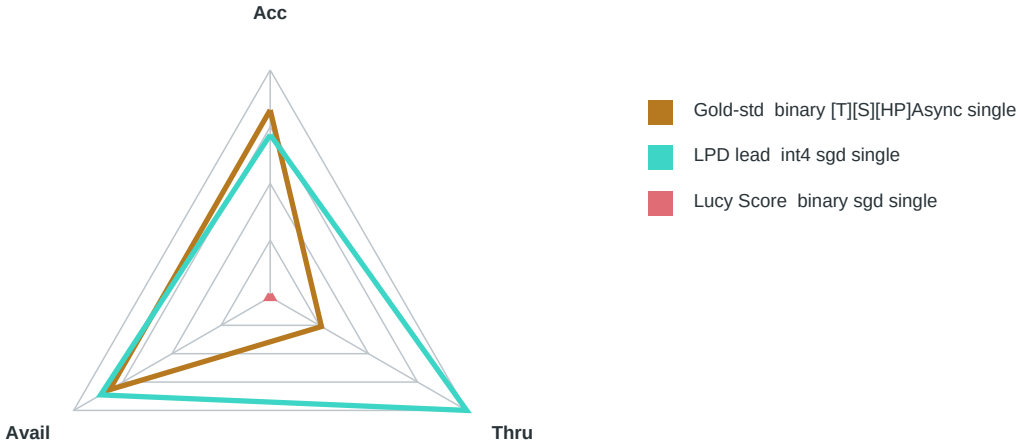
Consciousness - Acc, Throughput, Availability

Synthetic organism / Lucy density: can the net run and train at the same time in a small box. Lucy Score = Throughput x Availability x Acc / 10,000 (hard Acc; SoftAcc is serve-confidence only). SGD that blocks serve dies on Availability. Q = geomean Acc/Thru/Avail vs learner peaks (traps do not set Thru/Avail). LPD = Q x shrink vs Acc-champ RAM; 0 unless Acc keep >=70%. Gold = all 3 pillars >=80% at <=20% Acc-champ RAM. Gold-std = Acc >=80% plus Thru or Avail, then smallest then fastest. Score/MiB is the binary trap.
Acc champ int32|none|Step[T]Alt|tricameral|simd Acc 39.8 Thru 1368 Avail 23.0% 1.1 KiB (RAM reference)
Lucy Score champ (T x Avail x Acc) binary|none|sgd|single|simd Score 4081.7 Acc 26.3 Soft 25 0.0 KiB
Live-fit champ (best Q) int4|none|sgd|single|simd Acc 28.1 Thru 35048 Avail 41.0% 0.0 KiB
Gold-std (2+ pillars, Acc keep >= 80%, then smallest then fastest): binary|none|[T][S][HP]Async|single|simd mode [T][S][HP]Async Acc 32.4 Thru 9139 0.0 KiB
Board fastest int32|none|sgd|single|simd Thru 38114 (traps may own this) Best availability int4|none|Mesh[T][S]Sparse|tricameral|simd 49.8%
Learner Thru peak 35048 learner Avail peak 47.5%

Consciousness radar - Acc / Thru / Avail vs learner peaks



Memory density radar - same pillars x shrink vs Acc champ (traps sit at origin)



No gold cell yet. Need all three pillars at 80% of learner peaks in one fifth of Acc-champ RAM.

Gold-standard train modes - 2+ pillars, Acc keep >= 80%, smallest then fastest

Mode	n	Acc	KiB	Thru	Cell
[T][S][HP]Async	5	36.1	0.0	9139	binary [T][S][HP]Async single
[T][S][HP]	4	37.8	0.0	15355	ternary [T][S][HP] single
Mesh[T][S]Sparse	4	38.1	0.0	5829	uint3 Mesh[T][S]Sparse single / int8 Mesh[T][S]Sparse single
[T][S][L]Cache	1	35.6	0.0	9692	int5 [T][S][L]Cache single
Mesh[T][S]	5	37.2	0.0	8142	uint6 Mesh[T][S] single / float64 Mesh[T][S] single
[T][S][FP]	4	34.9	0.0	12145	fp8e5m2 [T][S][FP] single
[T][S]Sparse	4	36.7	0.1	2271	ternary [T][S]Sparse tricameral / int4 [T][S]Sparse bicameral
[T][S]	1	32.1	0.3	6929	int8 [T][S] tricameral
[T][S][L]	1	32.6	0.4	2710	float16 [T][S][L] bicameral

Near-gold - 2+ pillars, RAM <= 50% of Acc champ

Band	Cell	Acc%	Thru%	Avail%	Q%	RAM%	xSmall	LPD	Acc	Thru	KiB
near	ternary [T][S][HP] single	89	44	82	69	1	32.0	21.93	35.5	15355	0.0
near	fp8e5m2 [T][S][FP] single	82	35	83	62	3	32.0	19.79	32.7	12145	0.0

Band	Cell	Acc%	Thru%	Avail%	Q%	RAM%	xSmall	LPD	Acc	Thru	KiB
near	int5 [T][S][L]Cache single	90	28	87	60	2	32.0	19.20	35.6	9692	0.0
near	int3 [T][S][HP]Async single	91	23	88	57	1	32.0	18.19	36.1	8018	0.0
near	binary [T][S][HP]Async single	82	26	82	56	0	32.0	17.86	32.4	9139	0.0
near	uint3 [T][S][HP]Async single	85	24	81	54	1	32.0	17.43	33.8	8261	0.0
near	uint6 Mesh[T][S] single	88	18	81	50	2	32.0	16.11	35.1	6276	0.0
near	int8 Mesh[T][S]Sparse single	80	17	80	48	3	32.0	15.22	32.0	5829	0.0
near	uint3 Mesh[T][S]Sparse single	83	15	81	46	1	32.0	14.85	33.1	5178	0.0
near	uint16 [T][S][FP] single	88	30	81	60	6	16.9	10.15	34.9	10659	0.1
near	ternary [T][S]Sparse tricameral	92	6	83	36	6	16.0	5.72	36.6	2083	0.1
near	float32 Mesh[T][S]Sparse single	96	15	80	49	11	9.0	4.41	38.1	5365	0.1

Lucy density (LPD) - Q x shrink vs Acc-champ RAM; 0 if Acc keep < 70%

Band	Cell	Acc%	Thru%	Avail%	Q%	RAM%	xSmall	LPD	Acc	Thru	KiB
-	int4 sgd single	71	100	86	85	1	32.0	27.15	28.1	35048	0.0
-	uint8 sgd single	70	97	80	82	3	32.0	26.19	28.0	34016	0.0
-	binary MeshBP single	72	80	94	82	0	32.0	26.09	28.6	28105	0.0
-	uint6 tween_chain single	71	83	81	78	2	32.0	24.98	28.4	29013	0.0
-	uint2 [T][S] single	71	75	90	78	1	32.0	24.96	28.1	26305	0.0
-	fp8e5m2 Step[T][S] single	75	75	82	77	3	32.0	24.71	29.7	26227	0.0
acc	fp8e4m3 Step[T][S] single	91	69	73	77	3	32.0	24.70	36.2	24084	0.0
-	int3 step_tween single	71	78	79	76	1	32.0	24.34	28.4	27278	0.0
-	int8 tween_chain single	73	76	78	76	3	32.0	24.28	29.2	26566	0.0
acc	uint3 Step[T][S] single	86	62	79	75	1	32.0	24.10	34.3	21834	0.0
-	ternary Mesh[T] single	73	72	78	74	1	32.0	23.81	29.0	25324	0.0
-	ternary tween_chain single	73	75	75	74	1	32.0	23.77	29.2	26201	0.0
-	int6 Mesh[T]Chain single	78	56	93	74	2	32.0	23.74	31.1	19761	0.0
-	int6 Mesh[T] single	77	65	76	73	2	32.0	23.23	30.6	22752	0.0
-	uint2 step_tween_chain single	73	66	78	72	1	32.0	23.08	29.1	23029	0.0
-	uint8 step_tween_chain single	76	69	69	71	3	32.0	22.78	30.2	24129	0.0
-	int5 Step[T][S] single	73	64	75	71	2	32.0	22.58	29.2	22294	0.0
-	int4 [T]Alt single	74	61	78	70	1	32.0	22.56	29.5	21234	0.0
-	uint8 tween single	71	63	79	70	3	32.0	22.55	28.3	21950	0.0
-	fp6 MeshBP single	77	56	80	70	2	32.0	22.40	30.6	19509	0.0

Consciousness rank - Q = geomean Acc/Thru/Avail keep

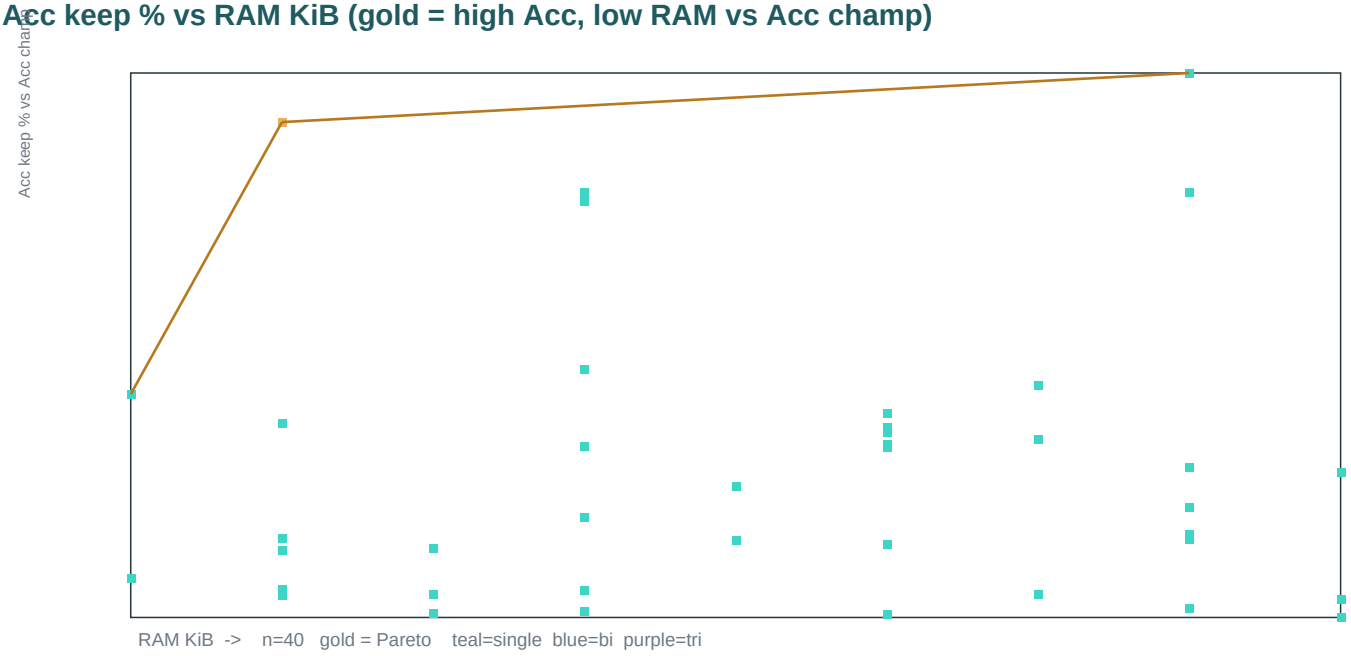
Band	Cell	Acc%	Thru%	Avail%	Q%	LPD	Thru	Avail
-	int4 sgd single	71	100	86	85	27.15	35048	41.0
-	uint32 tween_chain single	78	88	84	83	7.25	30808	39.9
-	uint8 sgd single	70	97	80	82	26.19	34016	38.1
-	binary MeshBP single	72	80	94	82	26.09	28105	44.6
-	float64 [T][S] single	78	84	78	80	3.61	29531	37.0
-	int [T][S] single	72	84	85	80	3.59	29326	40.3
acc	uint32 Step[T][S] single	93	70	78	80	6.96	24453	37.1
-	uint6 tween_chain single	71	83	81	78	24.98	29013	38.3
-	uint2 [T][S] single	71	75	90	78	24.96	26305	42.5
-	fp8e5m2 Step[T][S] single	75	75	82	77	24.71	26227	39.1

Trap - tiny RAM, Acc keep < 70% (Score/MiB and SoftAcc Score lie here)

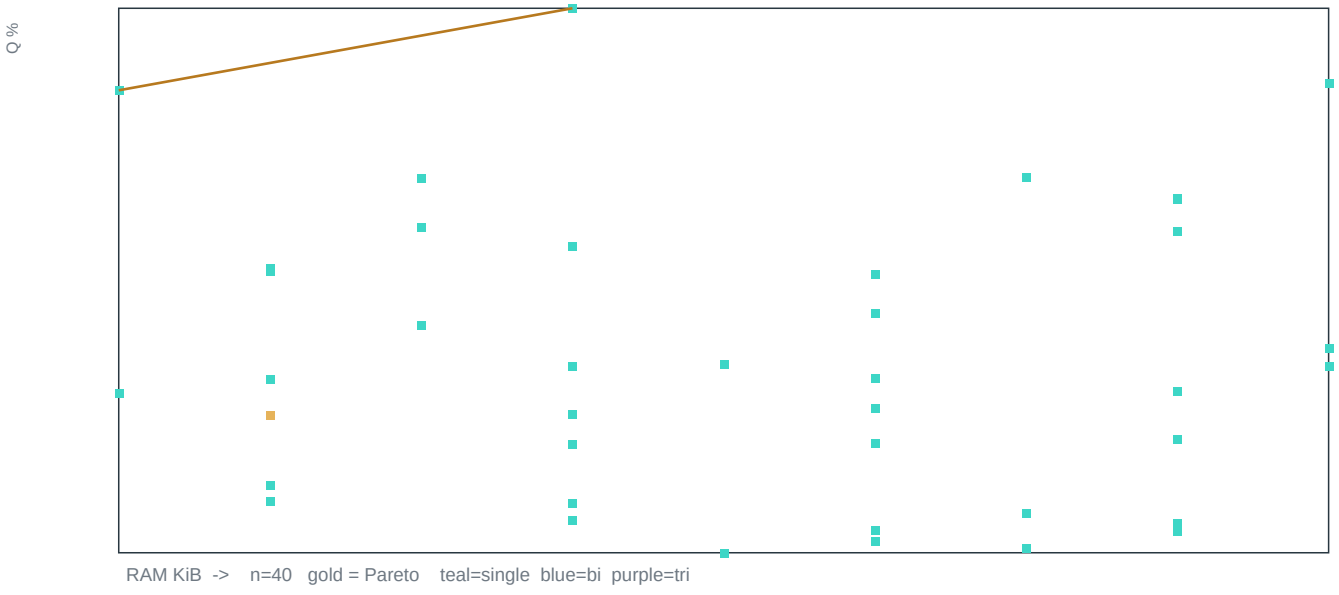
Band	Cell	Acc%	Thru%	Avail%	Q%	RAM%	xSmall	LPD	Acc	Thru	KiB
trap	binary sgd single	66	100	89	84	0	32.0	0.00	26.3	36790	0.0
trap	binary step_sgd single	64	80	74	72	0	32.0	0.00	25.4	27922	0.0

trap	binary tween single	52	29	43	40	0	32.0	0.00	20.8	10290	0.0
trap	binary tween_chain single	62	41	49	50	0	32.0	0.00	24.7	14269	0.0
trap	binary step_tween single	68	78	70	72	0	32.0	0.00	26.9	27453	0.0
trap	binary step_tween_chain single	64	70	75	69	0	32.0	0.00	25.5	24428	0.0
trap	binary Mesh[T] single	66	43	60	55	0	32.0	0.00	26.3	14905	0.0
trap	binary Mesh[T]Chain single	54	53	75	60	0	32.0	0.00	21.6	18614	0.0
trap	binary [T][S] single	52	84	82	71	0	32.0	0.00	20.7	29573	0.0
trap	binary [T]Alt single	65	47	68	59	0	32.0	0.00	25.9	16491	0.0

Acc keep % vs RAM KiB (gold = high Acc, low RAM vs Acc champ)



Q% vs RAM KiB (gold = high consciousness, low RAM)



Q% vs shrink vs Acc champ (gold = upper right)

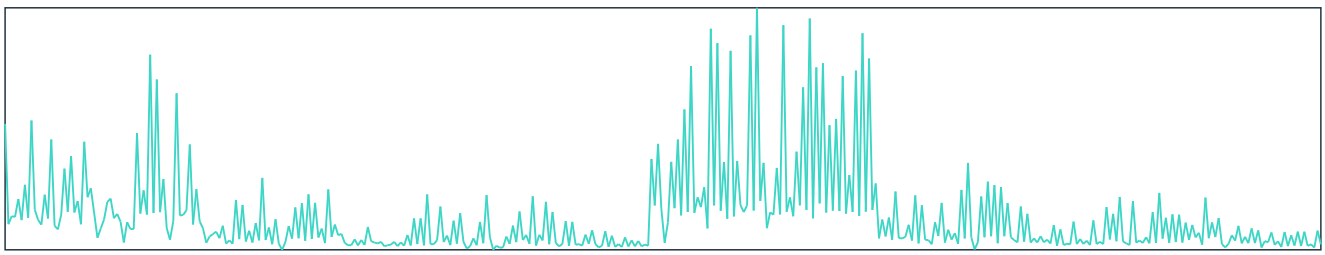
Q% vs shrink vs Acc champ (gold = upper right)



Top Lucy density (LPD)

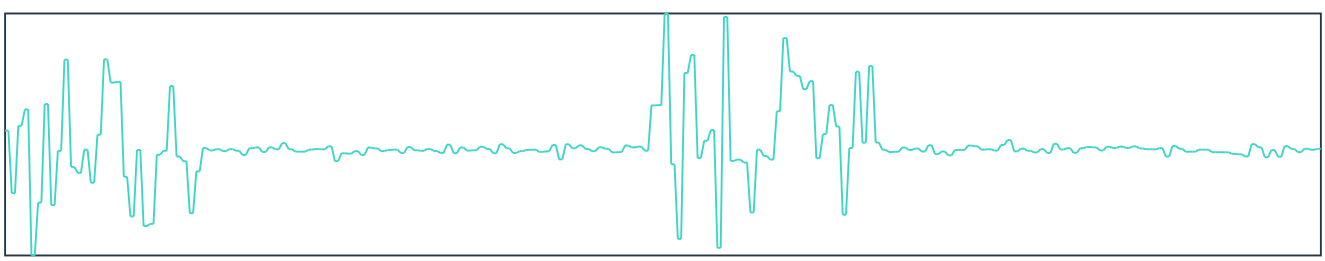


Live pulse (Score)



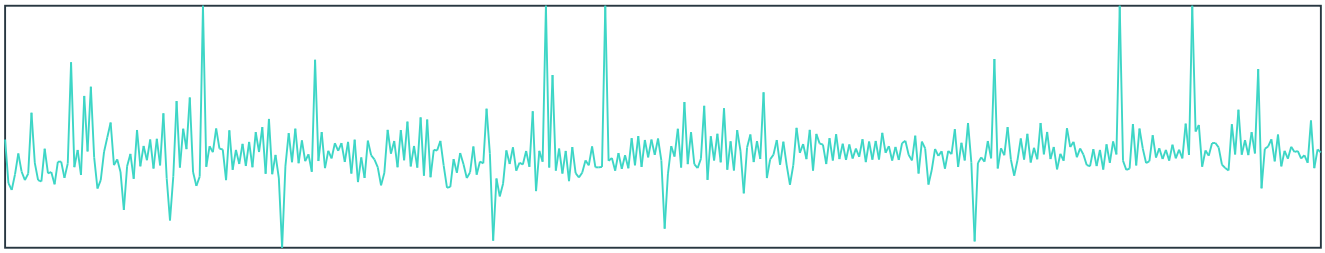
n=400 min=1.89 max=3028.91

Live pulse (SoftAcc)



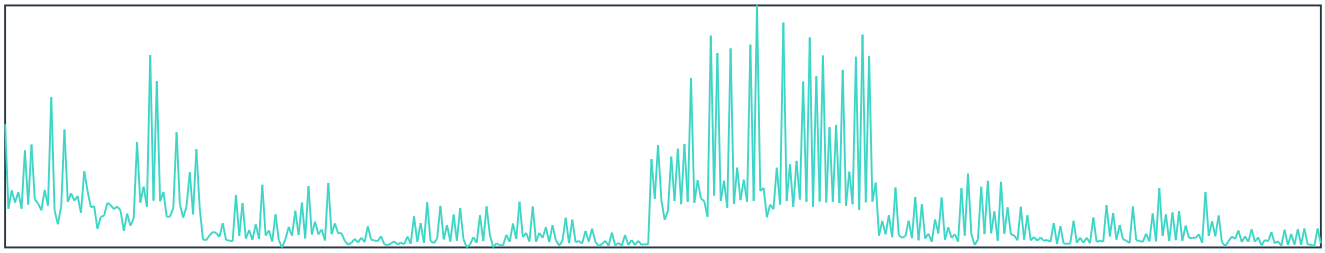
n=400 min=24.92 max=25.10

Live pulse (Availability)



n=400 min=3.39 max=100.00

Live pulse (Throughput)



n=400 min=223.59 max=26366.29

Queue by train mode (this epoch)

Mode	Done	Run	Left	Total