tide convt2

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 13:32:53 -
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 - convt2 - offline report

Lucy champions (this tide)

Axis	Cell	Score	Soft	Acc	Thru	Avail
hard acc	binary|none|[T][S][FP]|single|simd	1532.63	25.1	27.1	12696.3	48.0
throughput	float32|none|sgd|single|simd	2041.87	25.0	22.2	18811.6	43.4
availability	binary|none|[T][S][L]Cache|single|simd	1533.26	25.0	31.9	11749.8	52.1
lucy score	float32|none|sgd|single|simd	2041.87	25.0	22.2	18811.6	43.4
mobile score (trap)	binary|none|[T][S][HP]|single|simd	1839.11	25.1	30.5	14529.8	50.5
t->50%	int16|none|sgd|bicameral|simd	16.75	24.4	22.2	290.6	23.6
acc/sec	float64|none|sgd|single|simd	1555.93	25.0	25.1	14589.0	42.6

Lucy axis champions (this tide)

Axis	Mode	DType	Arch	Value
hard_acc	[T][S][L]	complex64	bicameralx2	56.25
throughput	sgd	float32	singlex1	18811.55
availability	[T][S][L]Cache	binary	singlex1	52.12
score	sgd	float32	singlex1	2041.87
soft_acc	[T][S][FP]	binary	singlex1	25.13
acc_thru	[T][S][HP]	binary	singlex1	4430.24
realtime	sgd	float32	singlex1	8171.73
adapt	[T]Alt	ternary	singlex1	25.09
keep_learn	step_tween_chain	int6	bicameralx2	16.41
acc_per_sec	sgd	float64	singlex1	12.51
time_to_50	sgd	int16	bicameralx2	0.05
consistency	sgd	float64	singlex1	100.00
stability	sgd	fp4	singlex1	100.00
mobile_score	[T][S][HP]	binary	singlex1	53567982~
lpd	[T][S][HP]	uint3	bicameralx2	11.81
mspeed	[T][S][FP]	int8	tricameralx3	1.00
mavail	Mesh[T][S]Sparse	int6	tricameralx3	1.00
mix	[T][S][FP]	int8	tricameralx3	0.73
gold_std	[T][S][HP]Async	nf4	bicameralx2	7.73

Best settings per train mode

Mode	DType	Format	Score	Soft	Acc	Avail	n
sgd	float32	none	2041.9	25.0	22.2	43.4	102
tween_chain	float32	none	1926.7	25.0	26.6	46.2	102
Mesh[T]Chain	float32	none	1862.7	25.0	27.0	45.9	102
[T][S][HP]	binary	none	1839.1	25.1	30.5	50.5	102
[T][S][FP]	float32	none	1830.4	25.1	25.4	49.0	102
[T][S][L]	float32	none	1804.6	25.0	26.4	46.2	102
[T][S][L]Cache	float32	none	1779.8	25.0	25.0	51.8	102
tween	float32	none	1775.2	25.0	23.4	43.4	102
MeshBP	float32	none	1747.8	25.0	26.3	46.0	102

[T][S]	float32	none	1745.2	25.0	26.3	49.8	102
step_sgd	float32	none	1636.5	25.0	22.9	40.6	102
Mesh[T]	float32	none	1598.6	25.0	25.2	43.2	102
Step[T][S]	float32	none	1551.5	25.0	23.3	43.9	102
[T][S][HP]Async	float32	none	1417.6	25.0	23.2	48.8	102
step_tween_chain	float32	none	1411.6	25.0	24.2	40.2	102
[T][S]Sparse	float32	none	1400.8	25.0	34.0	51.6	102
Mesh[T][S]	float32	none	1316.1	25.0	32.0	51.6	102
step_tween	float32	none	1244.8	25.0	28.1	37.6	102
Mesh[T][S][FP]	float32	none	1054.7	25.0	27.5	51.1	102
Mesh[T][S]Sparse	float32	none	832.1	25.0	25.1	49.6	102
[T]Alt	binary	none	691.8	25.0	23.2	37.3	102
Step[T]Alt	float32	none	595.7	25.0	27.4	32.4	102
Mesh[T]Alt	int2	none	471.5	25.0	24.6	36.0	102

Best dtype per mode

Mode	Winner dtype	Score	Soft	Acc
sgd	float32	2041.9	25.0	22.2
tween_chain	float32	1926.7	25.0	26.6
Mesh[T]Chain	float32	1862.7	25.0	27.0
[T][S][HP]	binary	1839.1	25.1	30.5
[T][S][FP]	float32	1830.4	25.1	25.4
[T][S][L]	float32	1804.6	25.0	26.4
[T][S][L]Cache	float32	1779.8	25.0	25.0
tween	float32	1775.2	25.0	23.4
MeshBP	float32	1747.8	25.0	26.3
[T][S]	float32	1745.2	25.0	26.3
step_sgd	float32	1636.5	25.0	22.9
Mesh[T]	float32	1598.6	25.0	25.2
Step[T][S]	float32	1551.5	25.0	23.3
[T][S][HP]Async	float32	1417.6	25.0	23.2
step_tween_chain	float32	1411.6	25.0	24.2
[T][S]Sparse	float32	1400.8	25.0	34.0
Mesh[T][S]	float32	1316.1	25.0	32.0
step_tween	float32	1244.8	25.0	28.1
Mesh[T][S][FP]	float32	1054.7	25.0	27.5
Mesh[T][S]Sparse	float32	832.1	25.0	25.1
[T]Alt	binary	691.8	25.0	23.2
Step[T]Alt	float32	595.7	25.0	27.4
Mesh[T]Alt	int2	471.5	25.0	24.6

Best mode per dtype

DType	Winner mode	Score	Soft	Acc
float32	sgd	2041.9	25.0	22.2
binary	[T][S][HP]	1839.1	25.1	30.5
int8	sgd	1795.6	25.0	22.8
ternary	sgd	1750.3	25.0	23.2
int2	sgd	1740.6	25.0	23.4
int4	tween_chain	1722.8	25.0	22.3
uint8	tween_chain	1708.9	25.0	20.9
float64	tween_chain	1637.6	25.0	28.3
fp4	sgd	1611.0	25.0	25.4

bfloat16	tween_chain	1522.6	25.0	22.8
fp8e4m3	sgd	1328.6	25.0	20.6
fp8e5m2	sgd	1318.0	25.0	22.8
float16	tween_chain	1313.1	25.0	23.6
uint32	tween_chain	1249.3	25.0	22.8
uint16	sgd	1225.2	25.0	27.0
uint64	sgd	1208.9	25.0	24.8
uint4	sgd	1162.1	25.0	28.5
int32	sgd	1161.2	25.0	24.5
int64	sgd	1156.0	25.0	26.8
int16	sgd	1153.9	25.0	25.7
uint2	sgd	1119.2	25.0	25.7
complex128	sgd	1085.7	25.0	26.2
uint	sgd	1085.7	25.0	25.0
uintptr	sgd	1081.4	25.0	25.4
complex64	sgd	1051.5	25.0	24.7
int	sgd	1012.8	25.0	22.6
uint3	[T][S]	900.6	25.0	27.9
nf4	sgd	885.3	25.0	25.2
int5	tween_chain	665.7	25.0	24.7
uint5	MeshBP	661.7	25.0	20.7
int3	[T][S]	652.4	25.0	26.9
int6	[T][S]	644.4	25.0	27.1
uint6	sgd	604.7	25.0	24.6
fp6	[T][S][L]	589.2	25.0	35.3

Leaderboard (Lucy Score)

#	Cell	Score	Soft	Acc	Thru	Avail
1	float32|none|sgd|single|simd	2041.9	25.0	22.2	18811.6	43.4
2	float32|none|tween_chain|single|simd	1926.7	25.0	26.6	16669.0	46.2
3	float32|none|Mesh[T]Chain|single|simd	1862.7	25.0	27.0	16236.5	45.9
4	binary|none|[T][S][HP]|single|simd	1839.1	25.1	30.5	14529.8	50.5
5	float32|none|[T][S][FP]|single|simd	1830.4	25.1	25.4	14904.9	49.0
6	float32|none|[T][S][L]|single|simd	1804.6	25.0	26.4	15634.7	46.2
7	int8|none|sgd|single|simd	1795.6	25.0	22.8	16856.2	42.6
8	int8|none|tween_chain|single|simd	1787.8	25.0	21.9	15719.9	45.5
9	float32|none|[T][S][L]Cache|single|simd	1779.8	25.0	25.0	13739.0	51.8
10	float32|none|tween|single|simd	1775.2	25.0	23.4	16361.6	43.4
11	ternary|none|sgd|single|simd	1750.3	25.0	23.2	16113.0	43.5
12	float32|none|MeshBP|single|simd	1747.8	25.0	26.3	15204.5	46.0
13	float32|none|[T][S]|single|simd	1745.2	25.0	26.3	14023.4	49.8
14	int2|none|sgd|single|simd	1740.6	25.0	23.4	16420.9	42.4
15	int4|none|tween_chain|single|simd	1722.8	25.0	22.3	15162.5	45.5
16	binary|none|tween_chain|single|simd	1717.0	25.0	24.8	15272.4	45.0
17	uint8|none|tween_chain|single|simd	1708.9	25.0	20.9	14856.3	46.0
18	int2|none|tween_chain|single|simd	1707.9	25.0	23.4	15502.9	44.1
19	uint8|none|sgd|single|simd	1693.0	25.0	26.8	15947.8	42.5
20	binary|none|sgd|single|simd	1687.7	25.0	24.6	15806.9	42.7

Leaderboard (SoftAcc)

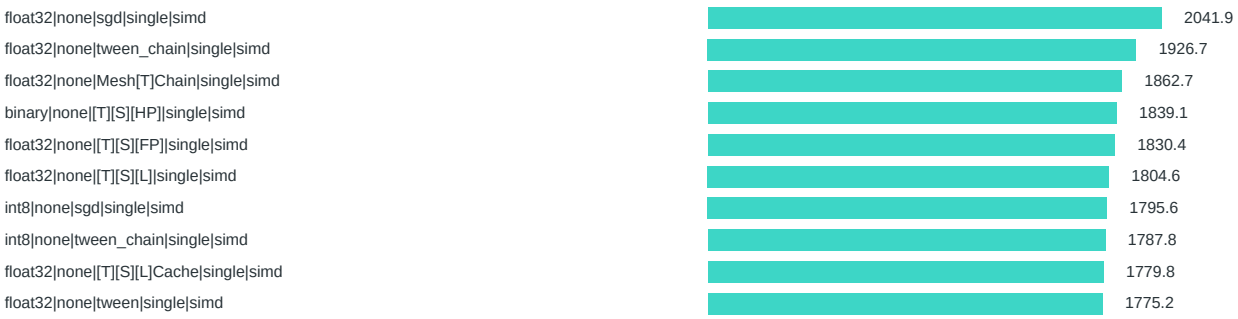
#	Cell	Score	Soft	Acc	Thru	Avail
1	binary|none|[T][S][FP]|single|simd	1532.6	25.1	27.1	12696.3	48.0

2	float32|none|[T][S][FP]|single|simd	1830.4	25.1	25.4	14904.9	49.0
3	binary|none|[T][S][HP]|single|simd	1839.1	25.1	30.5	14529.8	50.5
4	binary|none|[T][S][L]Cache|single|simd	1533.3	25.0	31.9	11749.8	52.1
5	ternary|none|Mesh[T]Chain|single|simd	1585.6	25.0	25.3	14060.5	45.1
6	binary|none|sgd|single|simd	1687.7	25.0	24.6	15806.9	42.7
7	float32|none|tween_chain|single|simd	1926.7	25.0	26.6	16669.0	46.2
8	float64|none|sgd|single|simd	1555.9	25.0	25.1	14589.0	42.6
9	ternary|none|tween_chain|single|simd	1596.7	25.0	25.2	14717.0	43.4
10	float32|none|Mesh[T]|single|simd	1598.6	25.0	25.2	14790.0	43.2
11	int8|none|[T][S][FP]|single|simd	1560.7	25.0	28.7	12929.7	48.3
12	int2|none|MeshBP|single|simd	1638.0	25.0	23.9	14778.1	44.3
13	int8|none|Mesh[T]Chain|single|simd	1526.6	25.0	30.6	13561.4	45.0
14	ternary|none|MeshBP|single|simd	1612.8	25.0	27.5	14486.6	44.5
15	float32|none|MeshBP|single|simd	1747.8	25.0	26.3	15204.5	46.0
16	int8|none|tween_chain|single|simd	1787.8	25.0	21.9	15719.9	45.5
17	uint8|none|sgd|single|simd	1693.0	25.0	26.8	15947.8	42.5
18	float32|none|[T][S]|single|simd	1745.2	25.0	26.3	14023.4	49.8
19	uint8|none|MeshBP|single|simd	1599.0	25.0	22.5	14388.7	44.5
20	int2|none|tween_chain|single|simd	1707.9	25.0	23.4	15502.9	44.1

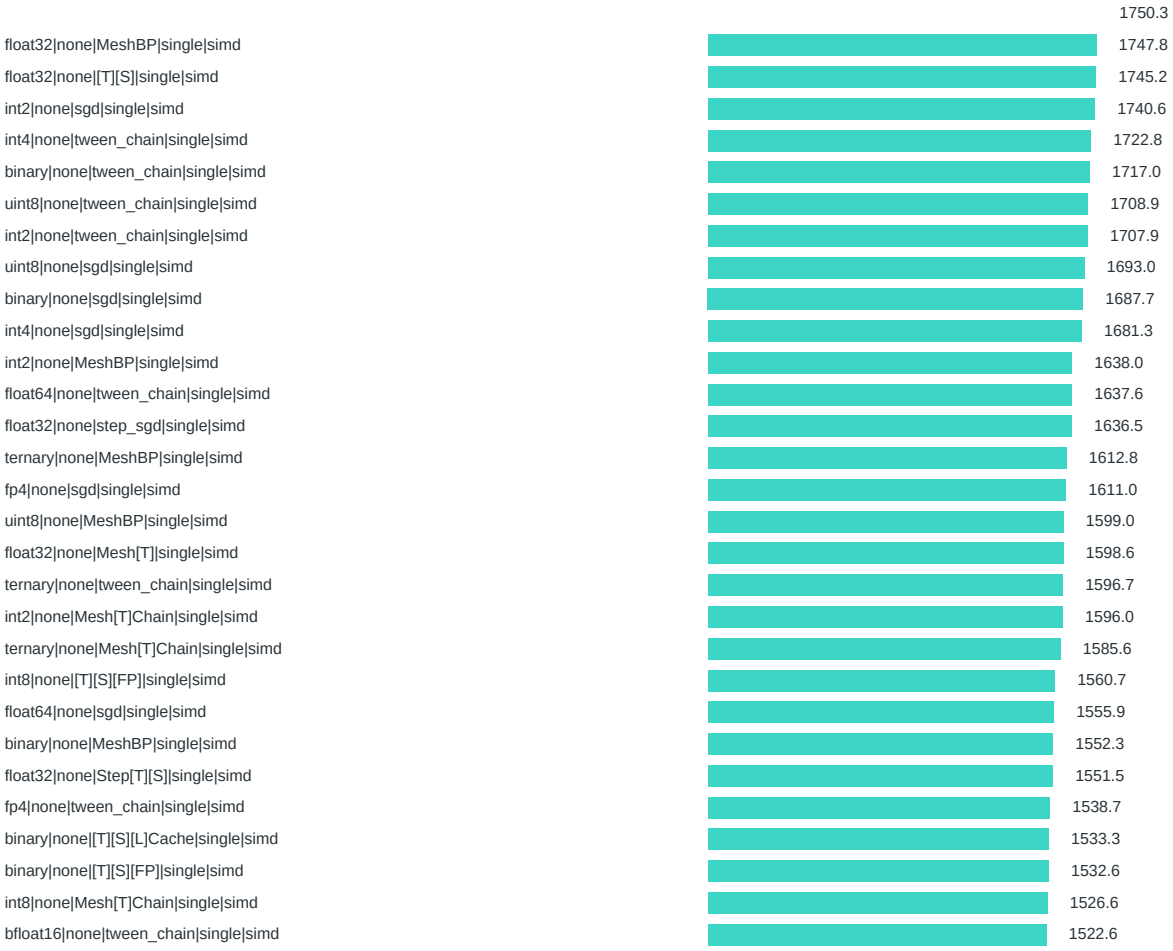
Leaderboard (hard Acc)

#	Cell	Score	Soft	Acc	Thru	Avail
1	binary|none|[T][S][L]Cache|single|simd	1533.3	25.0	31.9	11749.8	52.1
2	int8|none|Mesh[T]Chain|single|simd	1526.6	25.0	30.6	13561.4	45.0
3	binary|none|[T][S][HP]|single|simd	1839.1	25.1	30.5	14529.8	50.5
4	int8|none|[T][S][FP]|single|simd	1560.7	25.0	28.7	12929.7	48.3
5	float64|none|tween_chain|single|simd	1637.6	25.0	28.3	14159.2	46.3
6	ternary|none|MeshBP|single|simd	1612.8	25.0	27.5	14486.6	44.5
7	binary|none|[T][S][FP]|single|simd	1532.6	25.1	27.1	12696.3	48.0
8	float32|none|Mesh[T]Chain|single|simd	1862.7	25.0	27.0	16236.5	45.9
9	uint8|none|sgd|single|simd	1693.0	25.0	26.8	15947.8	42.5
10	float32|none|tween_chain|single|simd	1926.7	25.0	26.6	16669.0	46.2
11	float32|none|[T][S][L]|single|simd	1804.6	25.0	26.4	15634.7	46.2
12	float32|none|MeshBP|single|simd	1747.8	25.0	26.3	15204.5	46.0
13	float32|none|[T][S]|single|simd	1745.2	25.0	26.3	14023.4	49.8
14	int2|none|Mesh[T]Chain|single|simd	1596.0	25.0	26.2	14365.3	44.4
15	float32|none|[T][S][FP]|single|simd	1830.4	25.1	25.4	14904.9	49.0
16	fp4|none|sgd|single|simd	1611.0	25.0	25.4	15519.8	41.5
17	int4|none|sgd|single|simd	1681.3	25.0	25.3	16065.7	41.9
18	fp4|none|tween_chain|single|simd	1538.7	25.0	25.3	14062.7	43.8
19	ternary|none|Mesh[T]Chain|single|simd	1585.6	25.0	25.3	14060.5	45.1
20	ternary|none|tween_chain|single|simd	1596.7	25.0	25.2	14717.0	43.4

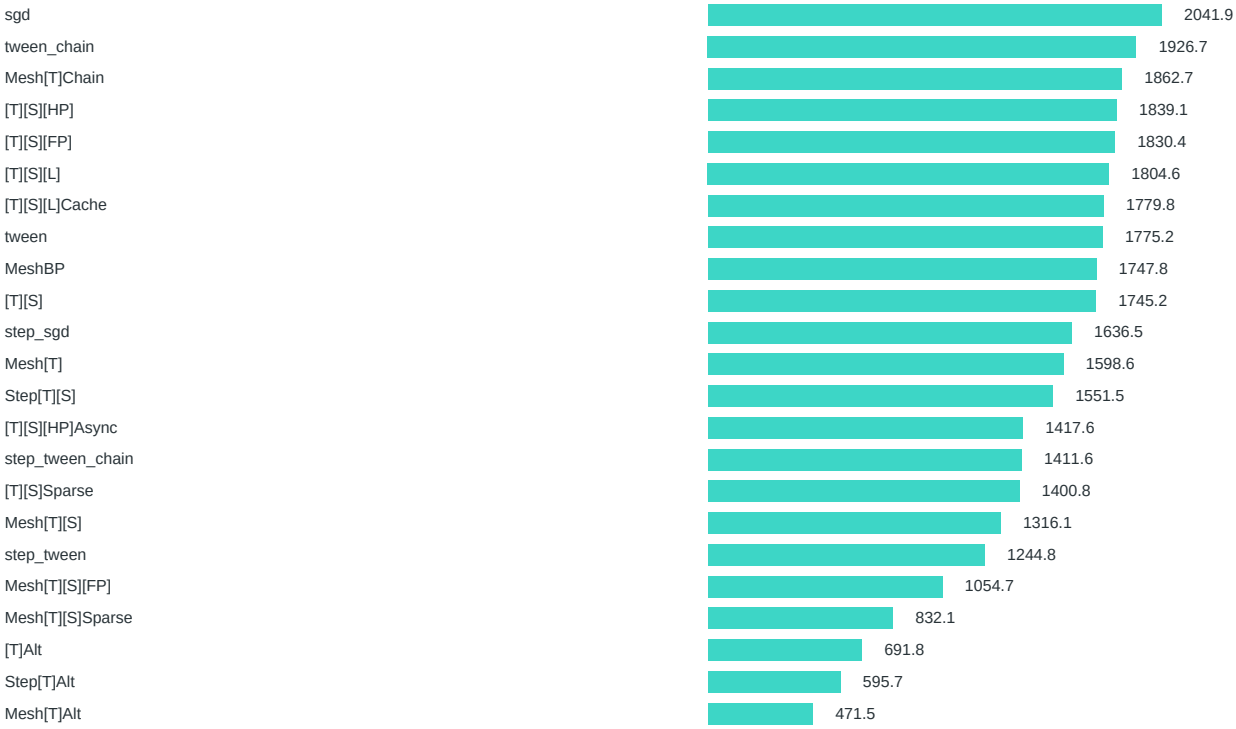
Top scores



ternary|none|sgd|single|simd



Best settings per mode

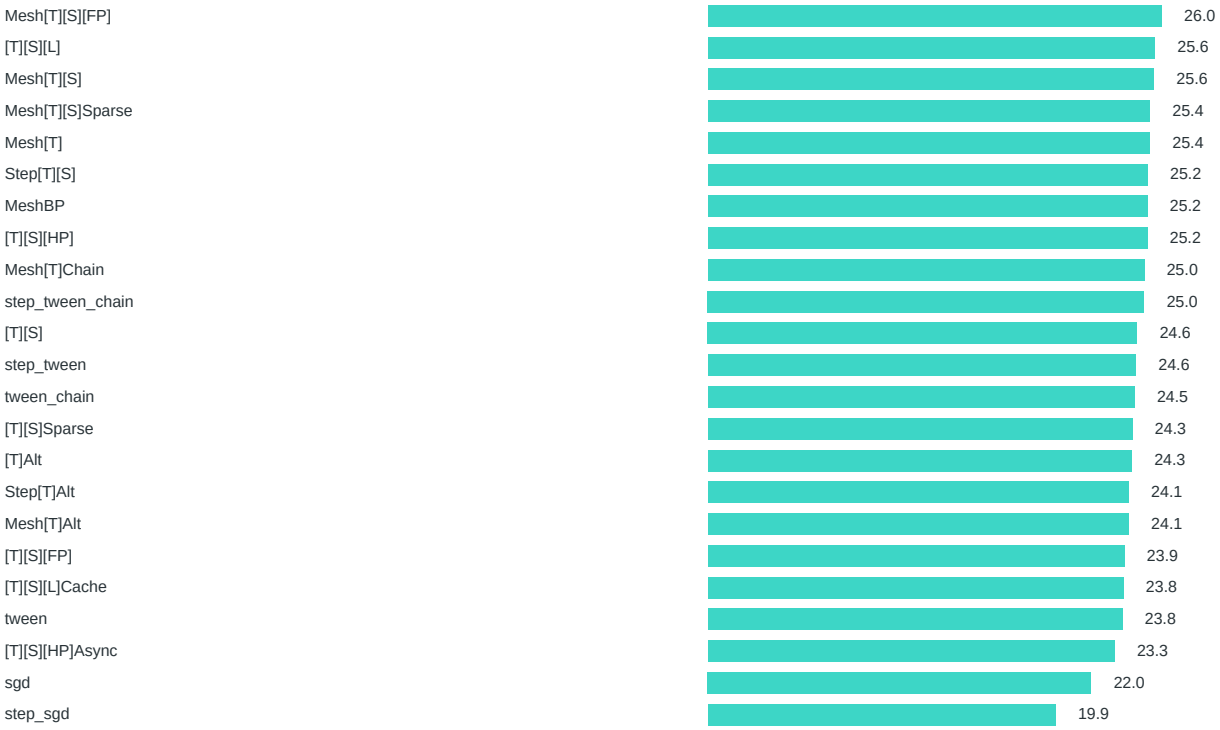


Mean Score by train mode





Mean hard Acc by train mode



Mean SoftAcc by train mode

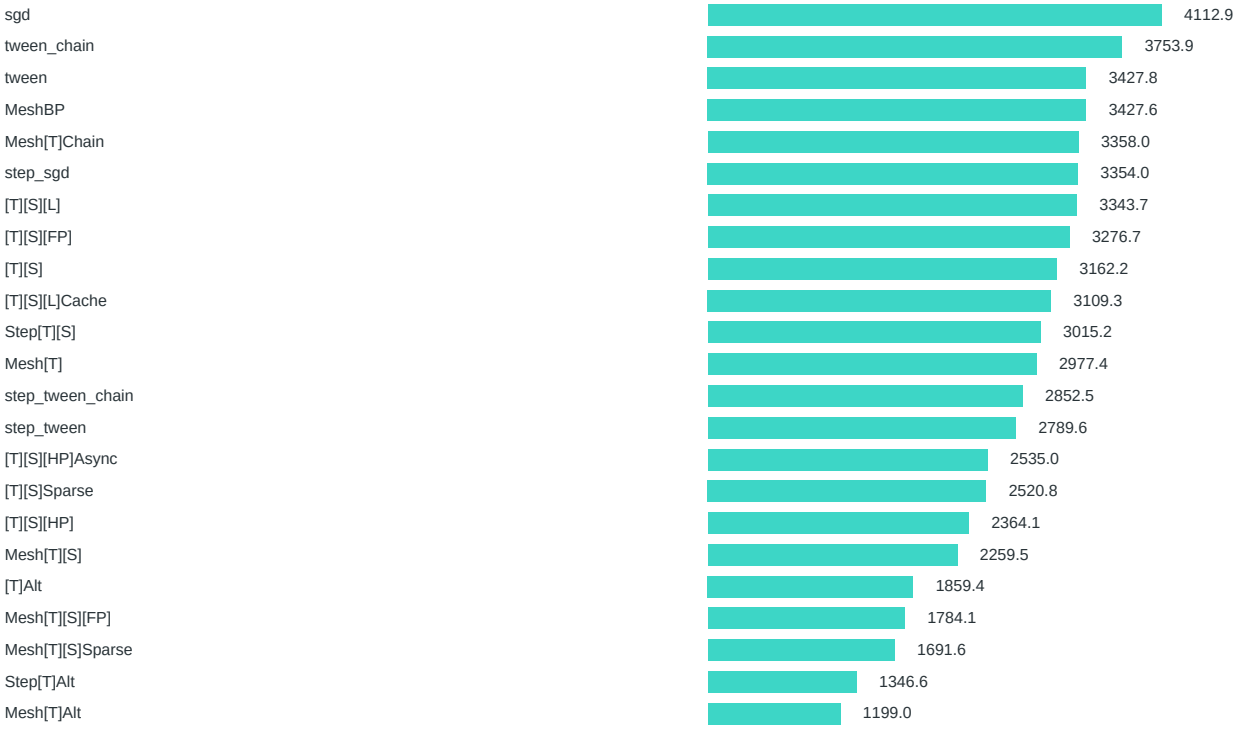




Mean Availability by train mode



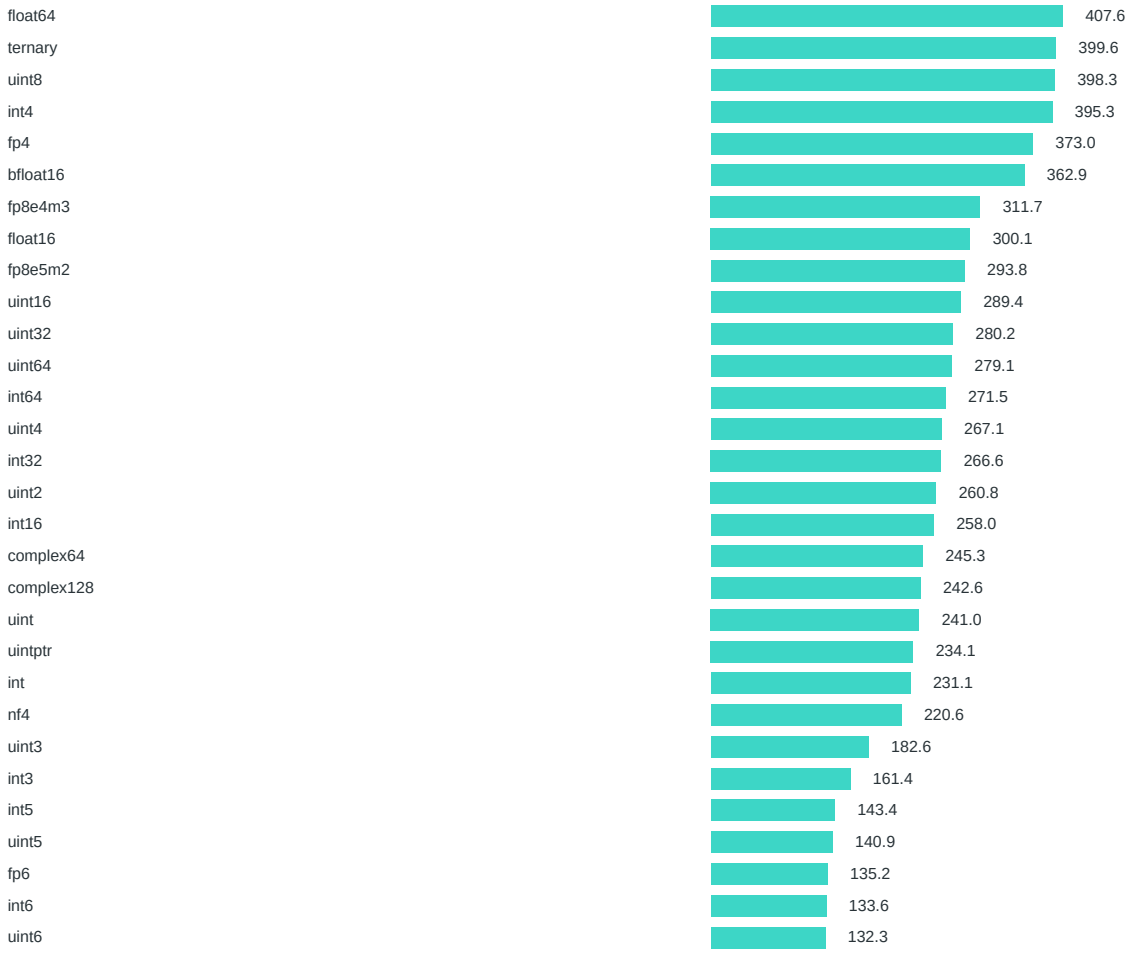
Mean Throughput by train mode



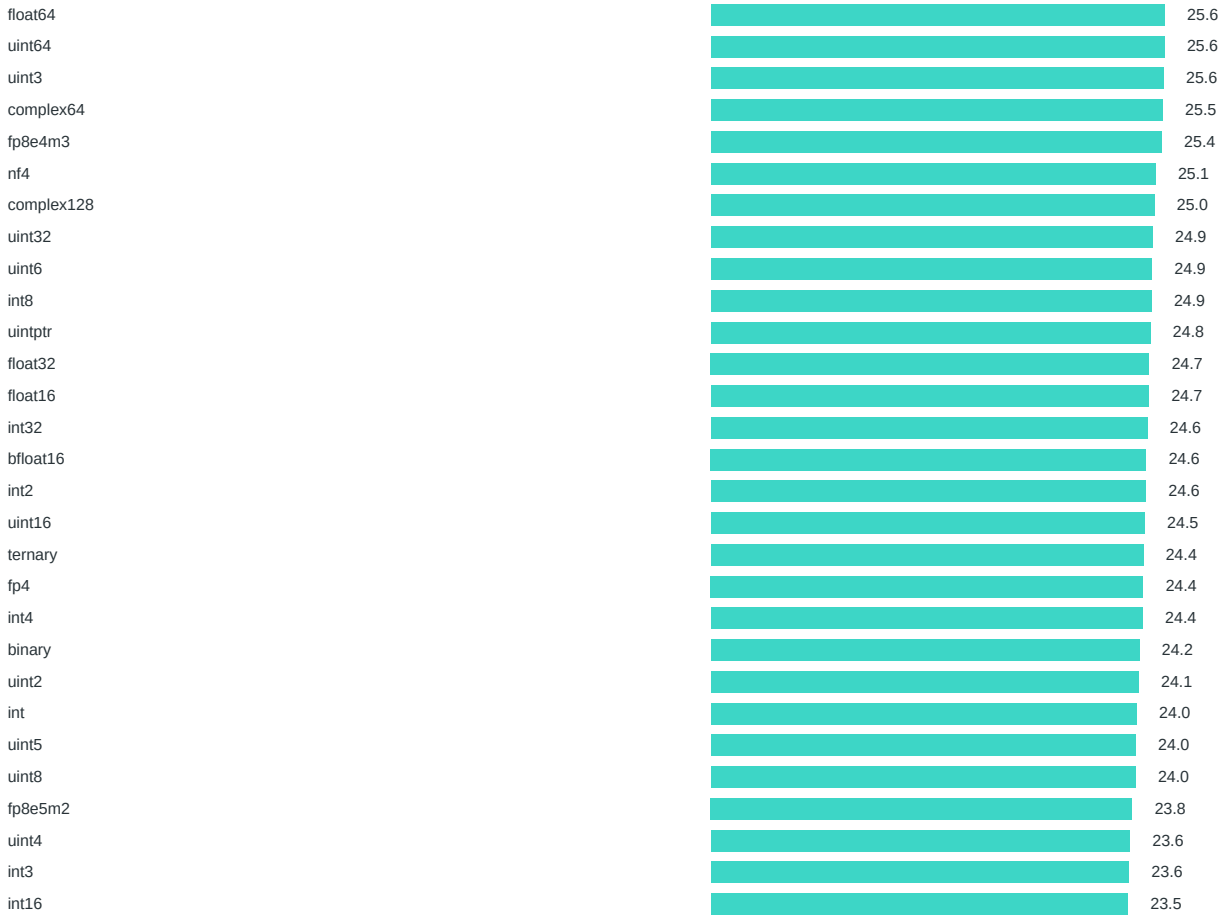
Mean Score by dtype



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	422	469	298	387	357	644	486	477	217	306	327	276
Mesh[T]	323	388	223	211	297	559	383	348	121	312	340	230
Mesh[T]Alt	92	99	109	103	100	119	167	133	38	130	81	85
Mesh[T]Chain	455	458	272	317	446	695	555	491	143	462	446	283
Mesh[T][S]	220	481	237	189	231	585	293	345	105	356	263	233
Mesh[T][S][FP]	208	313	177	194	251	416	323	296	103	212	257	214
Mesh[T][S]Sparse	279	297	140	226	210	341	332	279	134	201	204	123
Step[T]Alt	129	151	66	68	89	222	142	133	30	87	80	72
Step[T][S]	421	417	271	250	339	514	333	390	124	313	290	185
[T]Alt	166	216	163	126	158	245	206	226	55	161	160	129
[T][S]	434	623	332	342	430	650	499	447	192	401	353	312
[T][S][FP]	620	575	309	261	345	654	504	552	236	377	413	268
[T][S][HP]	332	791	221	197	282	556	396	295	120	324	263	216
[T][S][HP]Async	476	316	238	158	270	474	353	341	143	389	246	242
[T][S][L]	363	416	285	265	357	667	584	456	284	458	278	308
[T][S][L]Cache	502	679	286	388	366	626	666	448	143	513	430	306
[T][S]Sparse	444	423	259	207	298	692	410	393	104	285	276	234
sgd	491	568	386	354	432	647	544	553	204	377	413	313
step_sgd	403	407	233	310	314	529	423	422	122	232	308	256
step_tween	286	369	236	175	295	484	307	259	71	238	240	243
step_tween_chain	345	364	269	289	227	477	373	322	118	274	242	223
tween	464	569	243	266	387	585	458	446	137	316	383	271
tween_chain	472	583	325	356	421	709	635	527	169	444	465	292

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	272	534	151	308	492	180	203	404	447	273	602	319
Mesh[T]	240	457	216	235	414	139	129	305	387	241	385	229
Mesh[T]Alt	84	156	66	93	153	22	36	80	168	75	130	68
Mesh[T]Chain	344	569	191	281	497	153	197	282	640	213	544	235
Mesh[T][S]	349	290	163	306	362	169	88	306	337	198	397	276
Mesh[T][S][FP]	171	341	92	200	395	92	93	253	348	155	392	155
Mesh[T][S]Sparse	118	332	72	203	296	100	78	134	421	175	224	129
Step[T]Alt	102	192	44	98	123	46	42	85	166	77	119	81
Step[T][S]	361	464	208	289	412	121	137	279	466	222	408	270
[T]Alt	203	223	76	164	229	42	61	145	246	96	315	108
[T][S]	344	456	241	299	557	193	239	348	511	237	438	353
[T][S][FP]	307	527	211	376	572	197	162	317	644	302	528	232
[T][S][HP]	249	438	165	209	497	178	118	227	362	193	440	213
[T][S][HP]Async	255	303	114	269	307	146	127	236	309	232	263	246
[T][S][L]	297	387	172	277	369	210	181	343	561	223	402	265
[T][S][L]Cache	236	503	257	441	392	171	140	307	355	329	524	263
[T][S]Sparse	234	570	102	291	397	164	170	282	382	217	414	394
sgd	403	562	237	389	583	230	203	425	575	302	562	368
step_sgd	285	446	231	274	433	147	165	276	523	323	361	248
step_tween	274	450	131	217	290	84	75	287	363	210	315	202
step_tween_chain	204	336	139	211	313	113	111	218	342	252	423	258
tween	257	501	237	327	481	177	161	313	519	263	452	273
tween_chain	346	542	197	376	528	222	159	392	543	267	550	360

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	332	308	209	407	346	186	192	351	494	256
Mesh[T]	283	236	192	256	215	140	147	286	401	236
Mesh[T]Alt	94	122	46	117	105	38	43	94	125	82
Mesh[T]Chain	341	386	171	389	293	206	188	355	570	231
Mesh[T][S]	297	204	234	277	230	119	90	212	339	212
Mesh[T][S][FP]	229	144	137	237	191	60	107	227	300	108
Mesh[T][S]Sparse	154	216	54	161	176	57	91	204	361	174
Step[T]Alt	77	66	58	94	93	36	36	90	113	84
Step[T][S]	299	278	188	264	260	128	136	341	487	186
[T]Alt	187	125	74	176	161	67	45	126	240	139
[T][S]	391	271	350	291	401	191	157	354	413	333
[T][S][FP]	487	346	170	385	341	156	197	379	404	338
[T][S][HP]	253	290	317	258	191	111	115	228	426	213
[T][S][HP]Async	239	329	174	250	328	144	152	272	375	281
[T][S][L]	380	244	203	371	399	285	217	421	459	275
[T][S][L]Cache	402	335	324	343	355	261	168	391	436	345
[T][S]Sparse	238	279	181	310	277	99	145	277	376	183
sgd	449	391	225	440	450	195	200	408	622	373
step_sgd	289	270	212	288	224	139	128	254	501	265
step_tween	277	266	136	197	275	96	84	272	321	234
step_tween_chain	244	222	150	227	206	144	102	209	370	255
tween	339	300	212	318	282	140	137	290	535	260
tween_chain	374	371	182	390	344	242	167	381	493	322

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	25	23	23	28	25	26	27	24	28	25	28	23
Mesh[T]	28	25	25	27	25	25	26	24	23	25	27	22
Mesh[T]Alt	25	23	27	25	18	26	21	21	12	27	22	28
Mesh[T]Chain	20	24	24	27	30	24	25	24	26	25	23	24
Mesh[T][S]	24	20	36	21	23	22	25	19	29	27	16	21
Mesh[T][S][FP]	21	25	25	34	28	28	33	29	21	23	32	24
Mesh[T][S]Sparse	31	22	22	29	25	26	26	24	39	29	22	25
Step[T]Alt	27	22	28	18	23	22	27	28	16	19	27	26
Step[T][S]	26	20	28	32	29	25	25	23	23	28	24	25
[T]Alt	25	23	26	30	22	24	24	23	25	26	20	23
[T][S]	24	28	25	24	23	25	26	26	24	26	23	25
[T][S][FP]	28	20	26	17	21	21	24	28	35	27	20	28
[T][S][HP]	25	26	26	18	32	27	25	23	24	25	28	20
[T][S][HP]Async	28	22	27	28	22	22	22	20	21	29	16	21
[T][S][L]	22	32	27	38	26	24	27	27	35	23	19	32
[T][S][L]Cache	28	27	18	25	24	24	30	28	18	33	27	16
[T][S]Sparse	17	28	24	22	28	22	29	24	19	25	20	25
sgd	22	24	22	22	24	25	25	24	17	23	27	22
step_sgd	23	23	18	20	21	27	26	23	13	21	23	17
step_tween	22	27	25	22	26	25	22	25	23	25	27	28
step_tween_chain	24	23	26	26	22	26	26	25	27	24	24	25
tween	27	26	25	24	26	26	24	25	19	25	25	25
tween_chain	23	25	24	29	25	26	26	25	22	25	26	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	23	25	24	23	26	27	28	24	22	27	28	25
Mesh[T]	28	27	25	26	22	28	21	27	24	29	24	26
Mesh[T]Alt	17	25	26	18	29	17	28	17	29	28	23	23
Mesh[T]Chain	24	27	29	24	23	20	24	29	28	25	24	22
Mesh[T][S]	29	25	27	26	30	33	24	18	23	19	30	19
Mesh[T][S][FP]	32	27	30	25	30	27	33	21	28	15	25	25
Mesh[T][S]Sparse	23	26	26	21	25	20	34	15	21	26	24	28
Step[T]Alt	28	23	23	30	23	25	22	26	21	28	25	22
Step[T][S]	32	25	20	24	23	21	17	28	24	30	24	29
[T]Alt	25	22	24	28	23	23	26	26	23	24	29	19
[T][S]	24	21	23	23	26	29	26	25	24	25	18	28
[T][S][FP]	15	22	23	27	26	13	26	23	32	27	22	19
[T][S][HP]	22	27	28	21	21	22	21	27	23	27	28	22
[T][S][HP]Async	17	24	19	25	25	32	19	22	20	31	20	19
[T][S][L]	27	19	26	34	17	27	24	16	28	22	21	17
[T][S][L]Cache	21	26	22	27	23	26	18	18	24	29	22	23
[T][S]Sparse	17	27	20	22	25	30	23	22	25	23	24	34
sgd	22	25	18	25	23	17	16	27	24	19	27	20
step_sgd	22	25	16	19	23	13	15	20	27	21	21	17
step_tween	27	27	23	21	24	26	23	24	26	24	23	21
step_tween_chain	20	22	26	26	21	19	26	27	24	26	29	25
tween	23	27	23	30	25	20	16	25	28	27	24	21
tween_chain	23	22	22	21	26	24	24	25	24	26	27	26

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	26	24	24	27	25	25	25	29	22	22
Mesh[T]	28	23	27	24	23	25	27	22	27	26
Mesh[T]Alt	26	26	21	30	30	33	28	20	23	29
Mesh[T]Chain	26	27	27	27	23	31	20	26	27	25
Mesh[T][S]	28	20	38	31	18	41	26	28	22	33
Mesh[T][S][FP]	24	19	33	34	16	22	34	24	24	13
Mesh[T][S]Sparse	20	32	21	23	24	16	18	34	30	32
Step[T]Alt	27	26	30	25	23	26	18	21	23	22
Step[T][S]	25	27	23	20	26	22	32	30	27	21
[T]Alt	24	23	23	25	23	28	23	25	24	25
[T][S]	26	19	33	21	28	18	26	23	25	25
[T][S][FP]	15	28	26	21	24	20	28	31	19	32
[T][S][HP]	32	21	33	26	23	30	30	20	26	26
[T][S][HP]Async	16	23	27	30	24	17	31	29	22	23
[T][S][L]	33	12	30	27	26	22	32	30	19	32
[T][S][L]Cache	25	29	20	21	23	24	29	21	23	19
[T][S]Sparse	20	28	28	19	26	29	27	31	22	23
sgd	23	21	17	24	25	15	15	22	25	22
step_sgd	22	18	16	21	18	13	14	21	23	18
step_tween	26	30	22	24	24	23	21	27	25	25
step_tween_chain	24	26	27	26	25	29	27	28	24	26
tween	23	26	22	22	24	20	17	22	24	25
tween_chain	24	25	21	26	22	24	25	23	24	24

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	25	25	23	23	24	25	25	24	16	25	24	22
step_sgd	23	25	19	19	21	25	24	22	14	23	22	18
step_tween	25	25	24	25	25	25	25	25	23	25	25	25
step_tween_chain	25	25	25	25	25	25	25	25	25	25	25	25
tween	25	25	24	24	25	25	25	25	17	25	25	25
tween_chain	25	25	24	25	25	25	25	25	23	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	23	25	17	23	25	16	16	24	25	20	25	22
step_sgd	20	25	15	20	25	14	14	20	25	18	25	19
step_tween	25	25	25	25	25	25	23	25	25	25	25	25
step_tween_chain	25	25	25	25	25	25	24	25	25	25	25	25
tween	24	25	20	25	25	19	16	24	25	24	25	23
tween_chain	25	25	25	25	25	24	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	23	22	17	24	23	17	16	23	25	22
step_sgd	21	19	16	20	18	14	13	20	24	17
step_tween	25	25	22	25	25	24	24	25	25	25
step_tween_chain	25	25	25	25	25	25	24	25	25	25
tween	24	24	21	24	24	18	18	24	25	24
tween_chain	25	25	25	25	25	24	22	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	28	23	29	30	29	27	29	26	30	28	29	29
Mesh[T]	27	22	28	27	27	26	28	24	28	27	27	27
Mesh[T]Alt	21	17	22	22	24	17	22	19	20	21	22	22
Mesh[T]Chain	27	24	29	29	30	27	30	26	29	28	29	28
Mesh[T][S]	37	32	39	39	39	34	37	35	39	40	39	39
Mesh[T][S][FP]	37	31	38	39	39	34	37	35	40	38	38	39
Mesh[T][S]Sparse	42	40	41	41	42	42	42	41	41	41	42	41
Step[T]Alt	18	16	19	19	19	18	19	18	16	19	18	19
Step[T][S]	29	27	29	29	30	28	29	28	31	30	29	30
[T]Alt	20	17	22	21	22	17	22	19	22	21	21	22
[T][S]	38	32	39	40	39	32	37	33	40	38	38	38
[T][S][FP]	37	31	38	38	38	33	36	34	39	39	38	38
[T][S][HP]	37	33	38	39	37	33	37	32	40	38	38	38
[T][S][HP]Async	37	32	38	38	38	33	37	34	39	38	37	38
[T][S][L]	31	23	34	33	33	28	32	33	35	34	33	33
[T][S][L]Cache	38	33	39	39	39	32	37	35	38	39	38	39
[T][S]Sparse	41	40	42	41	42	43	40	41	41	42	41	41
sgd	28	24	30	30	29	28	29	26	29	29	29	30
step_sgd	23	21	25	25	24	24	25	23	25	24	24	25
step_tween	22	19	24	24	23	22	23	21	21	22	23	24
step_tween_chain	23	20	25	26	23	23	24	22	24	23	23	24
tween	26	22	27	27	28	26	28	24	28	27	27	27
tween_chain	28	24	29	29	29	27	30	26	30	29	29	29

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	30	23	28	29	23	30	29	29	25	28	23	29
Mesh[T]	27	22	28	27	21	28	27	28	24	27	21	26
Mesh[T]Alt	22	17	21	22	16	19	20	23	18	21	16	22
Mesh[T]Chain	29	23	28	30	22	29	30	29	24	27	24	28
Mesh[T][S]	40	31	40	39	32	38	37	39	31	37	32	39
Mesh[T][S][FP]	38	31	37	38	31	38	39	38	31	36	32	38
Mesh[T][S]Sparse	42	41	40	41	39	39	41	41	41	40	40	41
Step[T]Alt	21	17	19	19	16	19	17	19	16	17	15	19
Step[T][S]	31	26	31	29	27	31	28	29	27	29	26	28
[T]Alt	24	17	21	22	16	21	20	21	17	21	17	21
[T][S]	38	31	39	38	31	38	39	37	31	36	32	38
[T][S][FP]	39	31	38	38	31	37	39	39	30	35	30	38
[T][S][HP]	38	31	37	39	31	37	38	38	33	35	31	38
[T][S][HP]Async	38	30	37	38	31	38	39	38	31	35	31	38
[T][S][L]	33	23	32	32	24	35	36	34	24	32	24	33
[T][S][L]Cache	38	31	39	39	31	39	39	38	31	36	32	39
[T][S]Sparse	42	40	40	42	40	40	41	41	41	40	40	41
sgd	29	23	28	29	23	30	30	30	25	28	23	30
step_sgd	24	21	26	24	21	25	24	24	22	25	21	25
step_tween	24	19	23	24	18	22	21	24	20	23	19	24
step_tween_chain	23	20	24	24	20	24	23	24	22	24	20	25
tween	27	21	28	28	22	28	26	27	24	28	22	26
tween_chain	29	22	28	29	23	30	31	29	25	27	23	29

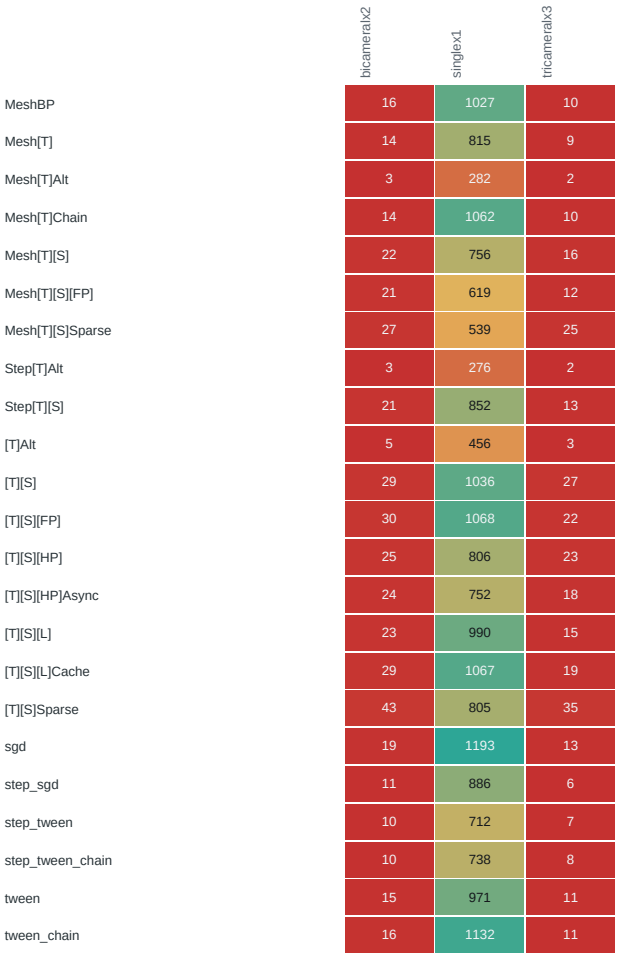
Honesty - mean Avail, every mode x dtype (cols 25-34)

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

	uint16	uint2	uint3	uint32	uint4	uint5	uint6	uint64	uint8	uintptr
MeshBP	28	30	29	30	28	30	30	29	28	29
Mesh[T]	27	27	29	26	26	27	27	27	27	27
Mesh[T]Alt	22	22	20	22	22	20	20	22	21	22
Mesh[T]Chain	29	29	28	30	29	29	30	29	28	28
Mesh[T][S]	39	39	40	39	39	38	38	39	36	39
Mesh[T][S][FP]	39	38	38	38	38	38	39	38	35	37
Mesh[T][S]Sparse	41	41	40	41	42	40	41	41	41	41
Step[T]Alt	18	18	16	18	20	18	18	19	18	18
Step[T][S]	29	30	30	29	29	30	30	30	28	29
[T]Alt	22	21	21	22	22	20	21	23	20	22
[T][S]	38	38	39	39	38	38	39	38	34	39
[T][S][FP]	38	38	36	38	38	38	39	38	35	38
[T][S][HP]	38	38	37	37	37	37	38	39	35	38
[T][S][HP]Async	37	38	38	38	38	37	38	38	34	38
[T][S][L]	33	33	32	33	33	35	35	33	29	33
[T][S][L]Cache	39	40	38	39	39	38	39	39	35	40
[T][S]Sparse	41	42	41	42	41	39	41	42	40	41
sgd	29	29	29	29	30	30	30	29	28	29
step_sgd	24	24	26	24	23	25	24	24	24	25
step_tween	24	24	22	24	24	22	21	24	23	24
step_tween_chain	24	24	25	23	24	25	22	24	24	25
tween	27	27	29	27	27	27	27	27	27	27
tween_chain	29	29	28	30	29	30	28	30	28	29

Mean Score, every mode x arch

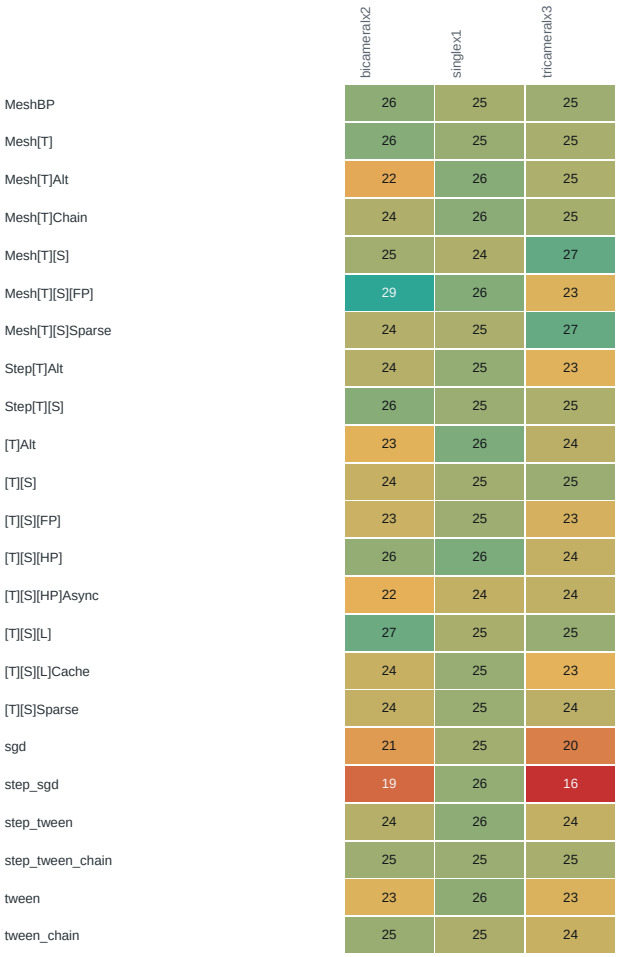
Mean Score, every mode x arch



	bicameralx2	singlex1	tricameralx3
MeshBP	16	1027	10
Mesh[T]	14	815	9
Mesh[T]Alt	3	282	2
Mesh[T]Chain	14	1062	10
Mesh[T][S]	22	756	16
Mesh[T][S][FP]	21	619	12
Mesh[T][S]Sparse	27	539	25
Step[T]Alt	3	276	2
Step[T][S]	21	852	13
[T]Alt	5	456	3
[T][S]	29	1036	27
[T][S][FP]	30	1068	22
[T][S][HP]	25	806	23
[T][S][HP]Async	24	752	18
[T][S][L]	23	990	15
[T][S][L]Cache	29	1067	19
[T][S]Sparse	43	805	35
sgd	19	1193	13
step_sgd	11	886	6
step_tween	10	712	7
step_tween_chain	10	738	8
tween	15	971	11
tween_chain	16	1132	11

Mean hard Acc, every mode x arch

Mean hard Acc, every mode x arch



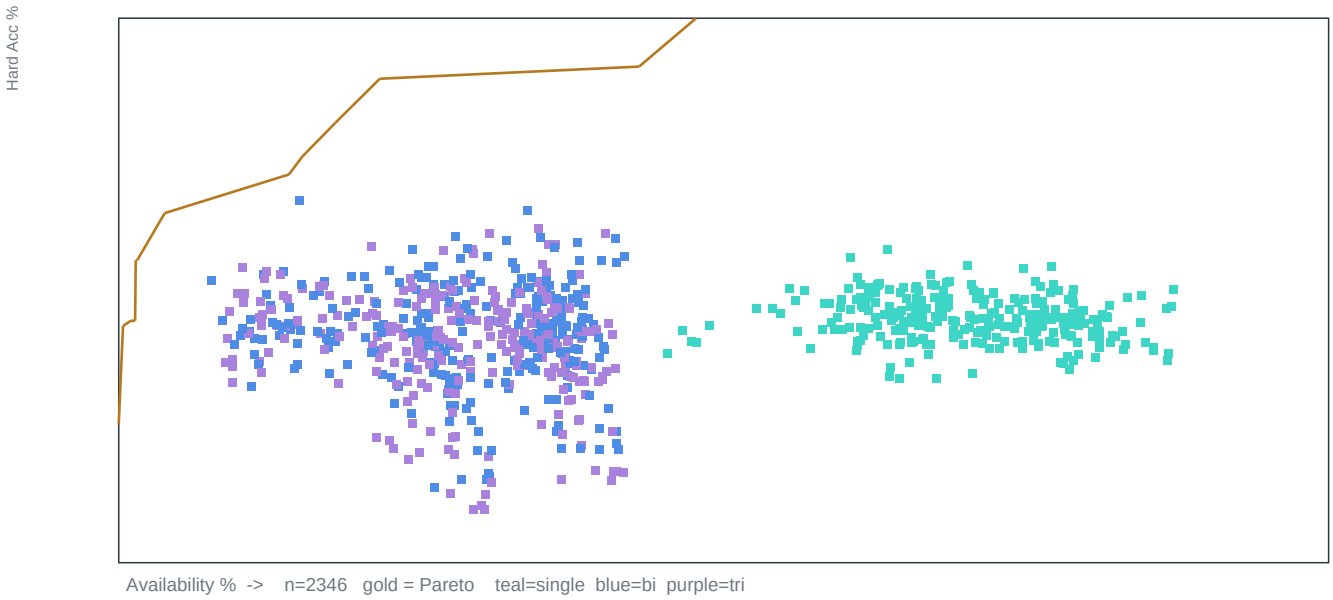
	bicameralx2	singlex1	tricameralx3
MeshBP	26	25	25
Mesh[T]	26	25	25
Mesh[T]Alt	22	26	25
Mesh[T]Chain	24	26	25
Mesh[T][S]	25	24	27
Mesh[T][S][FP]	29	26	23
Mesh[T][S]Sparse	24	25	27
Step[T]Alt	24	25	23
Step[T][S]	26	25	25
[T]Alt	23	26	24
[T][S]	24	25	25
[T][S][FP]	23	25	23
[T][S][HP]	26	26	24
[T][S][HP]Async	22	24	24
[T][S][L]	27	25	25
[T][S][L]Cache	24	25	23
[T][S]Sparse	24	25	24
sgd	21	25	20
step_sgd	19	26	16
step_tween	24	26	24
step_tween_chain	25	25	25
tween	23	26	23
tween_chain	25	25	24

Mean Avail, every mode x arch

Mean Avail, every mode x arch

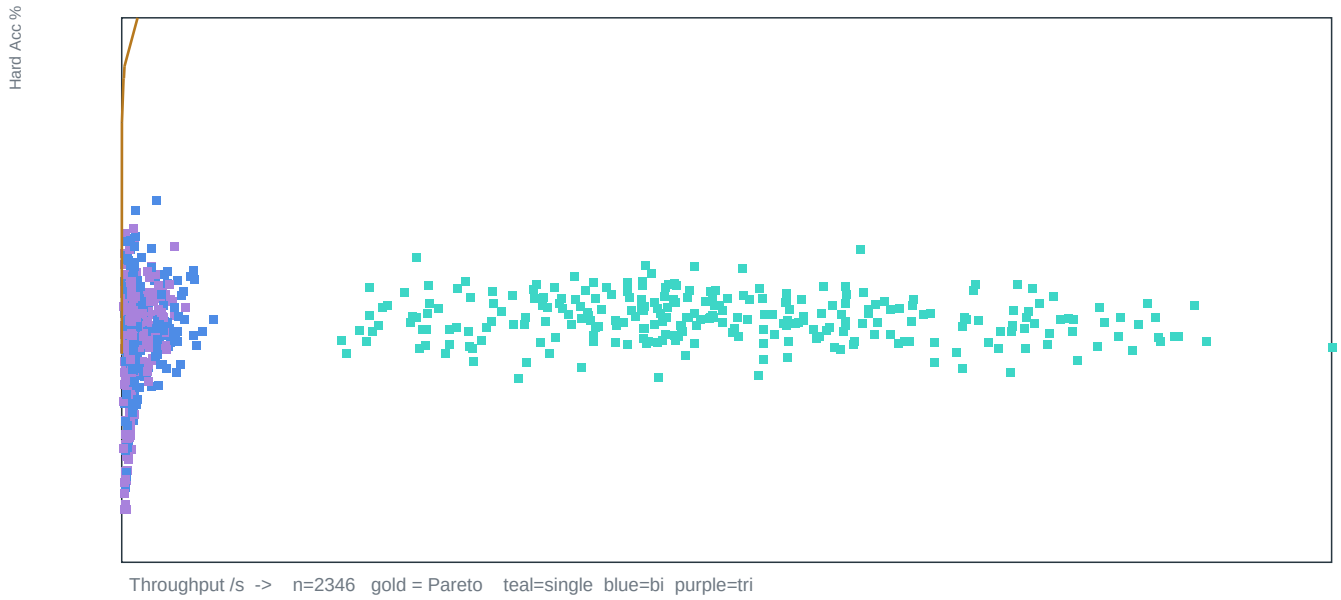
	bicamerax2	singlex1	tricamerax3
MeshBP	21	42	21
Mesh[T]	21	38	20
Mesh[T]Alt	15	32	15
Mesh[T]Chain	21	42	21
Mesh[T][S]	32	49	31
Mesh[T][S][FP]	32	47	32
Mesh[T][S]Sparse	38	47	38
Step[T]Alt	13	28	13
Step[T][S]	24	40	23
[T]Alt	15	32	15
[T][S]	32	48	31
[T][S][FP]	32	46	31
[T][S][HP]	32	46	31
[T][S][HP]Async	32	46	32
[T][S][L]	26	43	26
[T][S][L]Cache	32	49	31
[T][S]Sparse	38	47	38
sgd	22	41	22
step_sgd	18	36	17
step_tween	17	34	17
step_tween_chain	17	36	17
tween	20	39	20
tween_chain	21	43	21

Pillars - Availability vs hard Acc

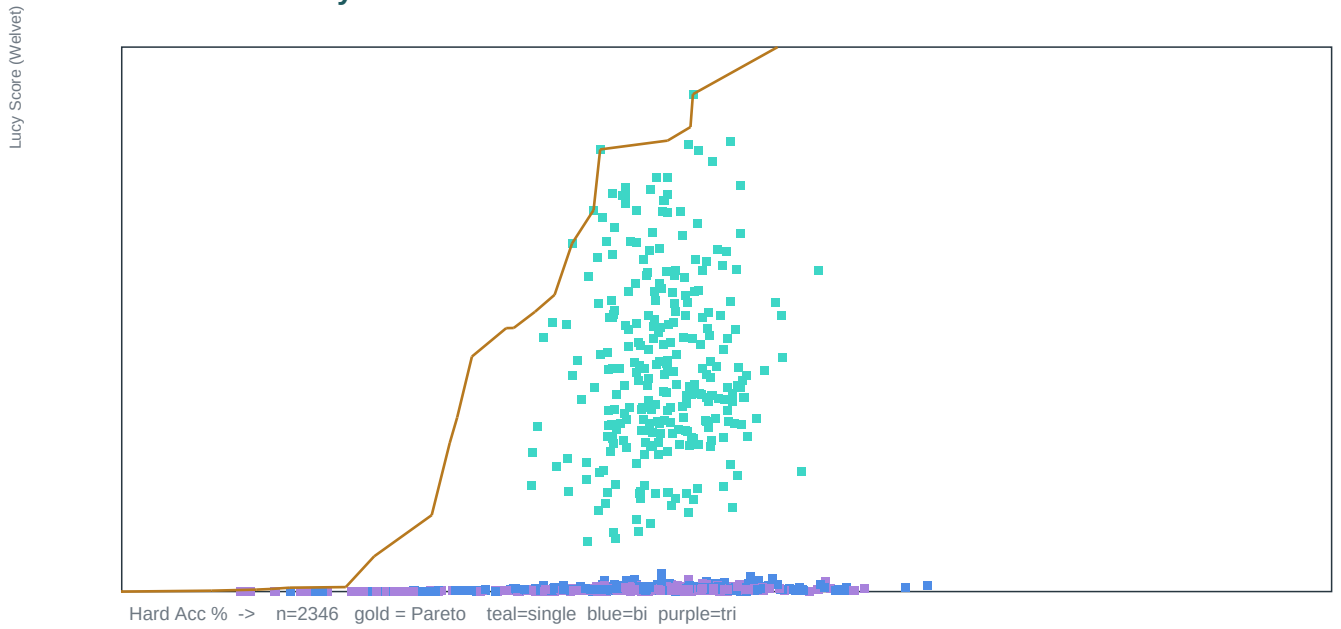


Pillars - Throughput vs hard Acc

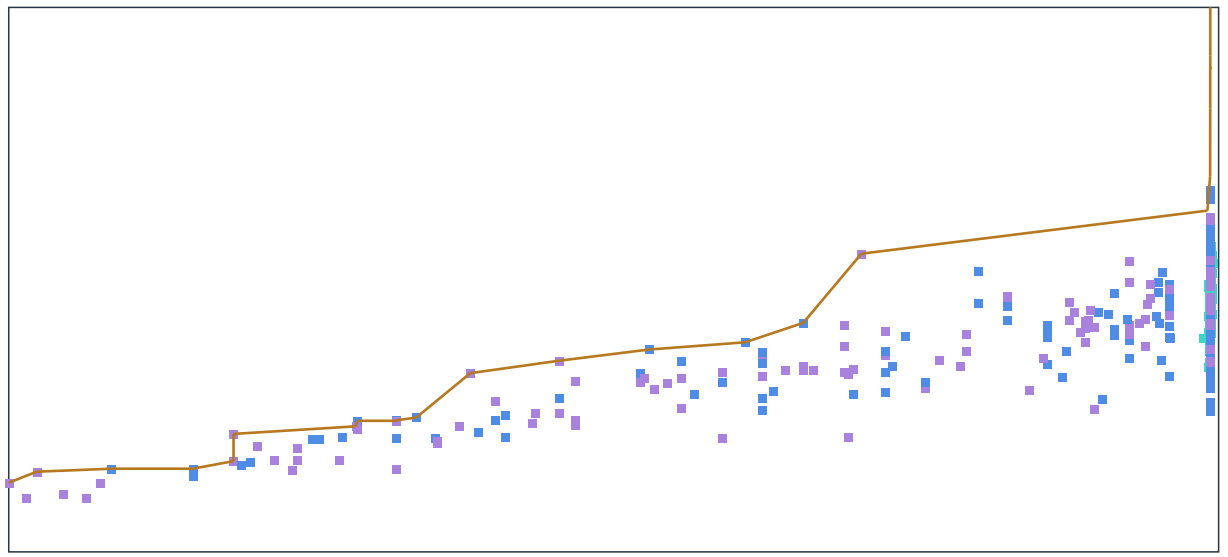
Pillars - Throughput vs hard Acc



Pareto - hard Acc vs Lucy Score

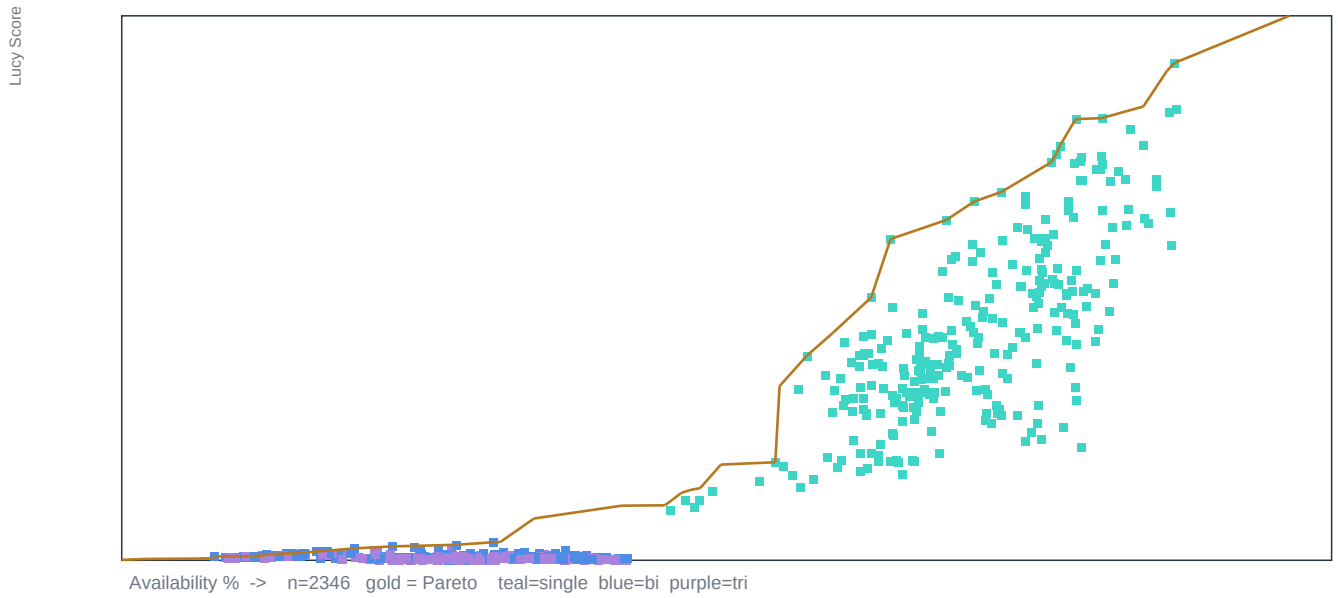


SoftAcc (serve-confidence) vs hard Acc

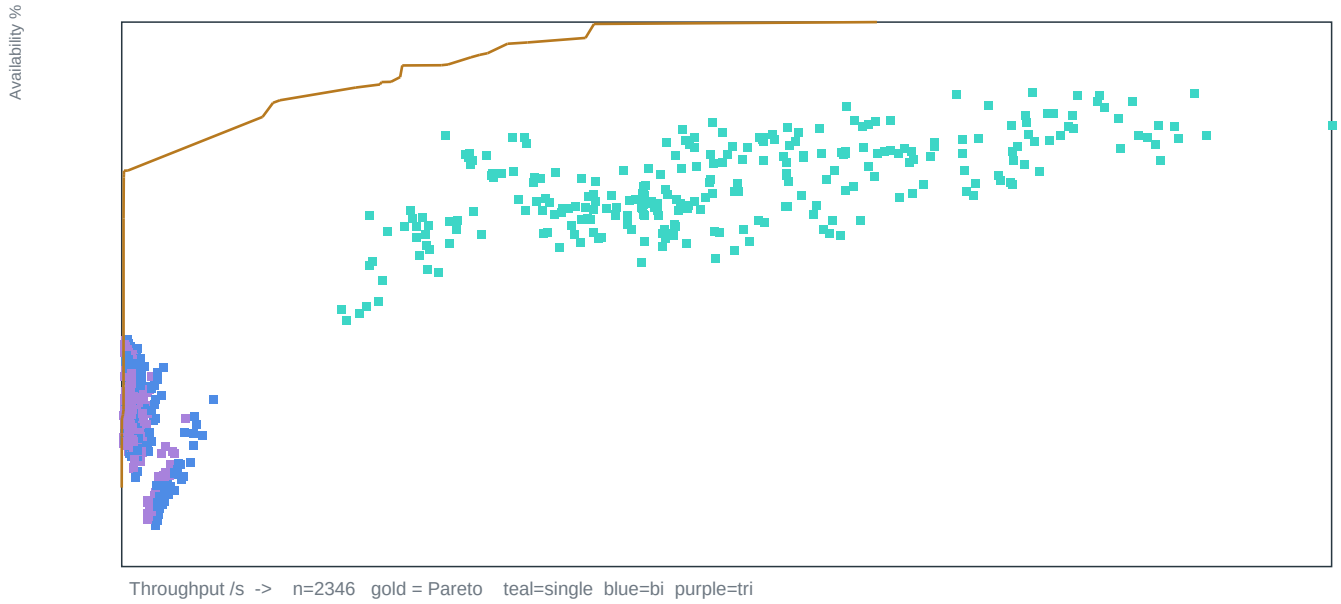



SoftAcc % -> n=2346 gold = Pareto teal=single blue=bi purple=tri
Hard Acc %

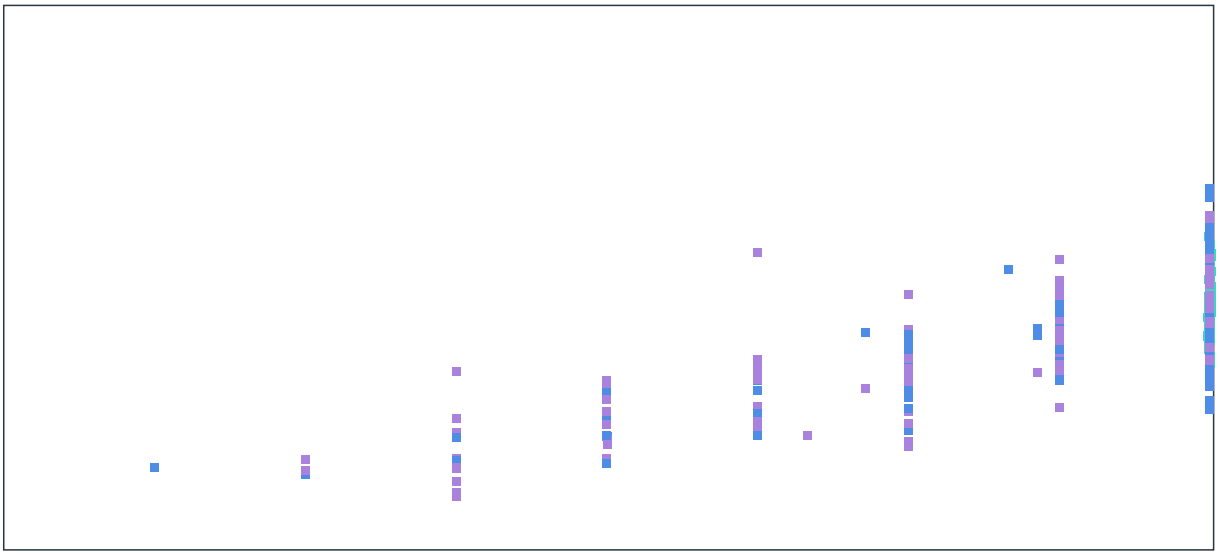
Avail vs Lucy Score (duty clock)



Pillars - Throughput vs Availability



AdaptPct vs hard Acc



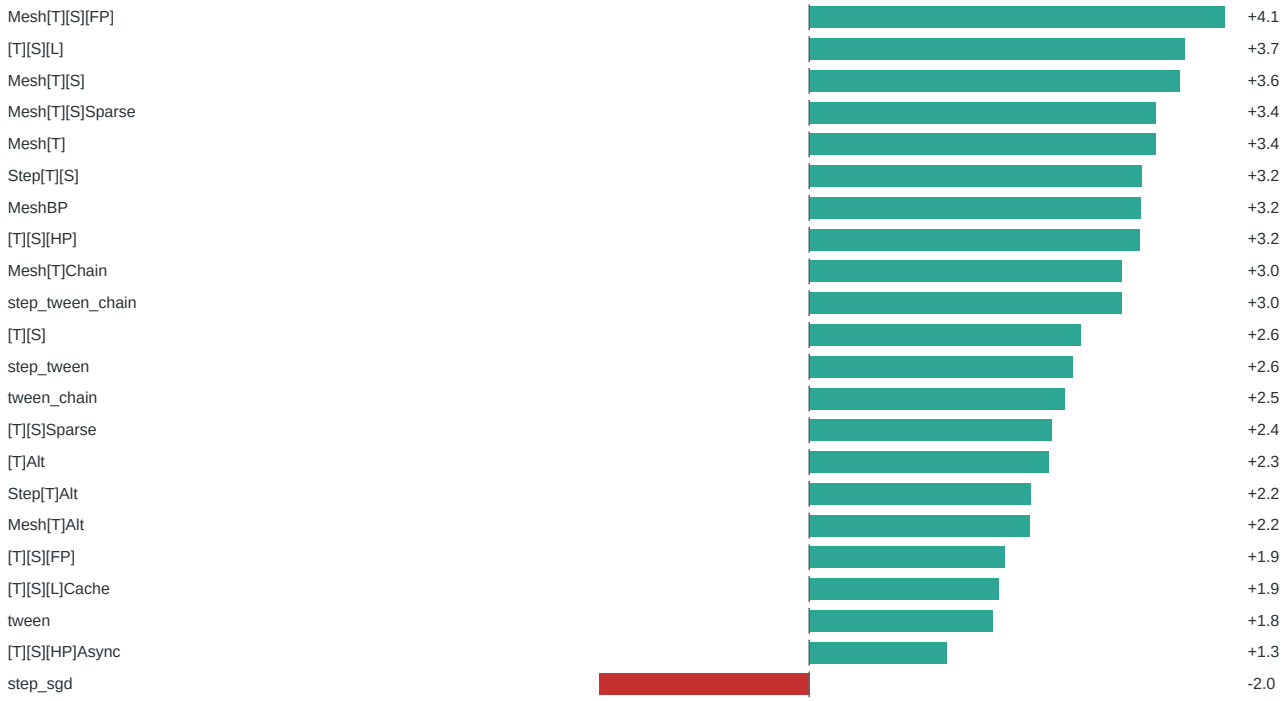

AdaptPct % -> n=2346 gold = Pareto teal=single blue=bi purple=tri
Hard Acc %

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][FP]	102	+4.1	59	+2.8	+8.5	-2329	-190.8	31
[T][S][L]	102	+3.7	53	+2.8	+3.3	-769	-65.1	51
Mesh[T][S]	102	+3.6	57	+2.8	+9.0	-1853	-143.5	44
Mesh[T][S]Sparse	102	+3.4	65	+2.8	+12.6	-2421	-211.2	54
Mesh[T]	102	+3.4	63	+2.8	-2.0	-1136	-128.5	15
Step[T][S]	102	+3.2	56	+2.8	+0.6	-1098	-112.4	34
MeshBP	102	+3.2	59	+2.8	-0.3	-685	-57.2	22
[T][S][HP]	102	+3.2	54	+2.8	+8.1	-1749	-123.3	54
Mesh[T]Chain	102	+3.0	61	+2.8	-0.4	-755	-46.4	22
step_tween_chain	102	+3.0	57	+2.7	-5.0	-1260	-156.0	3
[T][S]	102	+2.6	53	+2.8	+8.6	-951	-43.9	71
step_tween	102	+2.6	61	+2.6	-5.9	-1323	-165.1	2
tween_chain	102	+2.5	56	+2.6	-0.1	-359	-21.5	31
[T][S]Sparse	102	+2.4	56	+2.8	+12.6	-1592	-113.8	60
[T]Alt	102	+2.3	50	+2.8	-7.8	-2253	-253.4	0
Step[T]Alt	102	+2.2	55	+2.8	-10.3	-2766	-314.2	0
Mesh[T]Alt	102	+2.2	51	+2.8	-7.7	-2914	-312.4	0
[T][S][FP]	102	+1.9	54	+2.8	+8.2	-836	-34.8	61
[T][S][L]Cache	102	+1.9	53	+2.8	+8.8	-1004	-36.6	64
tween	102	+1.8	61	+1.0	-1.9	-685	-75.7	14
[T][S][HP]Async	102	+1.3	46	+2.8	+8.0	-1578	-143.4	48
step_sgd	102	-2.0	28	-2.2	-4.4	-759	-106.9	1

mean AccD vs sgd



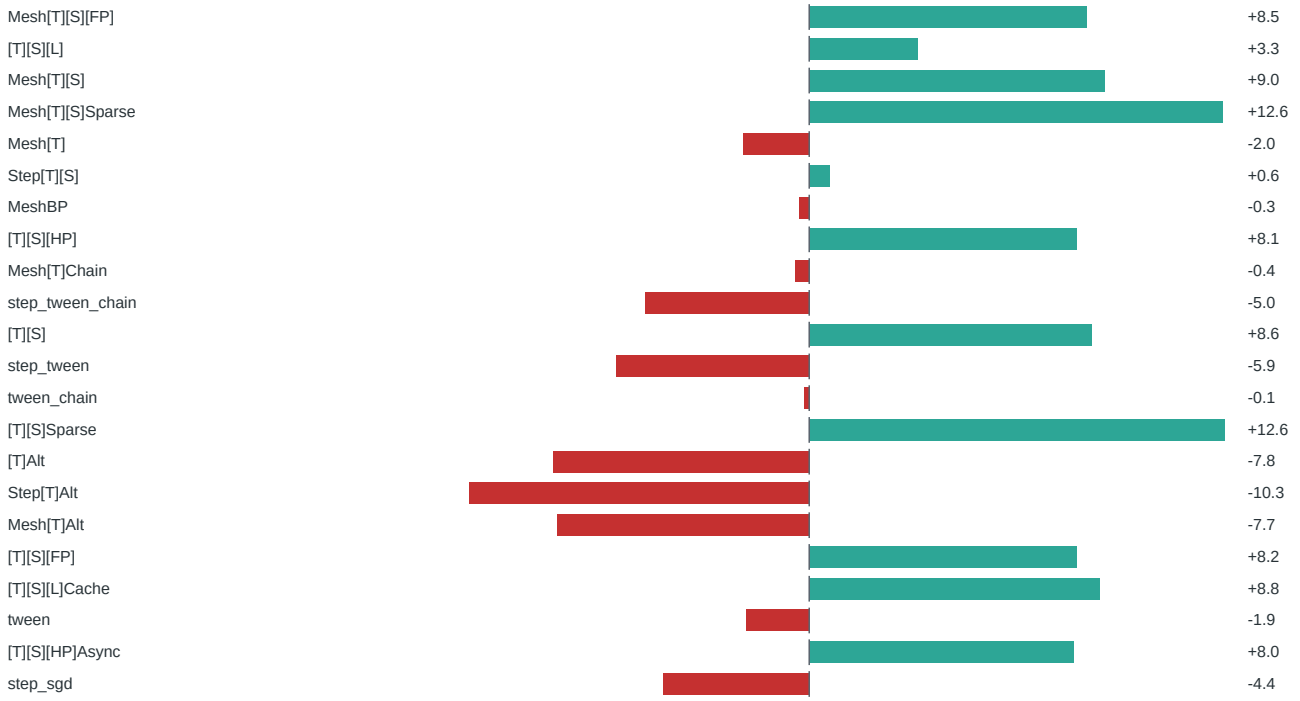
mean ScoreD vs sgd (duty clock)



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	+4	-2	+1	+6	+2	+1	+1	+1	+11	+3	+1	+1
Mesh[T]	+6	+1	+3	+5	+2	+1	+1	+0	+7	+2	-0	+0
Mesh[T]Alt	+3	-1	+5	+2	-5	+1	-5	-2	-5	+4	-4	+6
Mesh[T]Chain	-2	-0	+2	+5	+6	-1	-1	+0	+9	+2	-4	+2
Mesh[T][S]	+2	-4	+14	-1	-1	-2	+0	-5	+12	+4	-11	-1
Mesh[T][S][FP]	-1	+0	+3	+12	+4	+3	+7	+5	+5	+0	+5	+1
Mesh[T][S]Sparse	+9	-2	+0	+7	+1	+2	+1	+0	+22	+7	-4	+3
Step[T]Alt	+5	-2	+6	-4	-0	-3	+1	+4	-1	-4	+0	+4
Step[T][S]	+4	-4	+6	+10	+6	+0	-1	-1	+6	+5	-3	+3
[T]Alt	+3	-2	+4	+8	-1	-0	-2	-1	+8	+3	-6	+1
[T][S]	+2	+4	+2	+2	-1	+1	+0	+3	+7	+3	-4	+3
[T][S][FP]	+6	-4	+4	-5	-3	-3	-2	+4	+18	+4	-7	+6
[T][S][HP]	+3	+2	+4	-4	+8	+3	-0	-0	+7	+2	+2	-2
[T][S][HP]Async	+6	-2	+5	+6	-1	-2	-3	-4	+4	+6	-11	-1
[T][S][L]	-0	+7	+5	+16	+3	-1	+1	+3	+18	-0	-7	+10
[T][S][L]Cache	+6	+3	-4	+3	+0	-0	+4	+4	+1	+10	+1	-6
[T][S]Sparse	-5	+3	+2	-0	+5	-3	+3	+0	+2	+2	-7	+3
step_sgd	+1	-2	-4	-2	-3	+2	+0	-1	-4	-2	-4	-5
step_tween	+1	+2	+3	+0	+3	+0	-3	+1	+6	+2	+0	+6
step_tween_chain	+2	-2	+4	+4	-2	+1	+1	+2	+10	+1	-3	+2
tween	+5	+1	+3	+2	+2	+2	-2	+1	+2	+2	-2	+3
tween_chain	+1	+1	+2	+7	+1	+1	+0	+1	+5	+2	-1	+5

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	+1	-0	+6	-1	+3	+10	+11	-3	-2	+9	+2	+5
Mesh[T]	+6	+2	+7	+1	-1	+11	+5	+0	-0	+10	-3	+6
Mesh[T]Alt	-4	-0	+8	-7	+6	-0	+12	-9	+5	+10	-4	+4
Mesh[T]Chain	+2	+2	+11	-1	-1	+3	+8	+2	+4	+6	-3	+2
Mesh[T][S]	+7	-1	+9	+1	+7	+16	+8	-9	-1	+0	+4	-1
Mesh[T][S][FP]	+11	+1	+12	+0	+7	+10	+16	-5	+4	-3	-2	+5
Mesh[T][S]Sparse	+2	+0	+8	-4	+2	+4	+18	-11	-3	+7	-2	+8
Step[T]Alt	+7	-2	+5	+5	-0	+8	+6	-0	-3	+10	-1	+2
Step[T][S]	+11	-1	+2	-1	+0	+4	+0	+2	+0	+11	-3	+9
[T]Alt	+4	-3	+6	+3	-0	+7	+10	-0	-1	+5	+3	-1
[T][S]	+3	-4	+5	-1	+2	+12	+10	-2	-0	+6	-8	+8
[T][S][FP]	-7	-3	+5	+2	+3	-3	+10	-4	+8	+8	-5	-1
[T][S][HP]	+1	+2	+10	-4	-2	+6	+5	+0	-1	+9	+1	+2
[T][S][HP]Async	-5	-1	+1	+1	+2	+15	+3	-5	-4	+12	-6	-1
[T][S][L]	+5	-7	+8	+9	-6	+10	+8	-10	+4	+3	-6	-3
[T][S][L]Cache	-1	+1	+4	+2	+0	+9	+2	-9	-1	+10	-5	+3
[T][S]Sparse	-5	+1	+2	-3	+2	+13	+7	-4	+1	+4	-2	+14
step_sgd	+0	+0	-2	-6	-0	-3	-1	-6	+3	+2	-5	-3
step_tween	+5	+1	+5	-4	+1	+9	+6	-2	+2	+6	-4	+1
step_tween_chain	-2	-3	+8	+1	-2	+2	+9	+0	+0	+7	+2	+5
tween	+1	+1	+5	+5	+2	+3	-0	-2	+4	+8	-2	+1
tween_chain	+2	-3	+4	-4	+3	+7	+8	-1	-0	+7	-0	+6

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	+3	+3	+7	+4	-0	+10	+10	+7	-3	-0
Mesh[T]	+5	+2	+10	+0	-2	+10	+11	-0	+2	+4
Mesh[T]Alt	+3	+4	+4	+6	+5	+18	+13	-2	-2	+7
Mesh[T]Chain	+3	+6	+10	+3	-2	+17	+5	+4	+2	+2
Mesh[T][S]	+5	-1	+21	+7	-8	+27	+11	+5	-3	+10
Mesh[T][S][FP]	+0	-2	+16	+10	-9	+7	+19	+2	-1	-9
Mesh[T][S]Sparse	-3	+10	+4	-1	-1	+2	+3	+12	+6	+10
Step[T]Alt	+4	+5	+13	+1	-2	+12	+3	-2	-1	-0
Step[T][S]	+2	+6	+6	-4	+1	+8	+16	+8	+2	-1
[T]Alt	+0	+2	+6	+1	-2	+13	+7	+3	-1	+3
[T][S]	+3	-2	+17	-2	+3	+3	+11	+1	+0	+3
[T][S][FP]	-8	+6	+10	-3	-1	+5	+12	+9	-6	+10
[T][S][HP]	+9	-0	+17	+3	-2	+15	+15	-2	+1	+3
[T][S][HP]Async	-7	+2	+11	+7	-1	+2	+16	+6	-3	+0
[T][S][L]	+9	-9	+14	+4	+1	+7	+16	+7	-6	+10
[T][S][L]Cache	+2	+7	+3	-2	-2	+10	+13	-2	-1	-3
[T][S]Sparse	-3	+7	+11	-5	+1	+15	+12	+9	-2	+0
step_sgd	-2	-3	-0	-2	-7	-1	-2	-1	-2	-5
step_tween	+3	+9	+6	+0	-1	+8	+6	+4	+0	+3
step_tween_chain	+1	+5	+11	+2	+0	+14	+12	+5	-0	+4
tween	-0	+5	+5	-2	-1	+6	+2	-0	-1	+2
tween_chain	+1	+3	+5	+2	-3	+10	+10	+1	-1	+2

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	-68	-100	-88	+33	-75	-4	-58	-76	+13	-72	-86	-37
Mesh[T]	-167	-180	-163	-143	-135	-88	-161	-206	-82	-65	-72	-83
Mesh[T]Alt	-398	-469	-277	-251	-331	-528	-377	-421	-166	-247	-331	-228
Mesh[T]Chain	-35	-110	-114	-38	+15	+47	+11	-63	-60	+85	+33	-30
Mesh[T][S]	-271	-87	-149	-165	-200	-62	-250	-208	-99	-21	-149	-80
Mesh[T][S][FP]	-283	-255	-209	-160	-181	-232	-221	-257	-101	-166	-156	-99
Mesh[T][S]Sparse	-211	-272	-246	-128	-222	-307	-211	-275	-70	-176	-208	-191
Step[T]Alt	-361	-417	-320	-286	-342	-426	-402	-420	-173	-291	-332	-241
Step[T][S]	-69	-151	-115	-104	-92	-134	-210	-163	-80	-64	-123	-128
[T]Alt	-325	-352	-223	-228	-274	-403	-338	-327	-149	-216	-252	-184
[T][S]	-57	+55	-54	-13	-2	+3	-45	-107	-12	+24	-60	-1
[T][S][FP]	+130	+6	-77	-93	-86	+6	-39	-1	+32	-0	+1	-45
[T][S][HP]	-159	+222	-165	-157	-149	-91	-147	-259	-84	-53	-149	-97
[T][S][HP]Async	-14	-253	-148	-197	-162	-174	-190	-213	-61	+12	-166	-71
[T][S][L]	-127	-153	-101	-90	-74	+20	+40	-97	+81	+80	-135	-5
[T][S][L]Cache	+11	+111	-100	+33	-65	-21	+123	-106	-61	+135	+17	-7
[T][S]Sparse	-46	-146	-127	-147	-134	+45	-134	-160	-100	-92	-137	-79
step_sgd	-88	-162	-153	-44	-118	-118	-121	-132	-81	-145	-105	-57
step_tween	-205	-199	-150	-179	-136	-164	-237	-294	-133	-139	-172	-70
step_tween_chain	-146	-205	-117	-65	-205	-171	-171	-231	-85	-103	-171	-90
tween	-26	+1	-143	-89	-44	-63	-86	-107	-67	-61	-29	-42
tween_chain	-18	+14	-61	+2	-10	+61	+91	-26	-34	+66	+53	-21

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	-131	-28	-86	-81	-90	-51	-0	-21	-127	-29	+40	-49
Mesh[T]	-163	-105	-22	-154	-168	-91	-74	-120	-188	-61	-177	-139
Mesh[T]Alt	-319	-406	-172	-297	-430	-208	-168	-344	-406	-227	-432	-300
Mesh[T]Chain	-59	+7	-46	-109	-86	-77	-6	-142	+65	-89	-18	-133
Mesh[T][S]	-53	-272	-74	-83	-221	-62	-115	-119	-238	-104	-165	-92
Mesh[T][S][FP]	-232	-221	-146	-190	-188	-138	-110	-172	-227	-147	-170	-213
Mesh[T][S]Sparse	-284	-230	-166	-187	-287	-130	-126	-291	-154	-126	-338	-239
Step[T]Alt	-301	-370	-193	-291	-459	-185	-162	-339	-409	-225	-443	-287
Step[T][S]	-42	-98	-29	-101	-171	-110	-67	-145	-109	-80	-154	-98
[T]Alt	-200	-339	-162	-225	-354	-188	-142	-279	-329	-206	-247	-260
[T][S]	-59	-106	+4	-91	-26	-37	+35	-76	-64	-65	-124	-15
[T][S][FP]	-96	-35	-27	-14	-10	-33	-41	-107	+70	+0	-34	-136
[T][S][HP]	-153	-124	-72	-181	-86	-53	-85	-198	-213	-109	-122	-155
[T][S][HP]Async	-148	-259	-123	-120	-276	-84	-76	-189	-265	-69	-299	-122
[T][S][L]	-105	-175	-65	-112	-214	-20	-23	-81	-13	-79	-160	-103
[T][S][L]Cache	-166	-59	+20	+52	-190	-60	-63	-117	-220	+27	-38	-105
[T][S]Sparse	-169	+8	-136	-99	-186	-67	-33	-143	-193	-85	-148	+26
step_sgd	-118	-116	-6	-115	-150	-83	-38	-148	-51	+22	-201	-120
step_tween	-129	-112	-106	-172	-293	-146	-128	-137	-211	-91	-247	-166
step_tween_chain	-198	-226	-98	-179	-270	-118	-92	-207	-233	-50	-139	-110
tween	-146	-61	-0	-63	-101	-53	-42	-111	-56	-39	-110	-95
tween_chain	-57	-20	-40	-14	-55	-8	-45	-33	-32	-35	-12	-9

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	-118	-82	-15	-33	-105	-8	-9	-57	-129	-118
Mesh[T]	-167	-154	-32	-184	-235	-55	-54	-122	-221	-137
Mesh[T]Alt	-356	-269	-179	-323	-346	-156	-157	-314	-497	-292
Mesh[T]Chain	-108	-5	-54	-52	-157	+11	-12	-53	-52	-142
Mesh[T][S]	-152	-186	+10	-163	-220	-76	-110	-195	-283	-161
Mesh[T][S][FP]	-220	-247	-88	-203	-260	-135	-93	-181	-323	-266
Mesh[T][S]Sparse	-295	-175	-170	-280	-274	-138	-109	-204	-262	-199
Step[T]Alt	-372	-325	-166	-346	-357	-158	-165	-318	-509	-290
Step[T][S]	-151	-112	-37	-176	-190	-66	-64	-67	-136	-188
[T]Alt	-262	-265	-150	-264	-289	-128	-155	-282	-383	-235
[T][S]	-58	-120	+125	-149	-49	-3	-43	-53	-209	-41
[T][S][FP]	+38	-45	-55	-55	-109	-39	-3	-29	-218	-36
[T][S][HP]	-197	-101	+92	-182	-259	-84	-86	-180	-196	-160
[T][S][HP]Async	-210	-61	-50	-190	-122	-51	-49	-136	-247	-92
[T][S][L]	-69	-146	-21	-70	-51	+91	+16	+13	-163	-99
[T][S][L]Cache	-48	-55	+99	-98	-96	+66	-33	-17	-187	-29
[T][S]Sparse	-211	-112	-43	-131	-173	-96	-55	-131	-246	-190
step_sgd	-160	-121	-13	-153	-226	-56	-72	-154	-122	-108
step_tween	-172	-124	-88	-244	-176	-98	-117	-136	-301	-139
step_tween_chain	-205	-169	-74	-213	-244	-50	-99	-199	-253	-118
tween	-110	-90	-13	-122	-168	-55	-63	-118	-88	-113
tween_chain	-76	-20	-43	-50	-106	+47	-34	-27	-129	-52

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	-1	-0	-1	-0	-0	-0	-0	-0	+1	-1	-0	-1
Mesh[T]	-1	-1	-3	-2	-2	-2	-2	-2	-1	-2	-2	-3
Mesh[T]Alt	-7	-7	-8	-8	-5	-10	-7	-7	-9	-8	-7	-8
Mesh[T]Chain	-1	+0	-1	-1	+1	-1	+0	+0	-0	-1	-0	-2
Mesh[T][S]	+9	+8	+9	+9	+10	+6	+8	+9	+9	+11	+10	+9
Mesh[T][S][FP]	+8	+8	+8	+9	+10	+6	+8	+9	+10	+9	+9	+9
Mesh[T][S]Sparse	+13	+16	+11	+12	+13	+14	+12	+15	+12	+12	+13	+11
Step[T]Alt	-10	-8	-11	-11	-10	-10	-11	-8	-13	-10	-11	-10
Step[T][S]	+1	+4	-1	-1	+1	+0	-0	+2	+2	+1	-0	-0
[T]Alt	-8	-6	-8	-9	-7	-10	-8	-7	-8	-8	-8	-8
[T][S]	+9	+9	+9	+10	+10	+5	+7	+8	+10	+9	+9	+8
[T][S][FP]	+9	+8	+8	+8	+9	+5	+7	+8	+9	+10	+8	+8
[T][S][HP]	+8	+10	+8	+10	+8	+6	+7	+7	+10	+9	+9	+8
[T][S][HP]Async	+8	+8	+8	+8	+9	+6	+7	+8	+9	+9	+8	+8
[T][S][L]	+3	-0	+4	+3	+4	+1	+3	+7	+6	+5	+4	+4
[T][S][L]Cache	+9	+9	+9	+10	+10	+5	+8	+9	+9	+10	+9	+9
[T][S]Sparse	+13	+16	+12	+11	+13	+16	+11	+15	+11	+13	+12	+11
step_sgd	-5	-2	-5	-4	-5	-4	-5	-3	-4	-5	-5	-5
step_tween	-7	-5	-6	-6	-6	-6	-7	-5	-8	-7	-6	-6
step_tween_chain	-5	-4	-5	-4	-6	-4	-5	-4	-6	-6	-6	-6
tween	-2	-1	-3	-3	-1	-2	-1	-1	-2	-2	-2	-2
tween_chain	-0	+0	-1	-1	+0	-1	+1	+0	+0	+0	-0	-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	+0	-0	+0	+0	-0	+0	-1	-0	-0	-0	-1	-1
Mesh[T]	-2	-2	-0	-2	-2	-2	-3	-2	-1	-1	-2	-3
Mesh[T]Alt	-7	-6	-7	-7	-7	-11	-10	-6	-7	-7	-8	-7
Mesh[T]Chain	-0	-0	-0	+1	-1	-1	-0	-1	-0	-1	+0	-1
Mesh[T][S]	+10	+8	+12	+9	+9	+9	+7	+9	+6	+9	+9	+9
Mesh[T][S][FP]	+9	+8	+9	+9	+8	+8	+9	+9	+6	+8	+8	+8
Mesh[T][S]Sparse	+12	+17	+11	+12	+16	+9	+11	+12	+16	+12	+16	+12
Step[T]Alt	-8	-6	-9	-10	-7	-11	-13	-11	-9	-11	-9	-10
Step[T][S]	+1	+3	+2	-0	+3	+1	-2	-0	+2	+1	+2	-1
[T]Alt	-6	-6	-7	-8	-7	-9	-10	-8	-8	-7	-7	-9
[T][S]	+9	+8	+10	+9	+8	+9	+9	+8	+6	+8	+9	+9
[T][S][FP]	+9	+7	+10	+9	+7	+8	+9	+9	+6	+7	+6	+9
[T][S][HP]	+8	+8	+9	+10	+8	+7	+8	+9	+8	+7	+7	+8
[T][S][HP]Async	+9	+7	+9	+8	+8	+8	+9	+8	+6	+7	+7	+8
[T][S][L]	+4	-0	+4	+3	+1	+5	+6	+4	-1	+4	+0	+3
[T][S][L]Cache	+9	+8	+11	+10	+8	+9	+9	+9	+6	+8	+8	+9
[T][S]Sparse	+12	+16	+12	+12	+17	+10	+11	+12	+16	+12	+17	+11
step_sgd	-5	-3	-3	-5	-2	-5	-6	-6	-3	-3	-3	-5
step_tween	-5	-4	-5	-5	-5	-8	-9	-6	-5	-5	-5	-6
step_tween_chain	-6	-3	-4	-6	-4	-6	-7	-6	-3	-4	-4	-5
tween	-2	-2	+0	-2	-1	-2	-4	-3	-1	-0	-1	-4
tween_chain	-1	-1	+0	+0	+0	+0	+1	-0	-0	-1	-1	-1

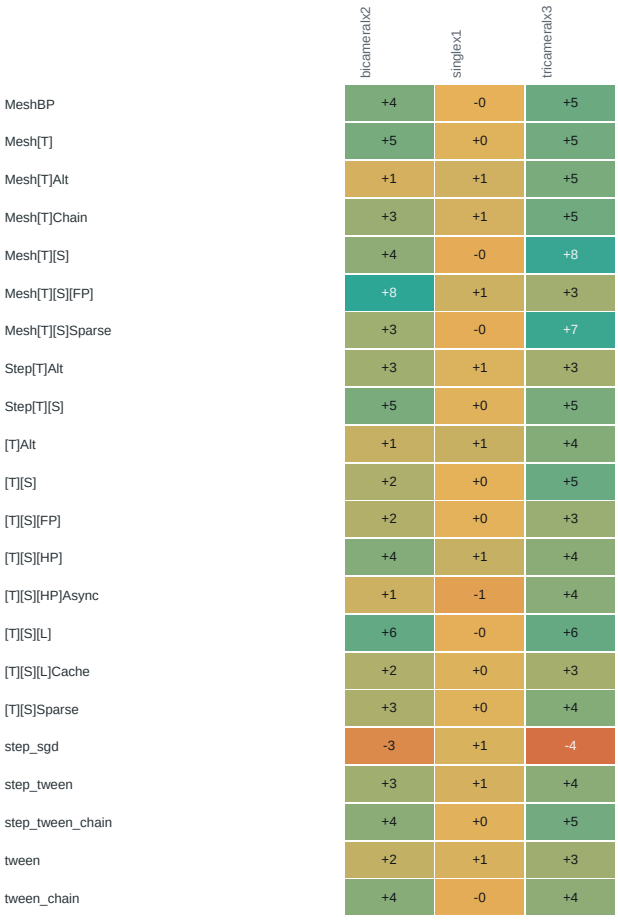
AvailD vs sgd, every mode x dtype (cols 25-34)

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

	uint16	uint2	uint3	uint32	uint4	uint5	uint6	uint64	uint8	uintptr
MeshBP	-2	+0	-0	+0	-1	+0	+0	-0	+0	-1
Mesh[T]	-2	-3	-0	-3	-4	-3	-2	-3	-1	-2
Mesh[T]Alt	-7	-7	-9	-7	-7	-9	-9	-7	-7	-7
Mesh[T]Chain	-0	-1	-0	+0	-0	-0	-0	-0	-0	-2
Mesh[T][S]	+10	+10	+11	+10	+10	+8	+8	+10	+8	+9
Mesh[T][S][FP]	+9	+9	+9	+9	+9	+8	+9	+9	+7	+8
Mesh[T][S]Sparse	+12	+12	+11	+12	+12	+10	+12	+12	+13	+12
Step[T]Alt	-12	-11	-12	-11	-10	-12	-12	-11	-10	-12
Step[T][S]	+0	+0	+1	+0	-1	-0	+0	+0	+0	-1
[T]Alt	-8	-8	-8	-7	-7	-10	-9	-6	-8	-7
[T][S]	+9	+8	+10	+9	+9	+8	+9	+9	+6	+10
[T][S][FP]	+8	+9	+8	+9	+8	+8	+9	+8	+7	+9
[T][S][HP]	+9	+8	+8	+8	+8	+7	+8	+9	+7	+9
[T][S][HP]Async	+8	+9	+9	+8	+9	+8	+8	+8	+6	+9
[T][S][L]	+3	+4	+4	+4	+4	+5	+5	+4	+1	+4
[T][S][L]Cache	+9	+10	+10	+10	+9	+8	+9	+10	+7	+10
[T][S]Sparse	+12	+12	+12	+12	+12	+9	+11	+12	+13	+12
step_sgd	-6	-5	-3	-5	-7	-5	-5	-5	-4	-5
step_tween	-5	-6	-7	-5	-5	-7	-9	-6	-5	-5
step_tween_chain	-6	-5	-4	-6	-5	-5	-7	-6	-4	-4
tween	-2	-3	+0	-2	-3	-3	-2	-2	-1	-3
tween_chain	-0	-0	-0	+0	-0	+1	-1	+0	+1	-0

AccD vs sgd, every mode x arch

AccD vs sgd, every mode x arch



Family collapse - Step* vs non-Step

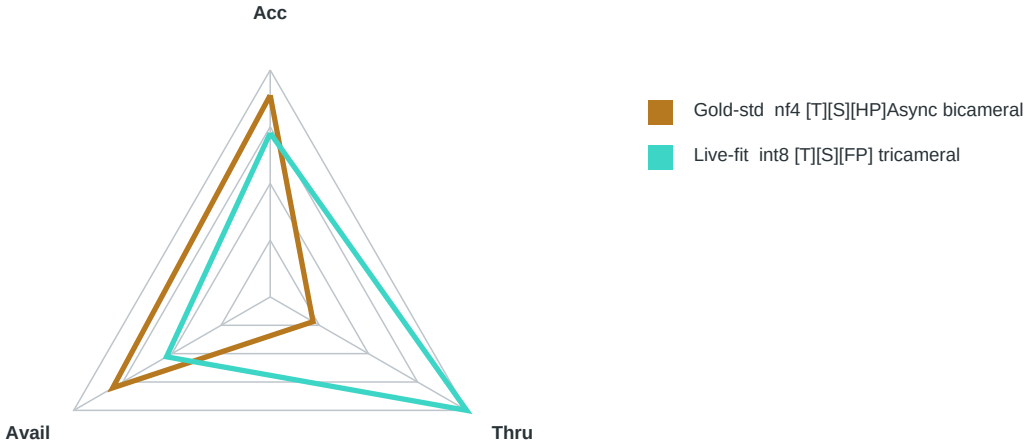
Step* is a 1D pipe (one sample enters layer 0 per tick; output is the sample that entered depth ticks ago). Non-Step of the same family is a full-chain update. AccD is a real scheduler split, not leftover warm-up forwards.

step	plain	n	mean |AccD|
Step[T]Alt	[T]Alt	102	6.56
Step[T][S]	[T][S]	102	5.94
step_sgd	sgd	102	3.40
step_tween	tween	102	3.77
step_tween_chain	tween_chain	102	3.80

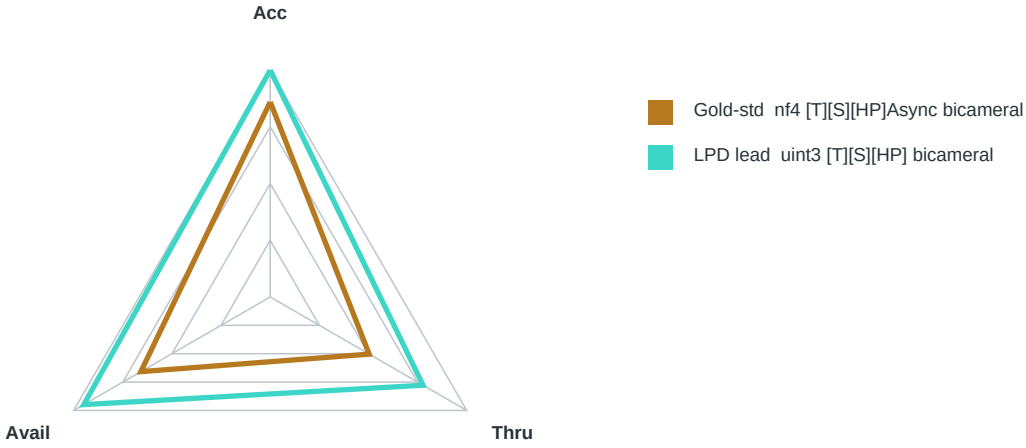
Consciousness - Acc, Throughput, Availability

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 complex64|none|[T][S][L]|bicameral|simd Acc 56.2 Thru 268 Avail 28.2% 123.8 KiB (RAM reference)
Lucy Score champ (T x Avail x Acc) binary|none|[T][S][HP]|single|simd Score 2238.4 Acc 30.5 Soft 25 0.0 KiB
Live-fit champ (best Q) int8|none|[T][S][FP]|tricameral|simd Acc 40.6 Thru 890 Avail 20.7% 20.5 KiB
Gold-std (2+ pillars, Acc keep >= 80%, then smallest then fastest): nf4|none|[T][S][HP]Async|bicameral|simd mode [T][S][HP]Async Acc 50.0 Thru 194 7.7 KiB
Board fastest float32|none|sgd|single|simd Thru 18812 (traps may own this) Best availability binary|none|[T][S][L]Cache|single|simd 52.1%
Learner Thru peak 890 learner Avail peak 39.3%

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	2	50.0	7.7	194	nf4 [T][S][HP]Async bicameral
Mesh[T][S]	4	50.0	9.7	167	uint5 Mesh[T][S] bicameral / uint32 Mesh[T][S] tricameral
[T][S][FP]	1	50.0	11.6	126	fp6 [T][S][FP] bicameral
Mesh[T][S]Sparse	3	50.0	15.4	242	int6 Mesh[T][S]Sparse tricameral / bfloat16 Mesh[T][S]Sparse tricam~
Mesh[T][S][FP]	3	50.0	15.4	178	int6 Mesh[T][S][FP] tricameral / complex64 Mesh[T][S][FP] bicameral
[T][S][HP]	1	50.0	15.4	125	uint6 [T][S][HP] tricameral
[T][S][L]Cache	1	50.0	15.4	87	uint6 [T][S][L]Cache tricameral
[T][S]Sparse	1	46.9	123.8	302	uint64 [T][S]Sparse bicameral

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

Band	Cell	Acc%	Thru%	Avail%	Q%	RAM%	xSmall	LPD	Acc	Thru	KiB
near	nf4 [T][S][HP]Async bicameral	89	22	80	54	6	16.0	8.60	50.0	194	7.7
near	uint5 Mesh[T][S] bicameral	89	11	93	45	8	12.8	5.81	50.0	102	9.7
near	fp6 [T][S][FP] bicameral	89	14	88	48	9	10.7	5.12	50.0	126	11.6

Band	Cell	Acc%	Thru%	Avail%	Q%	RAM%	xSmall	LPD	Acc	Thru	KiB
near	uint6 [T][S][HP]Async bicameral	89	12	91	46	9	10.7	4.91	50.0	107	11.6
near	uint5 Mesh[T][S] tricameral	89	9	94	42	10	9.6	4.05	50.0	79	12.9
near	uint6 [T][S][HP] tricameral	89	14	89	48	12	8.0	3.87	50.0	125	15.4
near	uint6 [T][S][L]Cache tricameral	89	10	92	43	12	8.0	3.46	50.0	87	15.4
near	int6 Mesh[T][S]Sparse tricameral	89	6	100	38	12	8.0	3.07	50.0	56	15.4
near	uint6 Mesh[T][S][FP] tricameral	89	6	94	37	12	8.0	2.99	50.0	55	15.4
near	int6 Mesh[T][S][FP] tricameral	89	6	91	36	12	8.0	2.88	50.0	51	15.4
near	bfloat16 Mesh[T][S]Sparse tricameral	80	27	99	60	33	3.0	1.81	45.0	242	41.1

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
-	uint3 [T][S][HP] bicameral	78	25	87	56	5	21.3	11.81	43.8	225	5.8
-	uint3 [T][S] bicameral	74	18	88	49	5	21.3	10.52	41.6	165	5.8
-	uint3 Mesh[T][S] bicameral	78	14	91	46	5	21.3	9.75	43.8	121	5.8
-	uint3 Mesh[T][S][FP] bicameral	78	12	92	44	5	21.3	9.31	43.8	105	5.8
near	nf4 [T][S][HP]Async bicameral	89	22	80	54	6	16.0	8.60	50.0	194	7.7
-	int4 Mesh[T][S] tricameral	78	57	57	63	8	12.1	7.62	43.8	511	10.3
near	uint5 Mesh[T][S] bicameral	89	11	93	45	8	12.8	5.81	50.0	102	9.7
-	int5 [T][S][L] bicameral	78	14	75	44	8	12.8	5.60	43.8	127	9.7
near	fp6 [T][S][FP] bicameral	89	14	88	48	9	10.7	5.12	50.0	126	11.6
near	uint6 [T][S][HP]Async bicameral	89	12	91	46	9	10.7	4.91	50.0	107	11.6
-	uint6 [T][S]Sparse bicameral	78	12	100	46	9	10.7	4.89	43.8	111	11.6
-	fp4 Step[T]Alt bicameral	71	11	33	30	6	16.0	4.77	40.1	101	7.7
-	int8 [T][S][FP] tricameral	72	100	53	73	17	6.0	4.37	40.6	890	20.5
-	fp6 Mesh[T][S]Sparse bicameral	78	9	99	40	9	10.7	4.30	43.8	76	11.6
-	fp8e5m2 Mesh[T][S][FP] bicameral	78	23	84	53	12	8.0	4.27	43.8	208	15.5
near	uint5 Mesh[T][S] tricameral	89	9	94	42	10	9.6	4.05	50.0	79	12.9
near	uint6 [T][S][HP] tricameral	89	14	89	48	12	8.0	3.87	50.0	125	15.4
near	uint6 [T][S][L]Cache tricameral	89	10	92	43	12	8.0	3.46	50.0	87	15.4
-	uint4 Mesh[T]Alt tricameral	78	6	43	28	8	12.0	3.34	43.8	56	10.3
acc	fp6 [T][S][L] tricameral	89	10	77	40	12	8.0	3.25	50.0	86	15.4

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

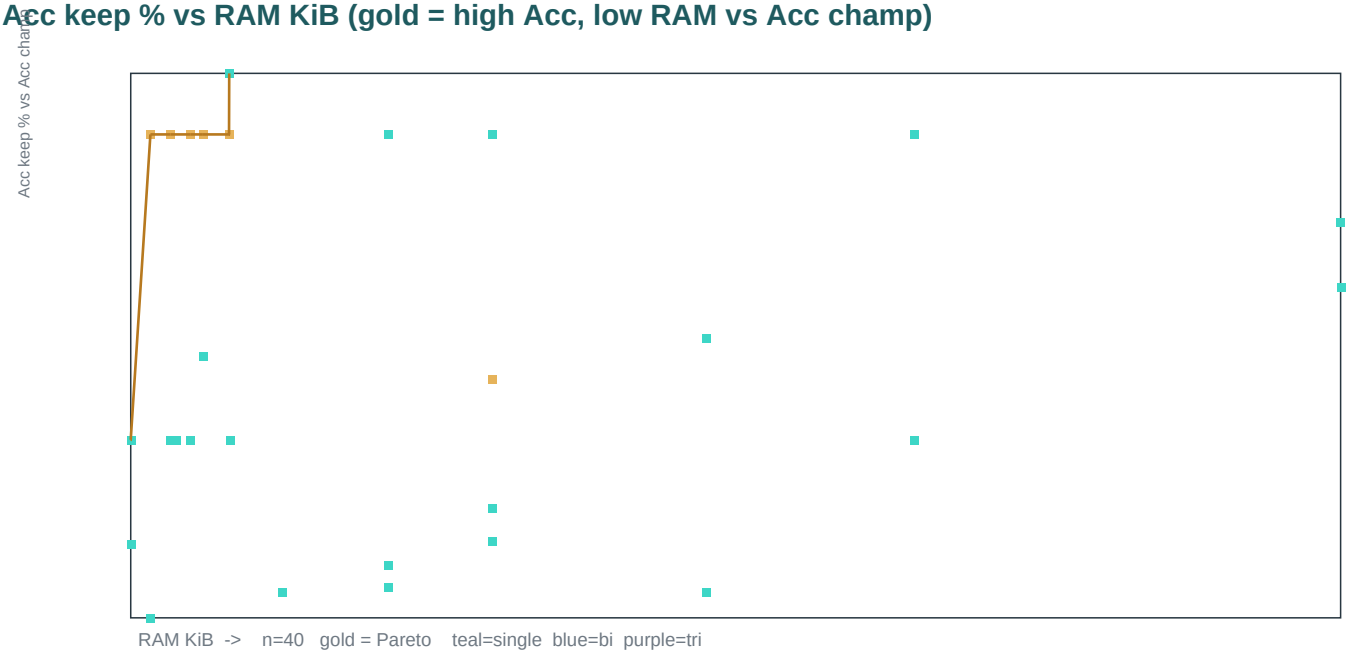
Band	Cell	Acc%	Thru%	Avail%	Q%	LPD	Thru	Avail
-	int8 [T][S][FP] tricameral	72	100	53	73	4.37	890	20.7
acc	float64 Mesh[T][S][FP] bicameral	86	44	80	67	0.67	394	31.3
keep	uint64 [T][S]Sparse bicameral	83	34	98	65	0.65	302	38.5
-	float16 [T][S][HP] tricameral	74	42	83	64	1.91	370	32.7
-	int4 Mesh[T][S] tricameral	78	57	57	63	7.62	511	22.2
acc	int32 [T][S][L] bicameral	81	39	73	61	1.23	344	28.7
-	complex128 [T][S][FP] bicameral	74	35	87	61	0.30	309	34.3
acc	complex64 [T][S][L] bicameral	100	30	72	60	0.60	268	28.2
near	bfloat16 Mesh[T][S]Sparse tricameral	80	27	99	60	1.81	242	39.0
-	uint3 [T][S][HP] bicameral	78	25	87	56	11.81	225	34.2

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	44	100	100	76	0	32.0	0.00	24.6	15807	0.0
trap	binary step_sgd single	39	100	100	73	0	32.0	0.00	22.1	13631	0.0
trap	binary tween single	51	100	100	80	0	32.0	0.00	28.8	13922	0.0
trap	binary tween_chain single	44	100	100	76	0	32.0	0.00	24.8	15272	0.0

trap	binary step_tween single	51	100	88	77	0	32.0	0.00	28.5	10909	0.0
trap	binary step_tween_chain single	44	100	97	75	0	32.0	0.00	25.0	11251	0.0
trap	binary MeshBP single	39	100	100	73	0	32.0	0.00	22.1	14058	0.0
trap	binary Mesh[T] single	40	100	100	74	0	32.0	0.00	22.7	12084	0.0
trap	binary Mesh[T]Chain single	39	100	100	73	0	32.0	0.00	22.2	13460	0.0
trap	binary [T][S] single	51	100	100	80	0	32.0	0.00	28.8	12156	0.0

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

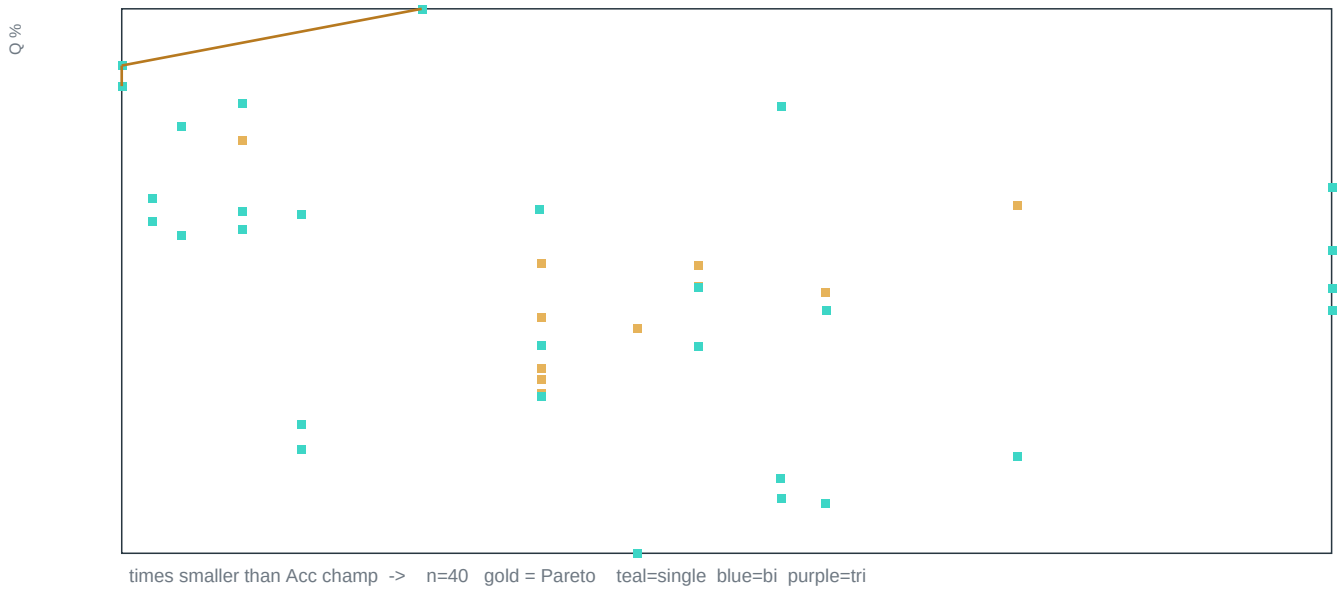


Q% vs RAM KiB (gold = high consciousness, low RAM)



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

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

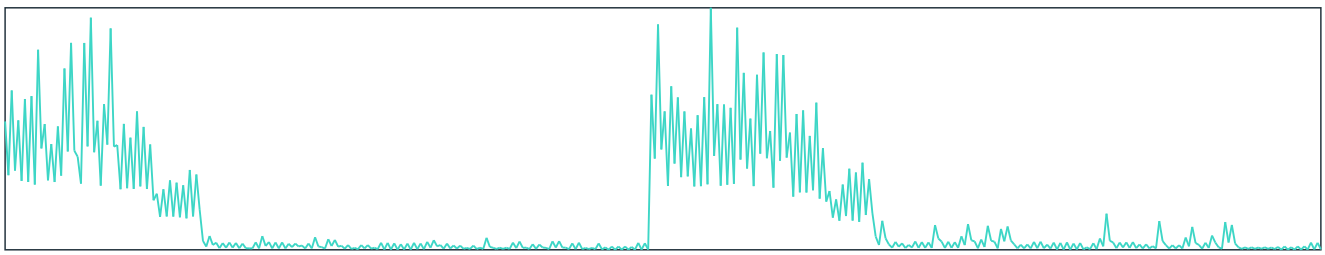


times smaller than Acc champ -> n=40 gold = Pareto teal=single blue=bi purple=tri

Top Lucy density (LPD)

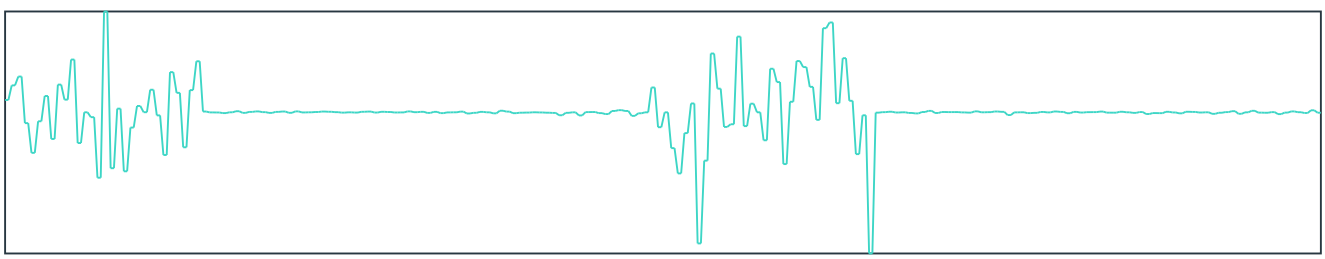


Live pulse (Score)



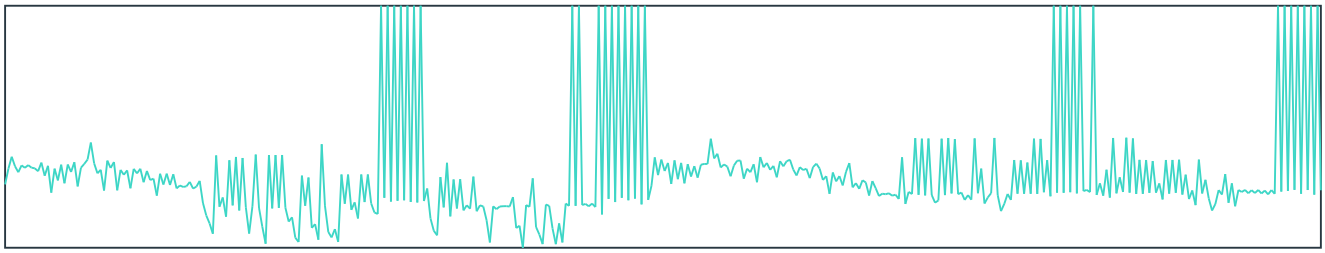
n=400 min=4.51 max=2000.22

Live pulse (SoftAcc)



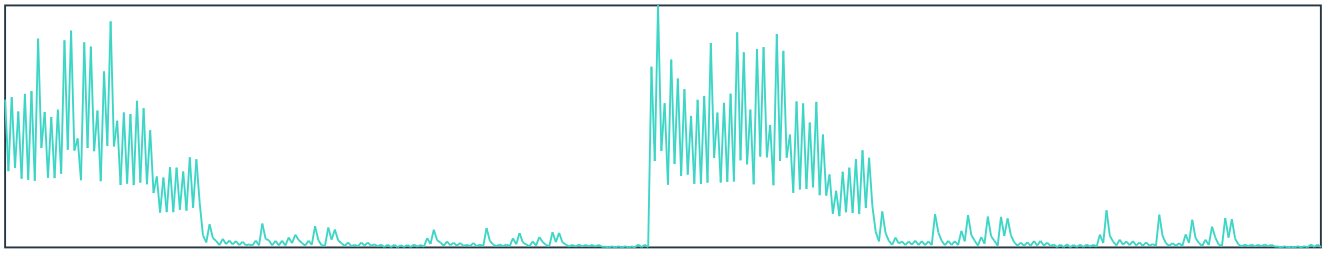
n=400 min=24.91 max=25.06

Live pulse (Availability)



n=400 min=20.68 max=100.00

Live pulse (Throughput)



n=400 min=50.60 max=16757.63

Queue by train mode (this epoch)

Mode	Done	Run	Left	Total