Katana – Measurements

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28 mai 2022

The Test Bench

Those test benchs have been run with :

Tool	**Git Commit Hash**
November 23, 2021 – 20211123	
Coriolis	`ca499e024c20b50ea48a8e21f30225b60efb4527`
`alliance-check-toolkit`	`afb3d074279f8dd417a4d7c63f9fad481bba4014`
May 28, 2022 – 20220528	
Coriolis	`33e148440ca373130319111745f58deb63b68c17`
`alliance-check-toolkit`	`fd452344a74421cb6bfcc88ae085758794d4d2d3`

Be aware that the all the curves uses logarithmic scale on both axis.

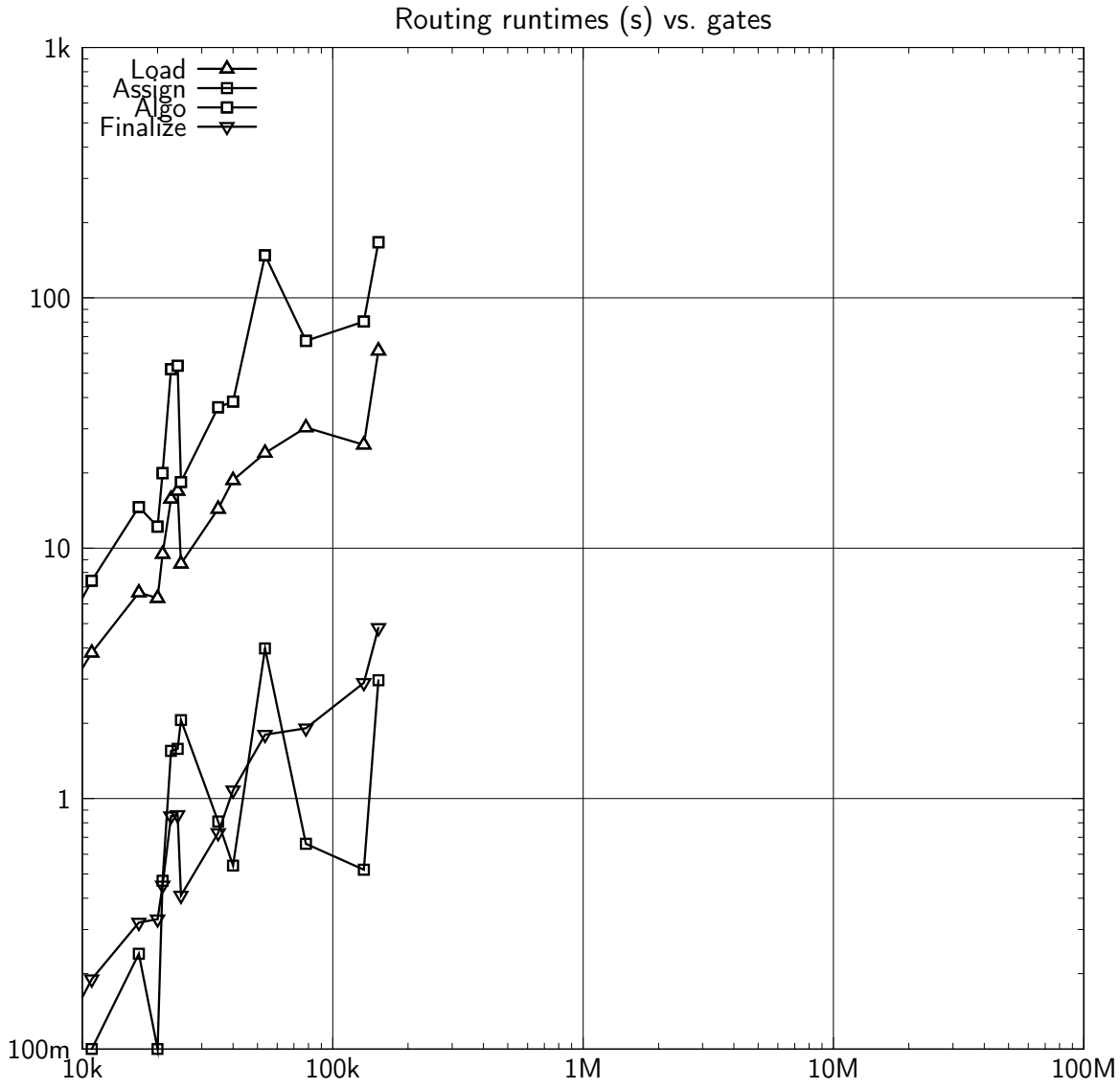
The figures shows that :

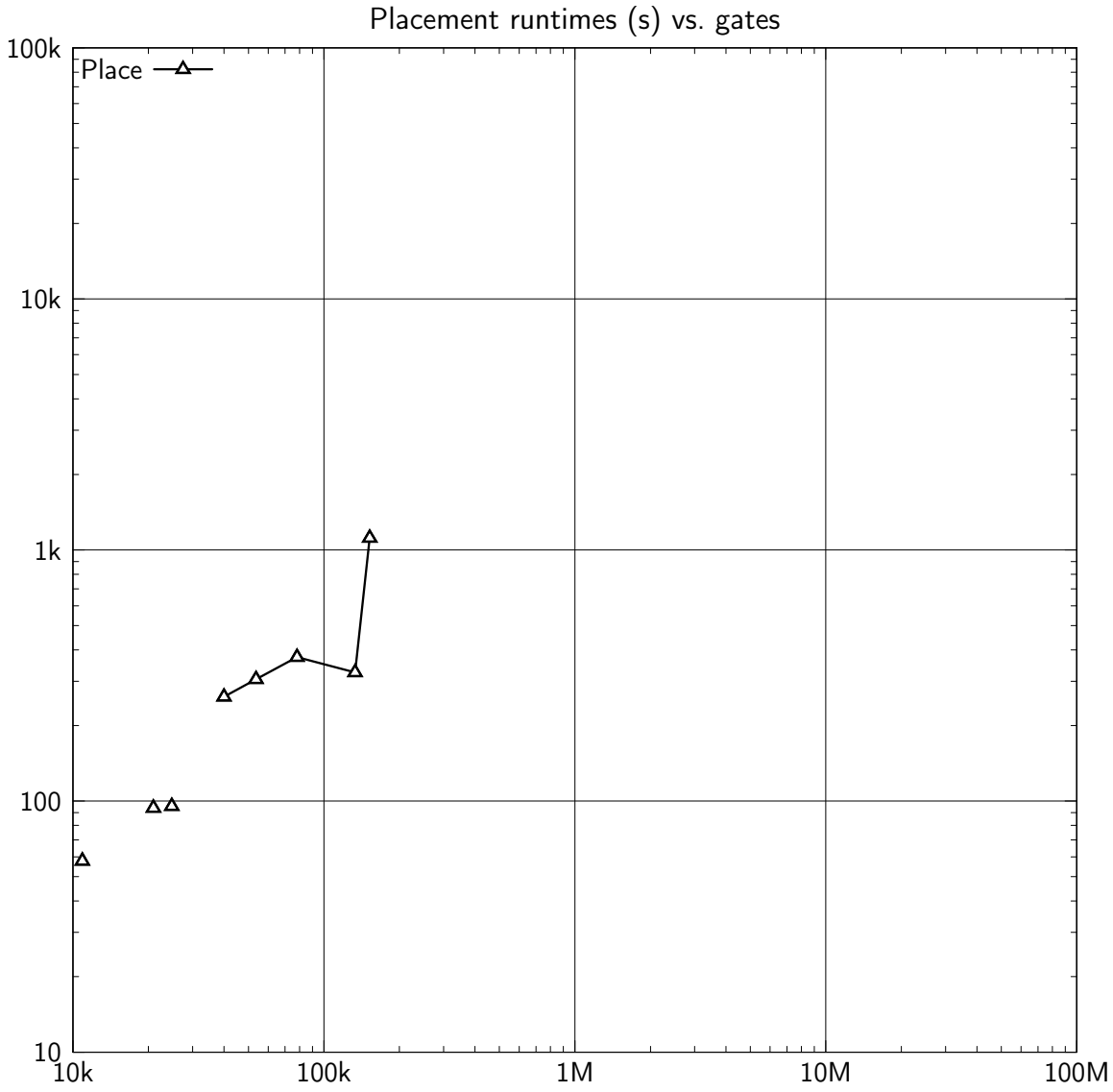
1. The runtime is quasi-linear.
2. The memory footprint is getting better as the design size increase...

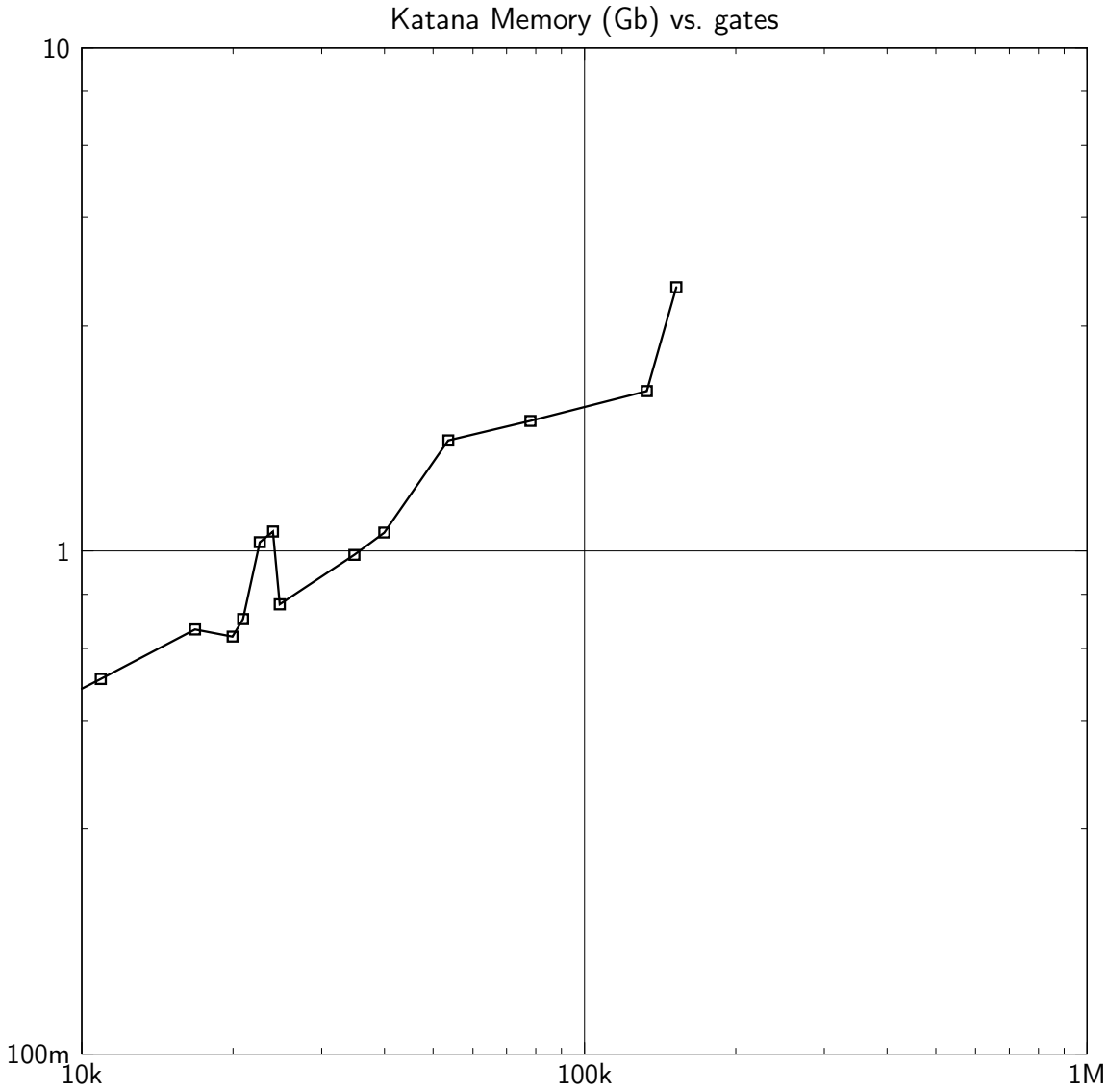
design	#gates	LoadT (s)	LoadS (Mb)	AssignT (s)	AlgoT (s)	AlgoS (Mb)	FinT (s)	#segments	#events
SoC benchmark									
arlet6502	2255	0.74	387	0.12	1.45	402	0.03	12765	19092
operator_lvl3	6065	2.55	452	0.17	6.41	509	0.13	44154	122771
operator_lvl2	7221	3.12	473	0.19	8.35	544	0.16	54455	156231
operator_lvl1	7256	2.46	452	0.07	4.57	500	0.12	41486	87167
operator_lvl0	8926	2.75	464	0.05	5.12	514	0.13	45291	88259
matrix_4_4	10909	3.82	492	0.10	7.42	570	0.19	64964	128947
dct_lvl1	16803	6.64	588	0.24	14.61	715	0.32	106035	259340
dct_lvl0	19958	6.32	584	0.10	12.20	692	0.33	97747	191337
matrix_4_8	20933	9.48	613	0.47	19.95	750	0.45	125297	252721
dct_lvl3	22603	15.74	780	1.55	51.87	1066	0.85	209770	677464
dct_lvl2	24011	16.93	811	1.58	53.55	1120	0.86	225120	735783
ao68000	24770	8.66	636	2.06	18.39	802	0.41	140067	227838
ieee_division	34870	14.37	776	0.81	36.53	1006	0.73	200590	438501
matrix_8_8	39973	18.71	850	0.54	38.52	1114	1.08	240023	484001
vld	53614	24.01	1158	3.98	147.98	1698	1.80	394329	1215955
matrix_8_16	78101	30.33	1336	0.66	67.43	1857	1.91	471849	956443
corona	133059	25.90	1653	0.52	80.48	2128	2.90	394334	717146
matrix_16_16	152341	61.58	2334	2.97	166.66	3426	4.81	940625	2142165

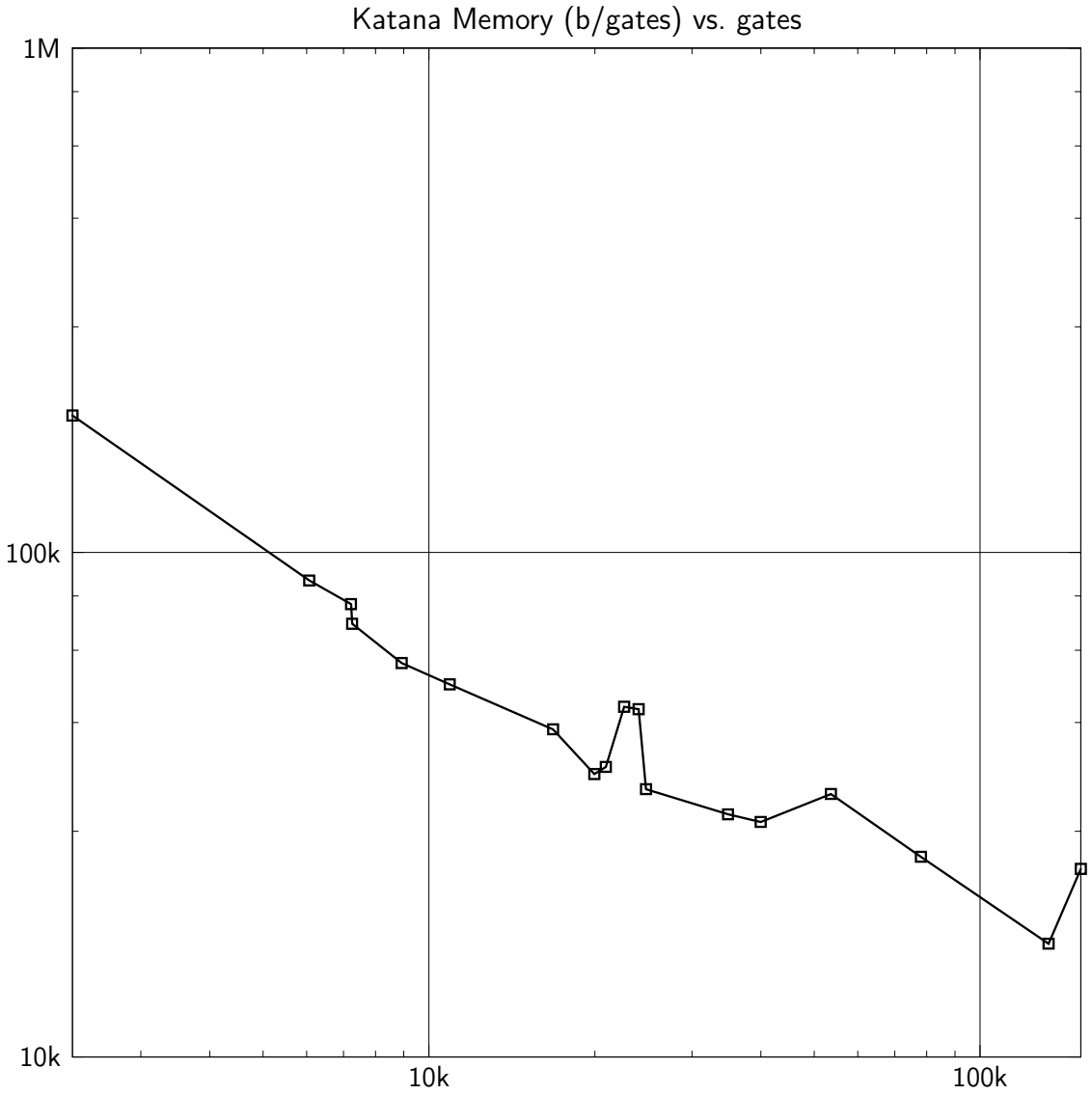
design	#gates	#gcells	PlaceT	#globals	#segments	Detailed WL	#events	#unique events
SoC benchmark								
arlet6502	2255	1089	5	5837	12765	115590+0	19092	12765
operator_lvl3	6065	5328	0	18830	44154	2358078+0	122771	44154
operator_lvl2	7221	6399	0	23259	54455	2904944+0	156231	54455
operator_lvl1	7256	5402	0	17933	41486	1996135+0	87167	41486
operator_lvl0	8926	6160	0	19480	45291	2113122+0	88259	45291
matrix_4_4	10909	7656	57	28661	64964	3000224+0	128947	64964
dct_lvl1	16803	12768	0	44854	106035	5028432+0	259340	106035
dct_lvl0	19958	12995	0	41006	97747	4367619+0	191337	97747
matrix_4_8	20933	14762	93	55385	125297	6096980+0	252721	125297
dct_lvl3	22603	22648	0	86372	209770	11387333+0	677464	209770
dct_lvl2	24011	24335	0	93780	225120	12137659+0	735783	225120
ao68000	24770	11664	95	65452	140067	1775652+0	227838	140067
ieee_division	34870	21608	0	84436	200590	9754365+0	438501	200590
matrix_8_8	39973	28224	260	106439	240023	11463657+0	484001	240023
vld	53614	53592	305	178667	394329	28222663+0	1215955	394329
matrix_8_16	78101	55460	374	209137	471849	23441317+0	956443	471849
corona	133059	102200	325	182427	394334	7259387+0	717146	394334
matrix_16_16	152341	108241	1116	411931	940625	51034936+0	2142165	940625

Times & Speeds




Placement runtimes (s) vs. gates
Place
100k
10k
1k
100
10
10k
100k
1M
10M
100M


Katana Memory (Gb) vs. gates
10
1
100m
10k
100k
1M


Katana Memory (b/gates) vs. gates
1M
100k
10k
10k
100k