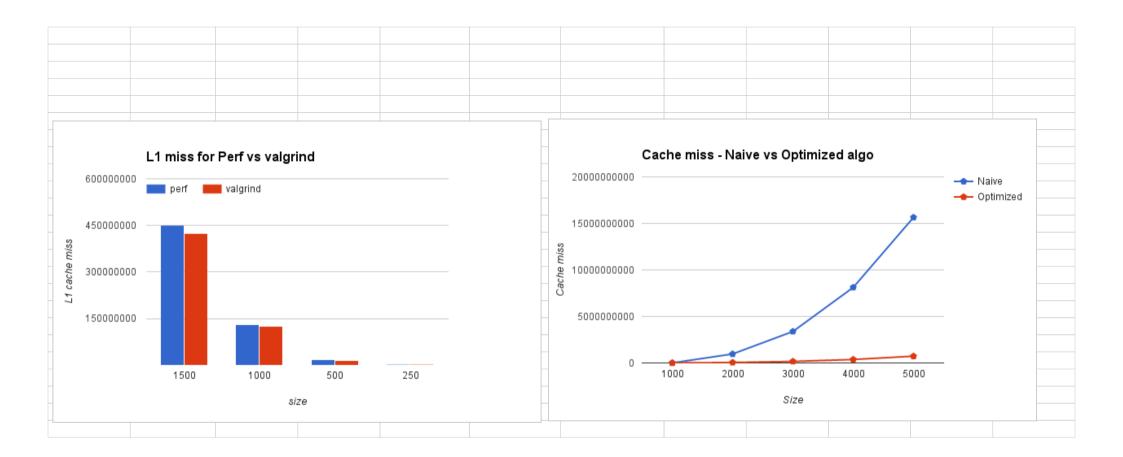## Perf -Cache misses comparision between naive and optimized dgemm algorithm (mac-login-intel.tum-mac.cos.lrz.de)

Size	Algo type	Cache-miss	L1-Load-miss	LLC-Load-miss	dTLB-Load-miss	Elapsed time(s)
1000	Naive	3,566,302	1,125,136,829	3	161,792	12.22061025
	Optimized	542,849	130,695,095	0	52,304	9.506367515
2000	Naive	961,856,464	8,607,359,880	0	1,860,122	175.4595018
	Optimized	48,757,427	1,084,882,864	0	79,883	75.97345791
3000	Naive	3,381,020,403	30,435,798,814	0	176,026,132	444.3726011
	Optimized	162,964,704	6,764,459,595	0	586,565	258.318864
4000	Naive	8,117,926,925	113,772,013,19	0	1,032,509,707	1347.328946
	Optimized	370,145,135	16,038,854,049	0	648,043	606.4898687
5000	Naive	15,646,301,418	141,092,147,56	0	2,684,191,273	2659.116061
	Optimized	724,838,943	31,321,819,449	6	1,970,185	1188.22697

cache miss for naive and optimzied

Size	Naive	Optimized
1000	3,566,302	542,849
2000	961,856,464	48,757,427
3000	3,381,020,403	162,964,704
4000	8,117,926,925	370,145,135
5000	15,646,301,418	724,838,943

Perf vs valgrind with optimized dgemm algorithm (mac-login-intel.tum-mac.cos.lrz.de)

Size	Perf			Valgrind		
	Elapsed Time(s	L1-Load-miss	LLC-Load-miss	Elapsed time(s)	D1 misses	LLd misses
1500	31.91366122	450,783,987	0	1877.01	423,285,980	1,690,018
1000	9.506367515	130,695,095	0	556.944	125,629,232	575,107
500	1.210139646	16,440,649	0	68.4107	15,784,982	96,228
250	0.148300976	2,014,632	0	9.11408	1,995,540	25,914

L1 miss for Perf vs valgrind

size	perf	valgrind
1500	450,783,987	423,285,980
1000	130,695,095	125,629,232
500	16,440,649	15,784,982
250	2,014,632	1,995,540

L1 miss for Perf vs valgrind

Cache miss - Naive vs Optimized algo

Strong Scaling (Blcok size = 16, Problem size = 3000) (mac-login-intel.tum-mac.cos.lrz.de)

Performance counters	#Threads			
	4	8	16	32
Elapsed time(s)	127.8012759	65.20110385	32.5823622	18.17296917
instructions	1,901,611,174,235	1,901,336,389,843	1,900,889,433,912	1,901,967,454,612
cache-misses	114,049,936	62,000,534	45,292,453	31,945,107
branch-misses	116,326,241	116,488,268	118,351,301	123,103,029
page-faults	838	855	887	923
cpu-migrations	16	13	34	508
stalled-cycles-frontend	794,483,092,495	791,090,929,263	792,137,546,234	1,153,987,033,757
stalled-cycles-backend	150,968,395,222	148,523,869,321	149,623,462,458	259,446,040,558
L1-dcache-load-misses	677,424,897	669,967,012	720,397,803	792,061,281
L1-dcache-prefetch-misses	1,683,667,823	1,700,101,204	1,626,841,606	1,422,325,139
LLC-prefetch-misses	31,834	31,779	31,792	34,994
dTLB-load-misses	3,755,146	2,864,690	6,261,822	25,891,880
branch-load-misses	116,607,097	116,278,824	118,923,208	123,453,038

	cache misses		
#Threads	strong scaling	weak scaling	
4	114,049,936	2,351,639	
8	62,000,534	23,488,149	
16	45,292,453	155,603,861	
32	31,945,107	8,270,798,025	

	branch misses		
#Threads	strong scaling	weak scaling	
4	116,326,241	4,419,033	
8	116,488,268	34,712,423	
16	118,351,301	280,321,623	
32	123,103,029	2,332,833,673	

	elapsed time(s)		
#Threads	strong scaling	weak scaling	
4	127.8012759	4.774563494	
8	65.20110385	20.32355616	
16	32.5823622	77.02798791	
32	18.17296917	347.5451793	

Weak Scaling (Block size = 16) (mac-login-intel.tum-mac.cos.lrz.de)

Performance counters	#Threads - Problem size			
	4 - 1000	8-2000	16-4000	32-8000
Elapsed time(s)	4.774563494	20.32355616	77.02798791	347.5451793
instructions	70,343,701,462	563,343,083,269	4,505,940,840,947	36,050,799,685,379
cache-misses	2,351,639	23,488,149	155,603,861	8,270,798,025
branch-misses	4,419,033	34,712,423	280,321,623	2,332,833,673
page-faults	463	677	506	1,260
cpu-migrations	7	23	36	11,047
stalled-cycles-frontend	28,346,644,823	254,848,207,398	1,870,852,213,944	22,430,075,012,708
stalled-cycles-backend	4,620,286,119	59,639,929,630	339,593,549,677	5,576,356,946,161
L1-dcache-load-misses	23,711,722	178,695,884	2,389,586,378	30,676,587,251
L1-dcache-prefetch-misses	63,777,709	557,082,797	1,909,105,387	24,133,955,294
LLC-prefetch-misses	1,166	9,821	75,235	673,455
dTLB-load-misses	109,061	1,047,096	18,852,642	704,559,533
branch-load-misses	4,389,671	34,778,023	279,929,778	2,333,082,204

Strong vs weak scaling wrto #threads

strong vs weak scaling wrto #threads

strong vs weak scaling wrto #threads

seconds

400

300

200

100

0

8   16   32

#Threads

strong scaling 127. 8012759

weak scaling 4. 7745634...