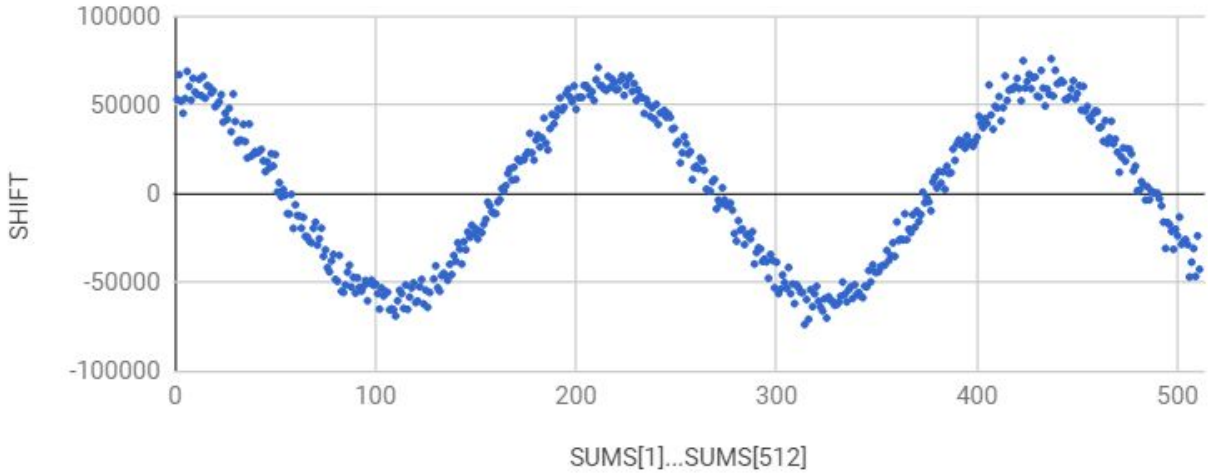
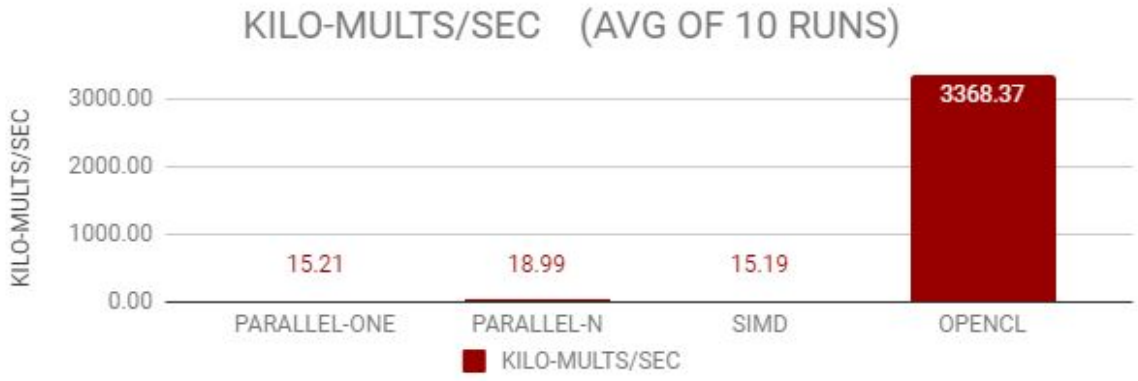
1. Personal computer
   - Intel i7-7700K @ 4.20GHz (4 cores, 8 threads)
   - NVIDIA 1080ti @ 1.57GHz (3584 CUDA cores)

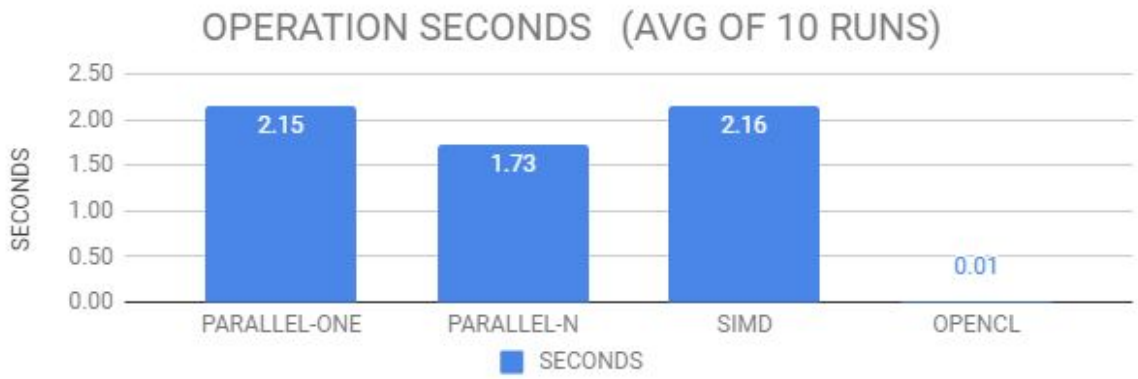
2. Table attached to end.



3. At periods of approximately one-hundred summations, maxima occurs around 60,000 units (+/- 10,000).

4. OpenCL performed via GPU considerably outpaces all three CPU-performed scripts.





5. Setting aside briefly the obvious gulf in CPU vs GPU performance, I was altogether surprised that the OpenMP SIMD pragma structure did not expressly outperform a single-threaded OpenMP parallel pragma on my CPU. My first guess is that the array size possibly isn't large enough to realize more completely the benefits of vectorization. Next, it's possible that the size selected—and lack of intentional memory alignment—resulted in poor prefetching performance. Finally, it is possible that my not vectorizing explicitly the inner-most loop contributed to an incomplete optimization by the compiler.

Performance-wise, quibbling over SIMD versus parallel-for optimization matters little when their difference is so completely overtaken by the performance from the GPU's thousands of parallel, arithmetic cores purpose-built for just such an operation as here (and, therefore, sub-optimal for CPU's complex execution management). If anything, this project confirmed for me the importance of keeping your group (warp's) memory assignments from getting in the way of your GPU's local work potential—let it perform what it was designed for.

SUMS[1]...SUMS[512] vs SHIFT

SUM NO	SHIFT
1	53233
2	67172
3	52176
4	45354
5	53662
6	69029
7	60528
8	52701
9	65066
10	57401
11	55994
12	64603
13	55365
14	66277
15	53873
16	60911
17	60474
18	56701
19	58209
20	49084
21	50267
22	51892
23	55880

24	40366
25	45391
26	41839
27	48202
28	34919
29	56239
30	40714
31	28958
32	30129
33	30112
34	39096
35	29399
36	20132
37	39287
38	21273
39	22113
40	23769
41	23012
42	23814
43	24992
44	18486
45	12411
46	18044
47	14349
48	22548
49	15605
50	22058
51	915
52	6193
53	-1749
54	2292
55	-897
56	-11298
57	-11488
58	-366
59	-19635
60	-6313
61	-12346
62	-12508
63	-19502
64	-13355
65	-24144
66	-24387

67	-26781
68	-27700
69	-19561
70	-16148
71	-29066
72	-25407
73	-19487
74	-35355
75	-31729
76	-41823
77	-44104
78	-37966
79	-34292
80	-48389
81	-49444
82	-34901
83	-55140
84	-55715
85	-51559
86	-44328
87	-40349
88	-52770
89	-47231
90	-56139
91	-47527
92	-52965
93	-54982
94	-52356
95	-48998
96	-60548
97	-50535
98	-48789
99	-51744
100	-51089
101	-56376
102	-65165
103	-53275
104	-57752
105	-55311
106	-55656
107	-65618
108	-65014
109	-65526

110	-69110
111	-60523
112	-54519
113	-56377
114	-64811
115	-51510
116	-65325
117	-58361
118	-53178
119	-50399
120	-61434
121	-60645
122	-52553
123	-48374
124	-62266
125	-54468
126	-64152
127	-55783
129	-48162
130	-40799
131	-53140
132	-55070
133	-46305
134	-44945
135	-46328
136	-48897
137	-39875
138	-45671
139	-34854
140	-38108
141	-27738
142	-31295
143	-39711
144	-27170
145	-31642
146	-21595
147	-24603
148	-17815
149	-22597
150	-19862
151	-25627
152	-21338
153	-22008

154	-17285
155	-14503
156	-4805
157	-6812
158	-10272
159	-11220
160	-11238
161	-4788
162	-3381
163	2904
164	1608
165	4484
166	11340
167	13986
168	7623
169	14920
170	8059
171	19414
172	18299
173	18938
174	19125
175	21896
176	23437
177	33992
178	23049
179	18952
180	30265
181	33032
182	26335
183	31486
184	42658
185	28583
186	24666
187	36688
188	44829
189	39325
190	43800
191	47766
192	54025
193	47014
194	48748
195	56453
196	58781

197	54480
198	51794
199	60785
200	47611
201	54323
202	54445
203	54312
204	61048
205	60979
206	59458
207	55593
208	57593
209	52516
210	64384
211	71377
212	61089
213	60790
214	59061
215	58281
216	66253
217	59908
218	64662
219	62739
220	58537
221	58951
222	63746
223	66475
224	55396
225	61042
226	64545
227	66511
228	57724
229	62090
230	52534
231	58509
232	55221
233	54088
234	45230
235	53230
236	50393
237	43632
238	48528
239	42145

240	50457
241	39133
242	45521
243	45484
244	46996
245	43121
246	45000
247	43036
248	36379
249	36991
250	27960
251	29453
252	17364
253	23092
254	32313
255	28140
256	22364
257	23844
258	7942
259	14635
260	15637
261	14198
262	20136
263	18427
264	13145
265	2494
266	1794
267	1342
268	6692
269	8103
270	-8604
271	-3664
272	-5853
273	3319
274	-3530
275	-6847
276	-6501
277	-5305
278	-9345
279	-22499
280	-26801
281	-15250
282	-20578

283	-19910
284	-28736
285	-23371
286	-22858
287	-25581
288	-21443
289	-39712
290	-33162
291	-30577
292	-31212
293	-38211
294	-36903
295	-38444
296	-47757
297	-34278
298	-37681
299	-53197
300	-38667
301	-56382
302	-53990
303	-45836
304	-50206
305	-53338
306	-41656
307	-56398
308	-51027
309	-62051
310	-51414
311	-53069
312	-55687
313	-55830
314	-73851
315	-59765
316	-70912
317	-54181
318	-63741
319	-56533
320	-52304
321	-60727
322	-64107
323	-66292
324	-59342
325	-70220

326	-58216
327	-60348
328	-60875
329	-62940
330	-62649
331	-61420
332	-57896
333	-49903
334	-56831
335	-61104
336	-54269
337	-52570
338	-59144
339	-51486
340	-56759
341	-55861
342	-57842
343	-58716
344	-52240
345	-52597
346	-43417
347	-49809
348	-40155
349	-44165
350	-44433
351	-43949
352	-41111
353	-40567
354	-40354
355	-32037
356	-37810
357	-34946
358	-27787
359	-35431
360	-15976
361	-26466
362	-25650
363	-26096
364	-11345
365	-25951
366	-20050
367	-21986
368	-11915

369	-18953
370	-9769
371	-15711
372	-11832
373	862
374	-5103
375	-2558
376	-4618
377	-9702
378	6547
379	9461
380	3235
381	12566
382	5980
383	12350
384	2403
385	15470
386	11391
387	11825
388	25161
389	18774
390	28189
391	30349
392	27613
393	29472
394	25617
395	32587
396	27979
397	29219
398	26708
399	29261
400	31864
401	43702
402	39745
403	37224
404	42403
405	39532
406	61372
407	44423
408	36296
409	49325
410	48339
411	54828

412	41045
413	48484
414	66428
415	52568
416	58330
417	59136
418	59154
419	60540
420	65041
421	59311
422	52385
423	75002
424	59580
425	63321
426	67329
427	59174
428	65564
429	65819
430	55086
431	54522
432	69589
433	59534
434	49472
435	59022
436	56048
437	76105
438	55100
439	69640
440	62011
441	62536
442	63906
443	62880
444	53106
445	53239
446	54531
447	59139
448	63691
449	53541
450	56367
451	60937
452	47155
453	60532
454	46657

455	49265
456	42809
457	41146
458	45137
459	46780
460	46314
461	37111
462	37762
463	29583
464	41200
465	28426
466	31461
467	40850
468	28131
469	30756
470	23362
471	12076
472	20779
473	25784
474	18329
475	25379
476	25101
477	22445
478	12913
479	15508
480	1564
481	1953
482	6764
483	4726
484	-3626
485	3966
486	-3508
487	1413
488	295
489	262
490	325
491	-2846
492	-6890
493	-16069
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