



Big Comparison Core i9 10900K vs. Ryzen 9 3950X Linux Benchmarks

Tests for a future article on Phoronix by Michael Larabel.

Automated Executive Summary

Core i9 10900K had the most wins, coming in first place for 55% of the tests.

Based on the geometric mean of all complete results, the fastest (Ryzen 9 3950X) was 1.014x the speed of the slowest (Core i9 10900K).

The results with the greatest spread from best to worst included:

ebizzy at 2.769x

CP2K Molecular Dynamics (Fayalite-FIST Data) at 2.639x

ParaView (Test: Wavelet Volume - Resolution: 3840 x 2160) at 2.487x

ParaView (Test: Wavelet Volume - Resolution: 3840 x 2160) at 2.486x

Cpuminer-Opt (Algorithm: m7m) at 2.057x

Parboil (Test: OpenMP CUTCP) at 2.052x

Mpack Benchmark (Benchmark: scikit_linearridgeregression) at 1.985x

GraphicsMagick (Operation: Swirl) at 1.904x

BLAKE2 at 1.896x

Facebook RocksDB (Test: Random Fill Sync) at 1.791x.

Test Systems:

Core i9 10900K

Processor: Intel Core i9-10900K @ 5.30GHz (10 Cores / 20 Threads), Motherboard: Gigabyte Z490 AORUS MASTER (F3 BIOS), Chipset: Intel Comet Lake PCH, Memory: 16GB, Disk: Samsung SSD 970 EVO 250GB, Graphics: AMD Radeon RX 5600 OEM/5600 XT / 5700/5700 8GB (2060/875MHz), Audio: Realtek ALC1220, Network: Intel Device 15f3 + Intel Wi-Fi 6 AX201

OS: Ubuntu 20.04, Kernel: 5.7.0-999-generic (x86_64) 20200519, Desktop: GNOME Shell 3.36.1, Display Server: X Server 1.20.8, Display Driver: amdgpu 19.1.0, OpenGL: 4.6 Mesa 20.0.4 (LLVM 9.0.1), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
 Disk Notes: NONE / errors=remount-ro,relatime,rw
 Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0xc8
 Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-3ubuntu1)
 Python Notes: Python 2.7.18rc1 + Python 3.8.2
 Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 11tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling + tsx_async_abort: Not affected

Ryzen 9 3950X

Processor: AMD Ryzen 9 3950X 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (1201 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: Samsung SSD 970 EVO 250GB, Graphics: AMD Radeon RX 5600 OEM/5600 XT / 5700/5700 8GB (2060/875MHz), Audio: AMD Navi 10 HDMI Audio, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.7.0-999-generic (x86_64) 20200519, Desktop: GNOME Shell 3.36.1, Display Server: X Server 1.20.8, Display Driver: amdgpu 19.1.0, OpenGL: 4.6 Mesa 20.0.4 (LLVM 9.0.1), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
 Disk Notes: NONE / errors=remount-ro,relatime,rw
 Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0x8701013
 Graphics Notes: GLAMOR
 Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-3ubuntu1)
 Python Notes: Python 2.7.18rc1 + Python 3.8.2
 Security Notes: itlb_multihit: Not affected + 11tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: conditional RSB filling + tsx_async_abort: Not affected

	Core i9 10900K	Ryzen 9 3950X
Pennant - sedovbig (Hydro Cycle Time - sec)	4228	4298
Normalized	100%	98.38%
Standard Deviation	0.1%	0%

Pennant - leblancbig (Hydro Cycle Time - sec)	3918	4113
Normalized	100%	95.26%
Standard Deviation	0.3%	0%
NWChem - C240 Buckyball (sec)	12612	9795
Normalized	77.66%	100%
Selenium - Basemark - Google Chrome (Overall)	1075	1387
Normalized	77.47%	100%
Standard Deviation	9.4%	7.8%
Selenium - Basemark - Firefox (Overall Score)	759.91	757.95
Normalized	100%	99.74%
Standard Deviation	7.3%	4.8%
Renaissance - A.U.C.T (ms)	9185	11097
Normalized	100%	82.77%
Standard Deviation	3.8%	1.8%
Selenium - MotionMark - Firefox (Score)	231.54	161.79
Normalized	100%	69.88%
Standard Deviation	28.2%	24.1%
Timed GCC Compilation - Time To Compile (sec)	716.255	731.029
Normalized	100%	97.98%
Standard Deviation	0.2%	0.3%
Crypto++ - All Algorithms (MiB/s)	1962	1784
Normalized	100%	90.95%
Standard Deviation	0%	0.1%
Numenta Anomaly Benchmark - EXPoSE (sec)	624.538	644.836
Normalized	100%	96.85%
Standard Deviation	0.4%	1%
PlaidML - No - Inference - DenseNet 201 - CPU (FPS)	3.35	3.87
Normalized	86.56%	100%
Standard Deviation	0.5%	1.1%
Renaissance - Savina Reactors.IO (ms)	15777	10636
Normalized	67.41%	100%
Standard Deviation	2%	6.1%
Basis Universal - U.L.2.R.P.P (sec)	573.950	587.383
Normalized	100%	97.71%
Standard Deviation	0.1%	0.2%
Renaissance - Apache Spark Bayes (ms)	1704	2728
Normalized	100%	62.47%
Standard Deviation	3%	19.6%
Selenium - WebXPRT - Firefox (Score)	294	252
Normalized	100%	85.71%
Standard Deviation		0.8%
Selenium - WebXPRT - Google Chrome (Score)	264	258
Normalized	100%	97.73%
Standard Deviation	0.8%	
LeelaChessZero - BLAS (Nodes/s)	378	380
Normalized	99.47%	100%
Standard Deviation	0.7%	2.9%
Java Gradle Build - Reactor (sec)	188.102	251.425
Normalized	100%	74.81%
Standard Deviation	2.8%	4%
Timed LLVM Compilation - Time To Compile (sec)	505.431	365.636
Normalized	72.34%	100%
Standard Deviation	1.1%	0.4%
Polyhedron Fortran Benchmarks - gas_dyn2 (sec)	39.99	41.78
Normalized	100%	95.72%

Blender - Barbershop - CPU-Only (sec)	473.60	342.25
Normalized	72.27%	100%
Standard Deviation	0.1%	0.1%
Renaissance - A.S.P (ms)	2895	3302
Normalized	100%	87.68%
Standard Deviation	2%	6.7%
Renaissance - Rand Forest (ms)	1465	1816
Normalized	100%	80.72%
Standard Deviation	1.8%	4.1%
Crypto++ - Keyed Algorithms (MiB/s)	789.168824	697.187580
Normalized	100%	88.34%
Standard Deviation	0%	0.3%
Core-Latency - A.L.B.C.C (ns)	97.21	152.54
Normalized	100%	63.73%
Selenium - CanvasMark - Firefox (Score)	14181	13796
Normalized	100%	97.29%
Standard Deviation	1.7%	4.2%
libgav1 - C.1.1.b (FPS)	31.25	21.19
Normalized	100%	67.81%
Standard Deviation	0.3%	0.3%
Blender - Pabellon Barcelona - CPU-Only (sec)	426.20	285.86
Normalized	67.07%	100%
Standard Deviation	0.2%	0.1%
LeelaChessZero - Eigen (Nodes/s)	607	400
Normalized	100%	65.9%
Standard Deviation	2.6%	1.8%
LeelaChessZero - Rand (Nodes/s)	231501	185500
Normalized	100%	80.13%
Standard Deviation	0.4%	0%
Renaissance - G.A.U.J.F (ms)	1249	1725
Normalized	100%	72.43%
Standard Deviation	4%	1.8%
FFTW - Float + SSE - 2D FFT Size 4096 (Mflops)	27489	21239
Normalized	100%	77.26%
Standard Deviation	1.6%	
libgav1 - Chimera 1080p (FPS)	83.73	51.13
Normalized	100%	61.07%
Standard Deviation	8.7%	0%
Facebook RocksDB - Rand Fill (Op/s)	656303	680458
Normalized	96.45%	100%
Standard Deviation	16.3%	15.2%
Crypto++ - I.E.C.P.K.A (MiB/s)	6378	5494
Normalized	100%	86.15%
Standard Deviation	0.1%	2.5%
Selenium - MotionMark - Google Chrome (Score)	1	1
PlaidML - No - Inference - ResNet 50 - CPU (FPS)	7.38	7.34
Normalized	100%	99.46%
Standard Deviation	0.6%	1.1%
Blender - Classroom - CPU-Only (sec)	338.66	226.13
Normalized	66.77%	100%
Standard Deviation	0.2%	0.1%
Renaissance - I.M.D.S (ms)	2968	3622
Normalized	100%	81.95%
Standard Deviation	12.2%	1.3%

Unigine Heaven - 1920 x 1080 - Windowed - OpenGL (FPS)	160.184	158.578
Normalized	100%	99%
Standard Deviation	0.1%	0.2%
Polyhedron Fortran Benchmarks - test_fpu2 (sec)	28.67	26.44
Normalized	92.22%	100%
High Performance Conjugate Gradient (GFLOP/s)	4.36353	4.58602
Normalized	95.15%	100%
Standard Deviation	0.3%	0%
BRL-CAD - V.P.M (VGR Performance Metric)	192500	251130
Normalized	76.65%	100%
PlaidML - No - Inference - Inception V3 - CPU (FPS)	9.23	11.21
Normalized	82.34%	100%
Standard Deviation	0.4%	0.4%
Selenium - Jetstream 2 - Firefox (Score)	102.083	95.645
Normalized	100%	93.69%
Standard Deviation	0.6%	0.8%
Algebraic Multi-Grid Benchmark (Figure Of Merit)	23127	26110
Normalized	88.57%	100%
Standard Deviation	1.4%	0%
CacheBench - Read (MB/s)	4322	3052
Normalized	100%	70.62%
Standard Deviation	0%	2.9%
Numpy Benchmark (Score)	444.12	414.61
Normalized	100%	93.36%
Standard Deviation	1.3%	1.4%
CP2K Molecular Dynamics - Fayalite-FIST Data (sec)	855.403	324.193
Normalized	37.9%	100%
Unigine Valley - 1920 x 1080 - Windowed - OpenGL (FPS)	176.703	160.954
Normalized	100%	91.09%
Standard Deviation	0.4%	0.3%
Hierarchical INTegration - FLOAT (QUIPs)	510613895	380487205
Normalized	100%	74.52%
Standard Deviation	0.3%	0.3%
FFTW - Stock - 2D FFT Size 4096 (Mflops)	6969	6458
Normalized	100%	92.66%
Standard Deviation	0.6%	0.5%
Unigine Superposition - 1920 x 1080 - Windowed - Ultra - OpenGL (FPS)	34.3	34.3
Standard Deviation	0.2%	0.2%
Unigine Superposition - 1920 x 1080 - Windowed - High - OpenGL (FPS)	77.7	82.2
Normalized	94.53%	100%
Standard Deviation	0.3%	0.1%
asmFish - 1.H.M.2.D (Nodes/s)	39969419	51867171
Normalized	77.06%	100%
Standard Deviation	3%	0.6%
Unigine Superposition - 1920 x 1080 - Windowed - Medium - OpenGL (FPS)	113.6	118.2
Normalized	96.11%	100%
Standard Deviation	0.8%	0%

Unigine Superposition - 1920 x 1080 - Windowed - Low - OpenGL (FPS)	229.3	176.2
Normalized	100%	76.84%
Standard Deviation	0.5%	0.1%
Facebook RocksDB - Rand Fill Sync (Op/s)	2875	5148
Normalized	55.85%	100%
Standard Deviation	1.5%	3.4%
Radiance Benchmark - Serial (sec)	577.884	538.599
Normalized	93.2%	100%
Selenium - Jetstream - Firefox (Score)	237.52	218.55
Normalized	100%	92.01%
Standard Deviation	0.3%	0.1%
Facebook RocksDB - Read While Writing (Op/s)	2911882	3615702
Normalized	80.53%	100%
Standard Deviation	3.1%	2.1%
Selenium - Jetstream - Google Chrome (Score)	258.92	227.80
Normalized	100%	87.98%
Standard Deviation	0.3%	0%
Appleseed - Emily (sec)	299.753452	213.491346
Normalized	71.22%	100%
Polyhedron Fortran Benchmarks - mp_prop_design	49.13	53.27
Normalized	100%	92.23%
GROMACS - Water Benchmark (Ns/Day)	0.978	1.236
Normalized	79.13%	100%
Standard Deviation	0.1%	0.2%
Parboil - OpenMP LBM (sec)	165.151103	160.964244
Normalized	97.46%	100%
Standard Deviation	0%	0.1%
Parboil - O.M.G (sec)	54.937194	31.274319
Normalized	56.93%	100%
Standard Deviation	6.5%	0.7%
Blender - Fishy Cat - CPU-Only (sec)	179.55	123.52
Normalized	68.79%	100%
Standard Deviation	0.2%	0.1%
Selenium - Jetstream 2 - Google Chrome (Score)	149.132	138.227
Normalized	100%	92.69%
Standard Deviation	2.1%	1.1%
Polyhedron Fortran Benchmarks - channel2 (sec)	43.45	42.71
Normalized	98.3%	100%
Polyhedron Fortran Benchmarks - fatigue2 (sec)	36.69	46.89
Normalized	100%	78.25%
libgav1 - Summer Nature 4K (FPS)	34.85	24.18
Normalized	100%	69.38%
Standard Deviation	1.3%	0.2%
PlaidML - No - Inference - VGG19 - CPU (FPS)	16.09	19.19
Normalized	83.85%	100%
Standard Deviation	0.7%	1%
Numenta Anomaly Benchmark - Earthgecko Skyline	90.165	77.869
Normalized	86.36%	100%
Standard Deviation	2.9%	0.4%
Renaissance - Scala Doty (ms)	1339	1368
Normalized	100%	97.93%
Standard Deviation	2.3%	2.3%
PlaidML - No - Inference - Mobilenet - CPU (FPS)	17.18	17.28
Normalized	99.42%	100%

	Standard Deviation	1.1%	1%
ACES DGEMM - S.F.P.R (GFLOP/s)		5.351115	5.537606
	Normalized	96.63%	100%
	Standard Deviation	1%	5.3%
CacheBench - R.M.W (MB/s)		55906	61492
	Normalized	90.92%	100%
	Standard Deviation	0%	0.6%
CacheBench - Write (MB/s)		36212	31703
	Normalized	100%	87.55%
	Standard Deviation	0%	0.3%
NAS Parallel Benchmarks - BT.C (Mop/s)		26329	22727
	Normalized	100%	86.32%
	Standard Deviation	0.1%	0.2%
NAS Parallel Benchmarks - EP.D (Mop/s)		1792	1071
	Normalized	100%	59.75%
	Standard Deviation	2.8%	0.2%
Mlpack Benchmark - scikit_qda (sec)		62.50	68.93
	Normalized	100%	90.67%
	Standard Deviation	0.4%	1.3%
Selenium - ARES-6 - Firefox (ms)		36.73	42.85
	Normalized	100%	85.72%
	Standard Deviation	0.9%	0.1%
PlaidML - No - Inference - VGG16 - CPU (FPS)		19.28	23.31
	Normalized	82.71%	100%
	Standard Deviation	0.9%	1.4%
dav1d - C.1.1.b (FPS)		131.44	113.65
	Normalized	100%	86.47%
	Standard Deviation	0.1%	0.4%
dav1d - C.1.1.b (FPS)		132.44	114.24
	Normalized	100%	86.26%
	Standard Deviation	0.1%	0.2%
Fhourstones - C.C.4.S (Kpos / sec)		17312	14987
	Normalized	100%	86.57%
	Standard Deviation	0.1%	0.2%
Selenium - StyleBench - Google Chrome (Runs /		37.6	37.7
	Normalized	99.73%	100%
	Standard Deviation	0.7%	0.7%
rav1e - 1 (FPS)		0.205	0.193
	Normalized	100%	94.15%
	Standard Deviation	0%	0.3%
Blender - BMW27 - CPU-Only (sec)		114.39	84.77
	Normalized	74.11%	100%
	Standard Deviation	0.3%	0.2%
Renaissance - Apache Spark ALS (ms)		1654	1950
	Normalized	100%	84.84%
	Standard Deviation	1.4%	0.8%
Appleseed - Disney Material (sec)		174.867928	121.874074
	Normalized	69.69%	100%
Timed Linux Kernel Compilation - Time To Compile		61.708	45.114
	Normalized	73.11%	100%
	Standard Deviation	0.9%	2.9%
Gzip Compression - L.S.T.A.T.t.g (sec)		28.833	33.392
	Normalized	100%	86.35%
	Standard Deviation	2.7%	3.3%
Minion - Quasigroup (sec)		93.440554	101.658951

	Normalized	100%	91.92%
	Standard Deviation	0.2%	0.6%
Appleseed - Material Tester (sec)		164.002915	128.457773
	Normalized	78.33%	100%
YafaRay - T.T.F.S.S (sec)		108.878	81.477
	Normalized	74.83%	100%
	Standard Deviation	0.1%	0.9%
Polyhedron Fortran Benchmarks - rnflow (sec)		12.58	15
	Normalized	100%	83.87%
rav1e - 5 (FPS)		0.670	0.626
	Normalized	100%	93.43%
	Standard Deviation	0.1%	0.1%
PyPerformance - python_startup (Milliseconds)		6.04	6.46
	Normalized	100%	93.5%
	Standard Deviation	0.1%	2.4%
Stress-NG - CPU Cache (Bogo Ops/s)		22.76	37.15
	Normalized	61.27%	100%
	Standard Deviation	0.6%	4.7%
Stress-NG - Atomic (Bogo Ops/s)		230445	747139
	Normalized	30.84%	100%
	Standard Deviation	13.5%	0.3%
OpenVKL - vkiBenchmark (Items / Sec)		192.83	234.25
	Normalized	82.32%	100%
	Standard Deviation	0.4%	0.2%
GEGl - Cartoon (sec)		78.938	89.855
	Normalized	100%	87.85%
	Standard Deviation	1.1%	1.1%
Timed GDB GNU Debugger Compilation - Time To Compile (sec)		77.059	88.759
	Normalized	100%	86.82%
	Standard Deviation	0.2%	0.1%
Selenium - Speedometer - Firefox (Runs/min)		104	99.34
	Normalized	100%	95.52%
	Standard Deviation	0.6%	0.4%
Build2 - Time To Compile (sec)		84.939	70.665
	Normalized	83.19%	100%
	Standard Deviation	1.6%	1.8%
Cpuminer-Opt - myr-gr (kH/s - Hash Speed)		17627	9899
	Normalized	100%	56.16%
	Standard Deviation	0.1%	10.6%
Zstd Compression - 19 (MB/s)		30.3	39.6
	Normalized	76.52%	100%
	Standard Deviation	0.3%	0.1%
VP9 libvpx Encoding - Speed 0 (FPS)		8.20	7.79
	Normalized	100%	95%
	Standard Deviation	0.6%	0.1%
Perl Benchmarks - Pod2html (sec)		0.09327881	0.11237626
	Normalized	100%	83.01%
	Standard Deviation	0.4%	0.9%
Hackbench - 32 - Process (sec)		49.161	54.263
	Normalized	100%	90.6%
	Standard Deviation	0.2%	2.7%
Crypto++ - Unkeyed Algorithms (MiB/s)		407.907548	389.039005
	Normalized	100%	95.37%
	Standard Deviation	0%	0.2%

Sockperf - Latency Under Load (usec)	17.423	14.949
Normalized	85.8%	100%
Standard Deviation	20.1%	27.8%
ASKAP - tConvolve MT - Degriding (Million Grid Points/sec)	1946	1618
Normalized	100%	83.12%
Standard Deviation	0.1%	0.2%
ASKAP - tConvolve MT - Gridding (Million Grid Points/sec)	1142	874.050
Normalized	100%	76.52%
Standard Deviation	0%	0.3%
Timed MrBayes Analysis - P.P.A (sec)	63.719	70.989
Normalized	100%	89.76%
Standard Deviation	0.1%	0.6%
PyPerformance - raytrace (Milliseconds)	352	427
Normalized	100%	82.44%
Standard Deviation	0.3%	
Stockfish - Total Time (Nodes/s)	35260191	50373394
Normalized	70%	100%
Standard Deviation	1.7%	0.5%
ET: Legacy - Renderer2 - 3840 x 2160 (FPS)	288.5	255.8
Normalized	100%	88.67%
Standard Deviation	6.5%	1.8%
Selenium - CanvasMark - Google Chrome (Score)	5033	5050
Normalized	99.66%	100%
Standard Deviation	0.5%	0.3%
oneDNN MKL-DNN - D.B.d - u8s8f32 (ms)	121.267	69.5926
Normalized	57.39%	100%
Standard Deviation	9.8%	0.1%
toyBrot Fractal Generator - OpenMP (ms)	80088	47670
Normalized	59.52%	100%
Standard Deviation	0%	0.7%
Himeno Benchmark - P.P.S (MFLOPS)	4395	4966
Normalized	88.49%	100%
Standard Deviation	0.1%	2.8%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	1.20434	1.11719
Normalized	92.76%	100%
Standard Deviation	0.4%	0.3%
toyBrot Fractal Generator - TBB (ms)	79924	46547
Normalized	58.24%	100%
Standard Deviation	1.5%	1.1%
toyBrot Fractal Generator - C++ Threads (ms)	79413	46331
Normalized	58.34%	100%
Standard Deviation	0.1%	0.3%
toyBrot Fractal Generator - C++ Tasks (ms)	79172	46370
Normalized	58.57%	100%
Standard Deviation	0.1%	0.3%
LuxCoreRender - DLSC (M samples/sec)	2.19	3.29
Normalized	66.57%	100%
Standard Deviation	2%	1.3%
LuxCoreRender - R.C.a.P (M samples/sec)	2.47	3.56
Normalized	69.38%	100%
Standard Deviation	0.4%	0.1%
IndigoBench - Bedroom (M samples/s)	1.894	2.669
Normalized	70.96%	100%

	Standard Deviation	0.2%	0.3%
IndigoBench - Supercar (M samples/s)		4.435	5.660
	Normalized	78.36%	100%
	Standard Deviation	0.1%	0.1%
Polyhedron Fortran Benchmarks - induct2 (sec)		14.45	21.35
	Normalized	100%	67.68%
GraphicsMagick - Sharpen (Iterations/min)		175	248
	Normalized	70.56%	100%
	Standard Deviation		0.2%
John The Ripper - MD5 (Real C/S)		1383667	1771667
	Normalized	78.1%	100%
	Standard Deviation	0%	0.2%
GraphicsMagick - Enhanced (Iterations/min)		269	400
	Normalized	67.25%	100%
GraphicsMagick - Noise-Gaussian (Iterations/min)		317	455
	Normalized	69.67%	100%
	Standard Deviation	0.2%	
Facebook RocksDB - Rand Read (Op/s)		68514144	95962407
	Normalized	71.4%	100%
	Standard Deviation	0.2%	1.1%
GraphicsMagick - Resizing (Iterations/min)		1266	1774
	Normalized	71.36%	100%
	Standard Deviation	0.2%	0.2%
GraphicsMagick - Swirl (Iterations/min)		529	1007
	Normalized	52.53%	100%
	Standard Deviation	0.2%	0.1%
GraphicsMagick - Rotate (Iterations/min)		888	730
	Normalized	100%	82.21%
	Standard Deviation		2.9%
GraphicsMagick - HWB Color Space (Iterations/min)		1219	1507
	Normalized	80.89%	100%
	Standard Deviation	0.2%	0.3%
Selenium - Speedometer - Google Chrome (Runs/min)		130	133
	Normalized	97.74%	100%
	Standard Deviation	0.4%	
oneDNN MKL-DNN - IP Batch All - f32 (ms)		56.9110	50.1698
	Normalized	88.15%	100%
	Standard Deviation	0.2%	0.3%
Radiance Benchmark - SMP Parallel (sec)		182.363	170.288
	Normalized	93.38%	100%
oneDNN MKL-DNN - IP Batch All - u8s8f32 (ms)		19.0225	19.8851
	Normalized	100%	95.66%
	Standard Deviation	0.1%	0.2%
Selenium - StyleBench - Firefox (Runs / Minute)		104	84.4
	Normalized	100%	81.15%
	Standard Deviation		0.2%
ASKAP - tConvolve MPI - Degriding (Million Grid Points/sec)		1953	1657
	Normalized	100%	84.84%
	Standard Deviation	0.1%	0.1%
ASKAP - tConvolve MPI - Gridding (Million Grid Points/sec)		1161	892.666
	Normalized	100%	76.88%
	Standard Deviation	0.2%	0%

GEGL - Wavelet Blur (sec)	52.123	61.585
Normalized	100%	84.64%
Standard Deviation	0.3%	1.2%
Minion - Solitaire (sec)	55.284448	57.688167
Normalized	100%	95.83%
Standard Deviation	0.2%	0.1%
Tachyon - Total Time (sec)	65.7816	46.0091
Normalized	69.94%	100%
Standard Deviation	0.1%	0.3%
Mlpack Benchmark - scikit_ica (sec)	53.21	53.76
Normalized	100%	98.98%
Standard Deviation	1.7%	0.9%
NAS Parallel Benchmarks - SP.B (Mop/s)	5284	8390
Normalized	62.97%	100%
Standard Deviation	0.2%	0.1%
Perl Benchmarks - Interpreter (sec)	0.00066725	0.00069115
Normalized	100%	96.54%
Standard Deviation	1.4%	1.9%
Basemark GPU - Vulkan - 3840 x 2160 - High (FPS)	81.93	80.95
Normalized	100%	98.8%
Standard Deviation	0.2%	0.1%
RawTherapee - T.B.T (sec)	53.309	52.809
Normalized	99.06%	100%
Standard Deviation	0.2%	0.1%
GEGL - Color Enhance (sec)	50.055	54.906
Normalized	100%	91.16%
Standard Deviation	1.2%	0.4%
Polyhedron Fortran Benchmarks - protein (sec)	11.62	12.37
Normalized	100%	93.94%
Mlpack Benchmark - scikit_linearridgeregression	4.05	2.04
Normalized	50.37%	100%
Standard Deviation	0.7%	0.5%
SQLite Speedtest - Timed Time - Size 1,000 (sec)	44.924	58.132
Normalized	100%	77.28%
Standard Deviation	0.1%	1.1%
Cpuminer-Opt - skein (kH/s - Hash Speed)	45343	54471
Normalized	83.24%	100%
Standard Deviation	0.5%	2.9%
Git - T.T.C.C.G.C (sec)	41.515	45.230
Normalized	100%	91.79%
Standard Deviation	0.1%	2.8%
DeepSpeech - CPU (sec)	78.36647	64.61712
Normalized	82.46%	100%
Standard Deviation	1.9%	0.8%
Basemark GPU - OpenGL - 3840 x 2160 - High (FPS)	59.64	73.68
Normalized	80.94%	100%
Standard Deviation	0.9%	0.4%
PyPerformance - 2to3 (Milliseconds)	241	283
Normalized	100%	85.16%
Standard Deviation		0.2%
LibreOffice - 2.D.T.P (sec)	6.403	6.605
Normalized	100%	96.94%
Standard Deviation	2.7%	2.7%
Selenium - ARES-6 - Google Chrome (ms)	17.47	20.20
Normalized	100%	86.49%

	Standard Deviation	0.5%	1.1%
m-queens - Time To Solve (sec)		59.649	34.304
	Normalized	57.51%	100%
	Standard Deviation	0%	0.1%
Renaissance - T.H.R (ms)		2004	2094
	Normalized	100%	95.69%
	Standard Deviation	1.3%	0.9%
Embree - Pathtracer - Asian Dragon Obj (FPS)		16.1775	19.6503
	Normalized	82.33%	100%
	Standard Deviation	0.2%	0.3%
Selenium - Octane - Firefox (Geometric Mean)		38776	34528
	Normalized	100%	89.04%
	Standard Deviation	1.1%	1.3%
Java SciMark - Composite (Mflops)		3053	3116
	Normalized	97.98%	100%
	Standard Deviation	0.5%	2%
G'MIC - P.I.O.A.3.V.1.T (sec)		16.006	18.735
	Normalized	100%	85.43%
	Standard Deviation	1.3%	3%
Timed PHP Compilation - Time To Compile (sec)		47.704	42.697
	Normalized	89.5%	100%
	Standard Deviation	0.8%	0.9%
Embree - Pathtracer ISPC - Asian Dragon Obj (FPS)		18.2419	19.0858
	Normalized	95.58%	100%
	Standard Deviation	0.2%	0.2%
ParaView - Many Spheres - 3840 x 2160 (MiPolys /		6344	6547
	Normalized	96.91%	100%
	Standard Deviation	4.6%	0.4%
ParaView - Many Spheres - 3840 x 2160 (Frames / Sec)		63.28	65.30
	Normalized	96.91%	100%
	Standard Deviation	4.6%	0.4%
Basis Universal - ETC1S (sec)		42.177	42.788
	Normalized	100%	98.57%
	Standard Deviation	0.5%	0.7%
C-Ray - Total Time - 4.1.R.P.P (sec)		52.130	31.594
	Normalized	60.61%	100%
	Standard Deviation	0%	0.1%
Selenium - Octane - Google Chrome (Geometric		54153	49230
	Normalized	100%	90.91%
	Standard Deviation	0.2%	0.7%
PyPerformance - go (Milliseconds)		187	228
	Normalized	100%	82.02%
Socketperf - Throughput (Messages/sec)		639629	590729
	Normalized	100%	92.35%
	Standard Deviation	1.6%	3.5%
FLAC Audio Encoding - WAV To FLAC (sec)		7.699	8.250
	Normalized	100%	93.32%
	Standard Deviation	2.6%	3.4%
Minion - Graceful (sec)		41.961286	39.558481
	Normalized	94.27%	100%
	Standard Deviation	0.1%	0.5%
Timed FFmpeg Compilation - Time To Compile (sec)		46.059	35.442
	Normalized	76.95%	100%
	Standard Deviation	1.1%	1%
Basis Universal - UASTC Level 3 (sec)		46.509	32.607

	Normalized	70.11%	100%
	Standard Deviation	0%	0.3%
C-Blosc - blosclz (MB/s)		10910	11288
	Normalized	96.65%	100%
	Standard Deviation	0.3%	0.2%
Xonotic - 3840 x 2160 - Ultimate (FPS)		318.7844013	308.6831229
	Normalized	100%	96.83%
	Standard Deviation	0.5%	0.1%
rav1e - 6 (FPS)		1.622	1.497
	Normalized	100%	92.29%
	Standard Deviation	0.1%	0.1%
libgav1 - S.N.1 (FPS)		135.37	78.41
	Normalized	100%	57.92%
	Standard Deviation	0.6%	0.1%
NAS Parallel Benchmarks - FT.C (Mop/s)		11106	11558
	Normalized	96.09%	100%
	Standard Deviation	0.1%	0%
oneDNN MKL-DNN - R.N.N.T - f32 (ms)		169.855	190.560
	Normalized	100%	89.13%
	Standard Deviation	0.9%	0.3%
Cython benchmark (sec)		35.064	38.658
	Normalized	100%	90.7%
	Standard Deviation	0.6%	1.2%
oneDNN MKL-DNN - R.N.N.I - f32 (ms)		28.0154	26.6223
	Normalized	95.03%	100%
	Standard Deviation	0.1%	0.2%
Cpuminer-Opt - m7m (kH/s - Hash Speed)		407.75	838.57
	Normalized	48.62%	100%
	Standard Deviation	0.1%	0.3%
Izbench - XZ 0 - Decompression (MB/s)		138	136
	Normalized	100%	98.55%
Izbench - XZ 0 - Compression (MB/s)		51	43
	Normalized	100%	84.31%
	Standard Deviation		2.7%
Stress-NG - Context Switching (Bogo Ops/s)		5661608	7734524
	Normalized	73.2%	100%
	Standard Deviation	0.8%	2.7%
GEGL - Rotate 90 Degrees (sec)		32.369	37.640
	Normalized	100%	86%
	Standard Deviation	1.2%	0.6%
LULESH (z/s)		11.960647	9.8209433
	Normalized	100%	82.11%
	Standard Deviation	1.6%	0.1%
GEGL - Antialias (sec)		32.111	37.298
	Normalized	100%	86.09%
	Standard Deviation	0.8%	0.6%
Embree - Pathtracer - Crown (FPS)		15.4524	20.8580
	Normalized	74.08%	100%
	Standard Deviation	0.2%	0.3%
Cpuminer-Opt - deep (kH/s - Hash Speed)		12397	15150
	Normalized	81.83%	100%
	Standard Deviation	0%	0.1%
7-Zip Compression - C.S.T (MIPS)		65002	90026
	Normalized	72.2%	100%
	Standard Deviation	0.6%	0.7%

PyPerformance - django_template (Milliseconds)	38.3	45.5
Normalized	100%	84.18%
Standard Deviation	0.5%	0.4%
Embree - Pathtracer ISPC - Crown (FPS)	17.7342	20.0572
Normalized	88.42%	100%
Standard Deviation	0.2%	0.8%
Xonotic - 3840 x 2160 - Ultra (FPS)	398.0959725	393.3117643
Normalized	100%	98.8%
Standard Deviation	0.5%	0.4%
Polyhedron Fortran Benchmarks - doduc (sec)	6.13	6.56
Normalized	100%	93.45%
PyPerformance - crypto_pyaes (Milliseconds)	83.2	97.2
Normalized	100%	85.6%
Standard Deviation	0%	0.3%
Tesseract - 3840 x 2160 (FPS)	431.0337	364.8969
Normalized	100%	84.66%
Standard Deviation	2.8%	1.1%
Redis - LPUSH (Reqs/sec)	2289561	1666745
Normalized	100%	72.8%
Standard Deviation	2.8%	4.5%
Embree - Pathtracer - Asian Dragon (FPS)	17.5550	21.4302
Normalized	81.92%	100%
Standard Deviation	0.7%	0.2%
Redis - SET (Reqs/sec)	2770463	1992291
Normalized	100%	71.91%
Standard Deviation	1.4%	5.4%
Numenta Anomaly Benchmark - B.C (sec)	36.066	26.176
Normalized	72.58%	100%
Standard Deviation	0.7%	2.9%
Cpuminer-Opt - sha256t (kH/s - Hash Speed)	102523	119460
Normalized	85.82%	100%
Standard Deviation	1.8%	2.6%
Cpuminer-Opt - lbry (kH/s - Hash Speed)	38917	46910
Normalized	82.96%	100%
Standard Deviation	0.1%	0.7%
Polyhedron Fortran Benchmarks - mdbx (sec)	3.87	4.27
Normalized	100%	90.63%
PyPerformance - chaos (Milliseconds)	79.8	100
Normalized	100%	79.8%
Standard Deviation	1.2%	
Stress-NG - CPU Stress (Bogo Ops/s)	4731	6621
Normalized	71.46%	100%
Standard Deviation	0.3%	0.2%
John The Ripper - Blowfish (Real C/S)	23257	27740
Normalized	83.84%	100%
Standard Deviation	0%	0.4%
Aircrack-ng (k/s)	45912	58218
Normalized	78.86%	100%
Standard Deviation	0%	0.1%
Stress-NG - Matrix Math (Bogo Ops/s)	62671	77934
Normalized	80.42%	100%
Standard Deviation	2.8%	0.8%
Stress-NG - Crypto (Bogo Ops/s)	2678	4744
Normalized	56.45%	100%
Standard Deviation	0.1%	0.3%

Stress-NG - Socket Activity (Bogo Ops/s)	8782	11945
Normalized	73.52%	100%
Standard Deviation	1.5%	0.8%
Stress-NG - Vector Math (Bogo Ops/s)	94531	148737
Normalized	63.56%	100%
Standard Deviation	0%	0.1%
AOM AV1 - Speed 0 Two-Pass (FPS)	0.35	0.34
Normalized	100%	97.14%
Standard Deviation	1.6%	0%
Xonotic - 3840 x 2160 - High (FPS)	438.9449334	442.1980742
Normalized	99.26%	100%
Standard Deviation	0.5%	0.5%
Embree - Pathtracer ISPC - Asian Dragon (FPS)	20.5126	21.3600
Normalized	96.03%	100%
Standard Deviation	0.7%	0.2%
AOBench - 2048 x 2048 - Total Time (sec)	27.170	31.131
Normalized	100%	87.28%
Standard Deviation	0.2%	0.6%
Polyhedron Fortran Benchmarks - air (sec)	1.95	1.62
Normalized	83.08%	100%
Izbench - Zstd 8 - Decompression (MB/s)	1884	1714
Normalized	100%	90.98%
Standard Deviation	0.2%	0.5%
Izbench - Zstd 8 - Compression (MB/s)	104	111
Normalized	93.69%	100%
Standard Deviation		0.9%
PyPerformance - regex_compile (Milliseconds)	133	155
Normalized	100%	85.81%
Standard Deviation	2.6%	
Polyhedron Fortran Benchmarks - aermod (sec)	4.57	5.49
Normalized	100%	83.24%
DaCapo Benchmark - Tradebeans (msec)	2478	4064
Normalized	100%	60.97%
Standard Deviation	3.4%	0.9%
PyPerformance - nbody (Milliseconds)	89.9	101
Normalized	100%	89.01%
Standard Deviation	0.2%	0.6%
Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)	517909	711755
Normalized	72.77%	100%
Standard Deviation	0.4%	0.2%
AOM AV1 - Speed 6 Realtime (FPS)	25.31	19.22
Normalized	100%	75.94%
Standard Deviation	0.8%	0.7%
Zstd Compression - 3 (MB/s)	2867	4014
Normalized	71.42%	100%
Standard Deviation	0.5%	1.6%
Izbench - Crush 0 - Decompression (MB/s)	612	529
Normalized	100%	86.44%
Standard Deviation	0.2%	0.3%
Izbench - Crush 0 - Compression (MB/s)	131	114
Normalized	100%	87.02%
Standard Deviation		1%
GEGL - Reflect (sec)	25.416	29.718
Normalized	100%	85.52%
Standard Deviation	0.2%	1.8%

Selenium - Kraken - Firefox (ms)	715.7	725.2
Normalized	100%	98.69%
Standard Deviation	2.3%	0.4%
Selenium - Kraken - Google Chrome (ms)	779.3	743.1
Normalized	95.35%	100%
Standard Deviation	2.7%	1%
PyPerformance - float (Milliseconds)	82.5	102
Normalized	100%	80.88%
Standard Deviation	0.2%	
PyPerformance - json_loads (Milliseconds)	18.3	22.0
Normalized	100%	83.18%
Standard Deviation	0%	0.3%
rav1e - 10 (FPS)	3.460	3.241
Normalized	100%	93.67%
Standard Deviation	0.2%	0.2%
GEGL - Tile Glass (sec)	24.658	29.061
Normalized	100%	84.85%
Standard Deviation	0.1%	0.5%
Redis - SADD (Reqs/sec)	3071108	2357410
Normalized	100%	76.76%
Standard Deviation	6.3%	2.2%
SMHasher - t1ha0_aes_avx2 (cycles/hash)	32.315	
Standard Deviation	0.1%	
SMHasher - t1ha0_aes_avx2 (MiB/sec)	46159	
Standard Deviation	2.9%	
Xonotic - 3840 x 2160 - Low (FPS)	532.2734013	544.3905119
Normalized	97.77%	100%
Standard Deviation	0.7%	0.5%
Timed MPlayer Compilation - Time To Compile (sec)	29.273	20.967
Normalized	71.63%	100%
Standard Deviation	0.2%	0.3%
PyPerformance - pathlib (Milliseconds)	14.4	15.5
Normalized	100%	92.9%
Standard Deviation	0.4%	0.4%
AOM AV1 - Speed 6 Two-Pass (FPS)	4.66	4.16
Normalized	100%	89.27%
Standard Deviation	0.3%	0.8%
Izbench - Brotli 2 - Decompression (MB/s)	908	780
Normalized	100%	85.9%
Standard Deviation	0.1%	0.5%
Izbench - Brotli 2 - Compression (MB/s)	233	222
Normalized	100%	95.28%
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	706.616	834.379
Normalized	84.69%	100%
Standard Deviation	0.2%	0.2%
DaCapo Benchmark - H2 (msec)	2615	3293
Normalized	100%	79.41%
Standard Deviation	8.2%	1.7%
Xsbench (Lookups/s)	2639580	2653413
Normalized	99.48%	100%
Standard Deviation	0%	0.1%
ebizzy (Records/s)	495906	1373026
Normalized	36.12%	100%
Standard Deviation	2.9%	0.8%
Tungsten Renderer - Water Caustic (sec)	23.6946	21.3900

	Normalized	90.27%	100%
	Standard Deviation	0.6%	0.5%
Mlpack Benchmark - scikit_svm (sec)		20.91	19.21
	Normalized	91.87%	100%
	Standard Deviation	0.1%	0.6%
XZ Compression - C.u.1.0.3.s.i.i.C.L.9 (sec)		22.326	24.112
	Normalized	100%	92.59%
	Standard Deviation	0.5%	0.3%
Izbench - Libdeflate 1 - Decompression (MB/s)		1482	1298
	Normalized	100%	87.58%
Izbench - Libdeflate 1 - Compression (MB/s)		290	271
	Normalized	100%	93.45%
	Standard Deviation	0.4%	
Timed ImageMagick Compilation - Time To Compile		25.033	20.860
	Normalized	83.33%	100%
	Standard Deviation	0.8%	0.1%
Botan - AES-256 (MiB/s)		4925	5865
	Normalized	83.98%	100%
	Standard Deviation	0%	0.1%
PyPerformance - pickle_pure_python (Milliseconds)		331	424
	Normalized	100%	78.07%
	Standard Deviation	0.3%	
Basis Universal - UASTC Level 2 (sec)		25.170	19.048
	Normalized	75.68%	100%
	Standard Deviation	0.4%	0.4%
Izbench - Brotli 0 - Decompression (MB/s)		783	661
	Normalized	100%	84.42%
	Standard Deviation	0.1%	
Izbench - Brotli 0 - Compression (MB/s)		543	555
	Normalized	97.84%	100%
	Standard Deviation	0.2%	0.4%
VP9 libvpx Encoding - Speed 5 (FPS)		30.43	25.53
	Normalized	100%	83.9%
	Standard Deviation	0.3%	0.4%
Izbench - Zstd 1 - Decompression (MB/s)		1776	1563
	Normalized	100%	88.01%
	Standard Deviation	0.3%	1%
Izbench - Zstd 1 - Compression (MB/s)		615	568
	Normalized	100%	92.36%
	Standard Deviation		1.3%
Rodinia - O.S (sec)		17.306	25.517
	Normalized	100%	67.82%
	Standard Deviation	0.1%	0.3%
oneDNN MKL-DNN - D.B.d - f32 (ms)		3.03768	2.55517
	Normalized	84.12%	100%
	Standard Deviation	0.2%	0.4%
Botan - Blowfish (MiB/s)		556.522	479.252
	Normalized	100%	86.12%
	Standard Deviation	0.1%	0.1%
Botan - Twofish (MiB/s)		446.240	393.003
	Normalized	100%	88.07%
	Standard Deviation	0.3%	0.1%
Botan - CAST-256 (MiB/s)		175.908	156.180
	Normalized	100%	88.79%
	Standard Deviation	0.1%	0.2%

Botan - KASUMI (MiB/s)	115.381	101.025
Normalized	100%	87.56%
Standard Deviation	0.3%	0.3%
OpenSSL - R.4.b.P (Signs/sec)	3756	4707
Normalized	79.79%	100%
Standard Deviation	0.1%	0.1%
dav1d - Summer Nature 4K (FPS)	177.43	187.35
Normalized	94.71%	100%
Standard Deviation	0.1%	0.5%
Facebook RocksDB - Seq Fill (Op/s)	1431900	1292441
Normalized	100%	90.26%
Standard Deviation	0.4%	0.5%
Polyhedron Fortran Benchmarks - ac (sec)	4.34	5.89
Normalized	100%	73.68%
PyBench - T.F.A.T.T (Milliseconds)	760	894
Normalized	100%	85.01%
Standard Deviation	0.5%	2.1%
Timed Apache Compilation - Time To Compile (sec)	17.907	20.240
Normalized	100%	88.47%
Standard Deviation	0.2%	0.4%
Selenium - PSPDFKit WASM - Firefox (Score)	1148	1304
Normalized	100%	88.04%
Standard Deviation	0.6%	0.1%
Zstd Compression - C.u.1.0.3.s.i.i.C.L.1 (sec)	21.925	15.514
Normalized	70.76%	100%
Standard Deviation	0.2%	0.7%
dav1d - Summer Nature 4K (FPS)	185.20	204.01
Normalized	90.78%	100%
Standard Deviation	0.1%	0.1%
dav1d - Chimera 1080p (FPS)	700.92	519.76
Normalized	100%	74.15%
Standard Deviation	0.1%	0.5%
Selenium - Maze Solver - Firefox (sec)	5.4	4.5
Normalized	83.33%	100%
Standard Deviation	1.1%	1.3%
Rodinia - OpenMP LavaMD (sec)	21.053	14.967
Normalized	71.09%	100%
Standard Deviation	0.8%	0.2%
Selenium - W.c - Firefox (ms)	414.4	351.9
Normalized	84.92%	100%
Standard Deviation	0.3%	0.7%
AOM AV1 - Speed 4 Two-Pass (FPS)	2.93	2.71
Normalized	100%	92.49%
Standard Deviation	0.4%	0.2%
Selenium - PSPDFKit WASM - Google Chrome (Score)	1387	1509
Normalized	100%	91.92%
Standard Deviation	0.7%	1.1%
Parboil - OpenMP Stencil (sec)	16.403124	15.106023
Normalized	92.09%	100%
Standard Deviation	1.1%	0.8%
Tungsten Renderer - Hair (sec)	20.2258	13.6067
Normalized	67.27%	100%
Standard Deviation	0.4%	0.2%
Intel Open Image Denoise - Memorial (Images / Sec)	11.12	12.73
Normalized	87.35%	100%

	Standard Deviation	0%	0.3%
dav1d - Chimera 1080p (FPS)		782.60	626.95
	Normalized	100%	80.11%
	Standard Deviation	0.3%	0.3%
NAS Parallel Benchmarks - MG.C (Mop/s)		11256	10836
	Normalized	100%	96.27%
	Standard Deviation	0.4%	0.1%
Polyhedron Fortran Benchmarks - linpk (sec)		2.31	3.05
	Normalized	100%	75.74%
Numenta Anomaly Benchmark - Relative Entropy		16.561	14.391
	Normalized	86.9%	100%
	Standard Deviation	1.5%	1%
oneDNN MKL-DNN - IP Batch 1D - f32 (ms)		3.30905	4.58909
	Normalized	100%	72.11%
	Standard Deviation	0.6%	0.1%
oneDNN MKL-DNN - IP Batch 1D - u8s8f32 (ms)		1.17466	1.34228
	Normalized	100%	87.51%
	Standard Deviation	0%	0.2%
OSBench - Create Threads (us/Event)		8.883476	12.243907
	Normalized	100%	72.55%
	Standard Deviation	0.6%	11.5%
Swet - Average (Operations/sec)		972233554	816912713
	Normalized	100%	84.02%
	Standard Deviation	0.3%	1.9%
Basemark GPU - OpenGL - 3840 x 2160 - Medium		304.94	187.04
	Normalized	100%	61.34%
	Standard Deviation	1.4%	2.6%
Go Benchmarks - json (ns/op)		3100011	2321631
	Normalized	74.89%	100%
	Standard Deviation	0.6%	0.1%
Rodinia - OpenMP CFD Solver (sec)		18.283	10.914
	Normalized	59.69%	100%
	Standard Deviation	0.2%	0.3%
Selenium - Maze Solver - Google Chrome (sec)		5.4	4.1
	Normalized	75.93%	100%
	Standard Deviation	0%	1.4%
Primesieve - 1.P.N.G (sec)		17.181	11.821
	Normalized	68.8%	100%
	Standard Deviation	0.6%	0.6%
AOM AV1 - Speed 8 Realtime (FPS)		49.01	38.24
	Normalized	100%	78.02%
	Standard Deviation	0.5%	1.6%
Socketperf - Latency Ping Pong (usec)		3.222	3.835
	Normalized	100%	84.02%
	Standard Deviation	1.3%	2.4%
Selenium - W.c - Google Chrome (ms)		343.4547	278.3210
	Normalized	81.04%	100%
	Standard Deviation	1.7%	1.8%
Nebular Empirical Analysis Tool (sec)		13.970	12.957
	Normalized	92.75%	100%
	Standard Deviation	0.1%	0.9%
GIMP - unsharp-mask (sec)		11.946	14.776
	Normalized	100%	80.85%
	Standard Deviation	0.1%	0.5%

ASKAP - tConvolve OpenMP - Degriding (Million Grid Points/sec)	2165	1925
Normalized	100%	88.91%
Standard Deviation	0.8%	0.4%
ASKAP - tConvolve OpenMP - Gridding (Million Grid Points/sec)	1307	1165
Normalized	100%	89.09%
Standard Deviation	0.8%	2%
SMHasher - MeowHash (cycles/hash)	51.813	
Standard Deviation	0.2%	
SMHasher - MeowHash (MiB/sec)	40765	
Standard Deviation	0.3%	
Basemark GPU - Vulkan - 3840 x 2160 - Medium (FPS)	404.07	415.32
Normalized	97.29%	100%
Standard Deviation	0.1%	0.3%
Redis - GET (Reqs/sec)	3788205	2609128
Normalized	100%	68.88%
Standard Deviation	1.1%	2.8%
SMHasher - Spooky32 (cycles/hash)	41.073	
Standard Deviation	0%	
SMHasher - Spooky32 (MiB/sec)	15361	
Standard Deviation	1.8%	
Bork File Encrypter - F.E.T (sec)	5.124	8.578
Normalized	100%	59.73%
Standard Deviation	1.5%	2.9%
GIMP - auto-levels (sec)	9.693	11.692
Normalized	100%	82.9%
Standard Deviation	0.3%	0.4%
rays1bench - Large Scene (mrays/s)	81.82	108.20
Normalized	75.62%	100%
Standard Deviation	0%	0.1%
Redis - LPOP (Reqs/sec)	3942561	2716045
Normalized	100%	68.89%
Standard Deviation	1.2%	2.5%
DaCapo Benchmark - Tradesoap (msec)	2889	3442
Normalized	100%	83.93%
Standard Deviation	1.4%	1.5%
GIMP - rotate (sec)	9.573	10.542
Normalized	100%	90.81%
Standard Deviation	0.5%	0.7%
Sysbench - CPU (Events/sec)	27066	34951
Normalized	77.44%	100%
Standard Deviation	0%	0.1%
SMHasher - fasthash32 (cycles/hash)	31.994	
Standard Deviation	0%	
SMHasher - fasthash32 (MiB/sec)	7843	
Standard Deviation	0.1%	
Selenium - W.i - Firefox (ms)	27.1	26.2
Normalized	96.68%	100%
Standard Deviation	0.7%	2.3%
SMHasher - t1ha2_atonce (cycles/hash)	32.065	
Standard Deviation	0%	
SMHasher - t1ha2_atonce (MiB/sec)	17288	
Standard Deviation	0.8%	

GnuPG - 2.F.E (sec)	7.949	11.194
Normalized	100%	71.01%
Standard Deviation	0.4%	1.9%
Go Benchmarks - garbage (ns/op)	788879	750702
Normalized	95.16%	100%
Standard Deviation	0.4%	0.7%
x265 - H.2.1.V.E (FPS)	72.38	62.85
Normalized	100%	86.83%
Standard Deviation	1%	0.8%
N-Queens - Elapsed Time (sec)	10.350	6.760
Normalized	65.31%	100%
Standard Deviation	0%	0.2%
Scikit-Learn (sec)	8.782	8.273
Normalized	94.2%	100%
Standard Deviation	2.5%	2.4%
NeatBench - CPU (FPS)	18.3	26.2
Normalized	69.85%	100%
Standard Deviation	0.3%	2.4%
SMHasher - wyhash (cycles/hash)	24.548	
Standard Deviation	0%	
SMHasher - wyhash (MiB/sec)	18893	
Standard Deviation	1.7%	
IPC_benchmark - U.U.D.S - 4096 (Messages/sec)	1260891	1088654
Normalized	100%	86.34%
Standard Deviation	0.6%	1.1%
Numenta Anomaly Benchmark - Windowed Gaussian (sec)	7.665	6.695
Normalized	87.35%	100%
Standard Deviation	0.7%	0.5%
GEGl - Crop (sec)	6.764	7.538
Normalized	100%	89.73%
Standard Deviation	1.4%	1.7%
Selenium - W.i - Google Chrome (ms)	35.7272	35.8952
Normalized	100%	99.53%
Standard Deviation	0.5%	0.9%
IPC_benchmark - TCP Socket - 4096 (Messages/sec)	1575932	1445302
Normalized	100%	91.71%
Standard Deviation	0.5%	0.8%
LAME MP3 Encoding - WAV To MP3 (sec)	6.974	6.954
Normalized	99.71%	100%
Standard Deviation	0.2%	2.3%
Basis Universal - UASTC Level 0 (sec)	6.514	7.197
Normalized	100%	90.51%
Standard Deviation	1.1%	1%
NAS Parallel Benchmarks - EP.C (Mop/s)	1829	1077
Normalized	100%	58.91%
Standard Deviation	0.4%	0.1%
Smallpt - G.I.R.1.S (sec)	7.852	5.237
Normalized	66.7%	100%
Standard Deviation	0.1%	0.1%
DaCapo Benchmark - Jython (msec)	3319	4010
Normalized	100%	82.77%
Standard Deviation	0.8%	
GIMP - resize (sec)	6.135	6.689
Normalized	100%	91.72%

	Standard Deviation	1%	1.7%
Tungsten Renderer - Volumetric Caustic (sec)		6.98866	5.53479
	Normalized	79.2%	100%
	Standard Deviation	0.3%	1.6%
libjpeg-turbo tjbench - D.T (Megapixels/sec)		237.108141	221.087385
	Normalized	100%	93.24%
	Standard Deviation	0.2%	0.2%
dav1d - S.N.1 (FPS)		671.39	547.69
	Normalized	100%	81.58%
	Standard Deviation	0.2%	0.3%
FFmpeg - H.2.H.T.N.D (sec)		4.562	7.197
	Normalized	100%	63.39%
	Standard Deviation	2.1%	1.5%
ParaView - Wavelet Volume - 3840 x 2160 (MiVoxels / Sec)		1306	3246
	Normalized	40.22%	100%
	Standard Deviation	2.2%	4.1%
ParaView - Wavelet Volume - 3840 x 2160 (Frames / Sec)		81.60	202.90
	Normalized	40.22%	100%
	Standard Deviation	2.2%	4.1%
dav1d - S.N.1 (FPS)		735.61	587.62
	Normalized	100%	79.88%
	Standard Deviation	0.2%	0.3%
OSBench - Create Files (us/Event)		10.474451	11.633563
	Normalized	100%	90.04%
	Standard Deviation	0.8%	0.4%
IPC_benchmark - FIFO Named Pipe - 4096 (Messages/sec)		1462821	2260588
	Normalized	64.71%	100%
	Standard Deviation	0.4%	1.3%
IPC_benchmark - Unnamed Pipe - 4096		1460097	2268105
	Normalized	64.38%	100%
	Standard Deviation	0.8%	0.6%
OSBench - Memory Allocations (Ns/Event)		56.163311	69.227616
	Normalized	100%	81.13%
	Standard Deviation	0.2%	0.3%
OSBench - Create Processes (us/Event)		16.390483	27.797222
	Normalized	100%	58.96%
	Standard Deviation	1.7%	2.4%
OSBench - Launch Programs (us/Event)		26.023388	35.923322
	Normalized	100%	72.44%
	Standard Deviation	0.3%	1.2%
GEGL - Scale (sec)		4.822	5.042
	Normalized	100%	95.64%
	Standard Deviation	2%	0.5%
ParaView - Wavelet Contour - 3840 x 2160 (MiPolys / Sec)		1962	1977
	Normalized	99.24%	100%
	Standard Deviation	1.9%	1.3%
ParaView - Wavelet Contour - 3840 x 2160 (Frames / Sec)		188.23	189.67
	Normalized	99.24%	100%
	Standard Deviation	1.9%	1.3%
Tungsten Renderer - Non-Exponential (sec)		5.14902	4.40751
	Normalized	85.6%	100%

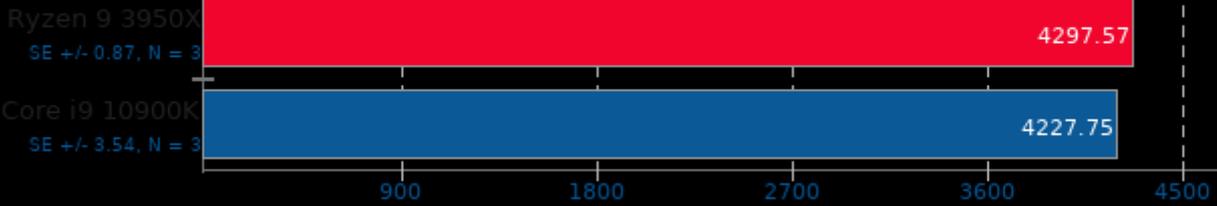
	Standard Deviation	0.2%	0.4%
Timed HMMer Search - P.D.S (sec)		4.281	5.086
	Normalized	100%	84.17%
	Standard Deviation	0.4%	1.6%
Nettle - aes256 (Mbyte/s)		8094	6114
	Normalized	100%	75.54%
	Standard Deviation	0%	0.1%
x264 - H.2.V.E (FPS)		126.49	159.92
	Normalized	79.1%	100%
	Standard Deviation	2.9%	2.9%
Bullet Physics Engine - Raytests (sec)		2.043963	2.084161
	Normalized	100%	98.07%
	Standard Deviation	0.4%	0.4%
Multichase Pointer Chaser - 1.A.2.B.S.4.T (ns)		50.128	70.200
	Normalized	100%	71.41%
	Standard Deviation	0%	0.1%
Multichase Pointer Chaser - 1.A.2.B.S.2.T (ns)		46.168	67.811
	Normalized	100%	68.08%
	Standard Deviation	0.2%	0%
Multichase Pointer Chaser - 1.A.2.B.S (ns)		44.604	67.366
	Normalized	100%	66.21%
	Standard Deviation	0.2%	0.1%
Parallel BZIP2 Compression - 2.F.C (sec)		3.118	
	Standard Deviation	2.5%	
oneDNN MKL-DNN - D.B.d - u8s8f32 (ms)		2.23525	2.63474
	Normalized	100%	84.84%
	Standard Deviation	0.4%	0.2%
Multichase Pointer Chaser - 2.A.2.B.S (ns)		41.813	67.194
	Normalized	100%	62.23%
	Standard Deviation	0.1%	0.3%
oneDNN MKL-DNN - D.B.d - f32 (ms)		4.76923	4.37431
	Normalized	91.72%	100%
	Standard Deviation	0.3%	0.3%
Nettle - sha512 (Mbyte/s)		639.74	640.16
	Normalized	99.93%	100%
	Standard Deviation	0.4%	2.9%
Multichase Pointer Chaser - 4.A.6.B.S (ns)		5.206	4.720
	Normalized	90.66%	100%
	Standard Deviation	0.1%	0.3%
Hackbench - 1 - Thread (sec)		2.245	3.016
	Normalized	100%	74.44%
	Standard Deviation	0.5%	1.1%
Hackbench - 1 - Process (sec)		2.029	2.711
	Normalized	100%	74.84%
	Standard Deviation	0.2%	1.8%
Optcarrot - O.B (FPS)		180.40	141.62
	Normalized	100%	78.5%
	Standard Deviation	0.3%	1.3%
Parboil - OpenMP CUTCP (sec)		2.718560	1.324664
	Normalized	48.73%	100%
	Standard Deviation	0.1%	0.5%
TSCP - A.C.P (Nodes/s)		1623785	1320223
	Normalized	100%	81.31%
	Standard Deviation	0.5%	0.7%
Nettle - chacha (Mbyte/s)		1360	992.023

	Normalized	100%	72.96%
	Standard Deviation	0%	0.1%
IOR - Read Test (MB/s)		867.37	1083
	Normalized	80.06%	100%
	Standard Deviation	4.7%	0.1%
IOR - Write Test (MB/s)		249.66	279.04
	Normalized	89.47%	100%
	Standard Deviation	0.2%	1%
ctx_clock - C.S.T (Clocks)		144	140
	Normalized	97.22%	100%
Nettle - poly1305-aes (Mbyte/s)		3726	2711
	Normalized	100%	72.77%
	Standard Deviation	0.3%	0.2%
BLAKE2 (Cycles/Byte)		4.03	7.64
	Normalized	100%	52.75%
	Standard Deviation	0%	0.6%
Bullet Physics Engine - Convex Trimesh (sec)		0.937118	0.943135
	Normalized	100%	99.36%
	Standard Deviation	0.8%	0.5%
Bullet Physics Engine - Prim Trimesh (sec)		0.782503	0.788758
	Normalized	100%	99.21%
	Standard Deviation	0.9%	0.4%
Bullet Physics Engine - 136 Ragdolls (sec)		2.233182	2.150808
	Normalized	96.31%	100%
	Standard Deviation	0.8%	0.4%
Bullet Physics Engine - 1000 Convex (sec)		3.584657	3.745295
	Normalized	100%	95.71%
	Standard Deviation	0.1%	0.4%
Bullet Physics Engine - 1000 Stack (sec)		3.810223	4.047731
	Normalized	100%	94.13%
	Standard Deviation	0.4%	0.5%
Bullet Physics Engine - 3000 Fall (sec)		3.359547	3.367286
	Normalized	100%	99.77%
	Standard Deviation	1.1%	0.4%
Java SciMark - J.S.O.R (Mflops)		1994	2074
	Normalized	96.15%	100%
	Standard Deviation	0.1%	1.4%
Java SciMark - D.L.M.F (Mflops)		7302	6835
	Normalized	100%	93.6%
	Standard Deviation	1%	2.9%
Java SciMark - S.M.M (Mflops)		2780	2784
	Normalized	99.85%	100%
	Standard Deviation	0.3%	1.8%
Java SciMark - F.F.T (Mflops)		1930	2134
	Normalized	90.45%	100%
	Standard Deviation	0.9%	2.1%
Java SciMark - Monte Carlo (Mflops)		1259	1753
	Normalized	71.8%	100%
	Standard Deviation	0%	1.7%

Pennant 1.0.1

Test: sedovbig

Hydro Cycle Time - Seconds, Fewer Is Better

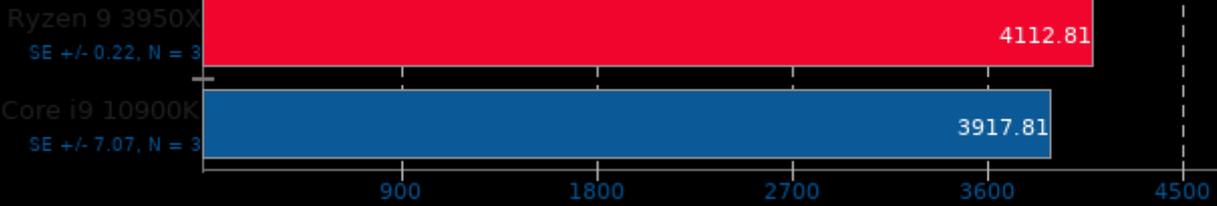


1. (CXX) g++ options: -fopenmp -pthread -lmpi_cxx -lmpi

Pennant 1.0.1

Test: leblancbig

Hydro Cycle Time - Seconds, Fewer Is Better

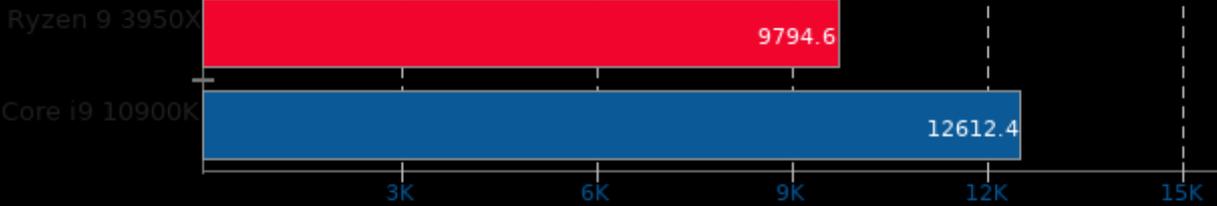


1. (CXX) g++ options: -fopenmp -pthread -lmpi_cxx -lmpi

NWChem 7.0

Input: C240 Buckyball

Seconds, Fewer Is Better

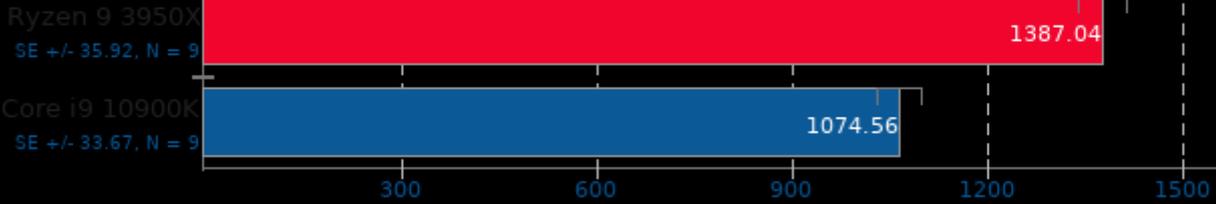


1. (F9X) gfortran options: -lnwctask -lccsd -lmcsf -lseici -lmp2 -lmoints -lstepper -ldriver -loptim -lnwdfc -lgradients -lcpfh -lesp -laddscf -ldangchang -lgu

Selenium

Benchmark: Basemark - Browser: Google Chrome

Overall Score, More Is Better

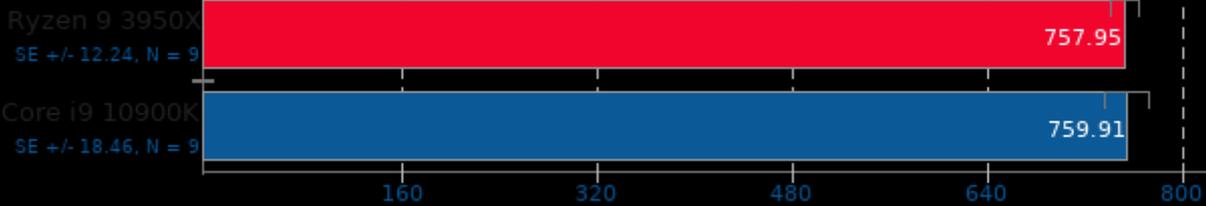


1. chrome 83.0.4103.61

Selenium

Benchmark: Basemark - Browser: Firefox

Overall Score, More Is Better

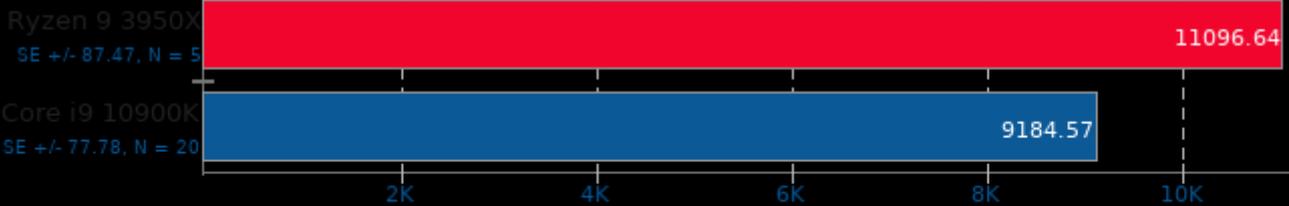


1. firefox 76.0.1

Renaissance 0.10.0

Test: Akka Unbalanced Cobwebbed Tree

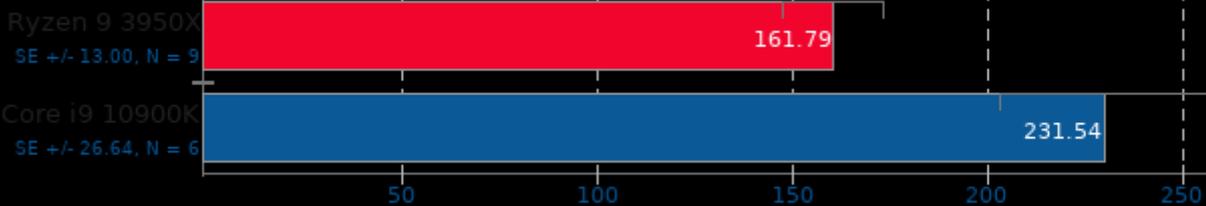
ms, Fewer Is Better



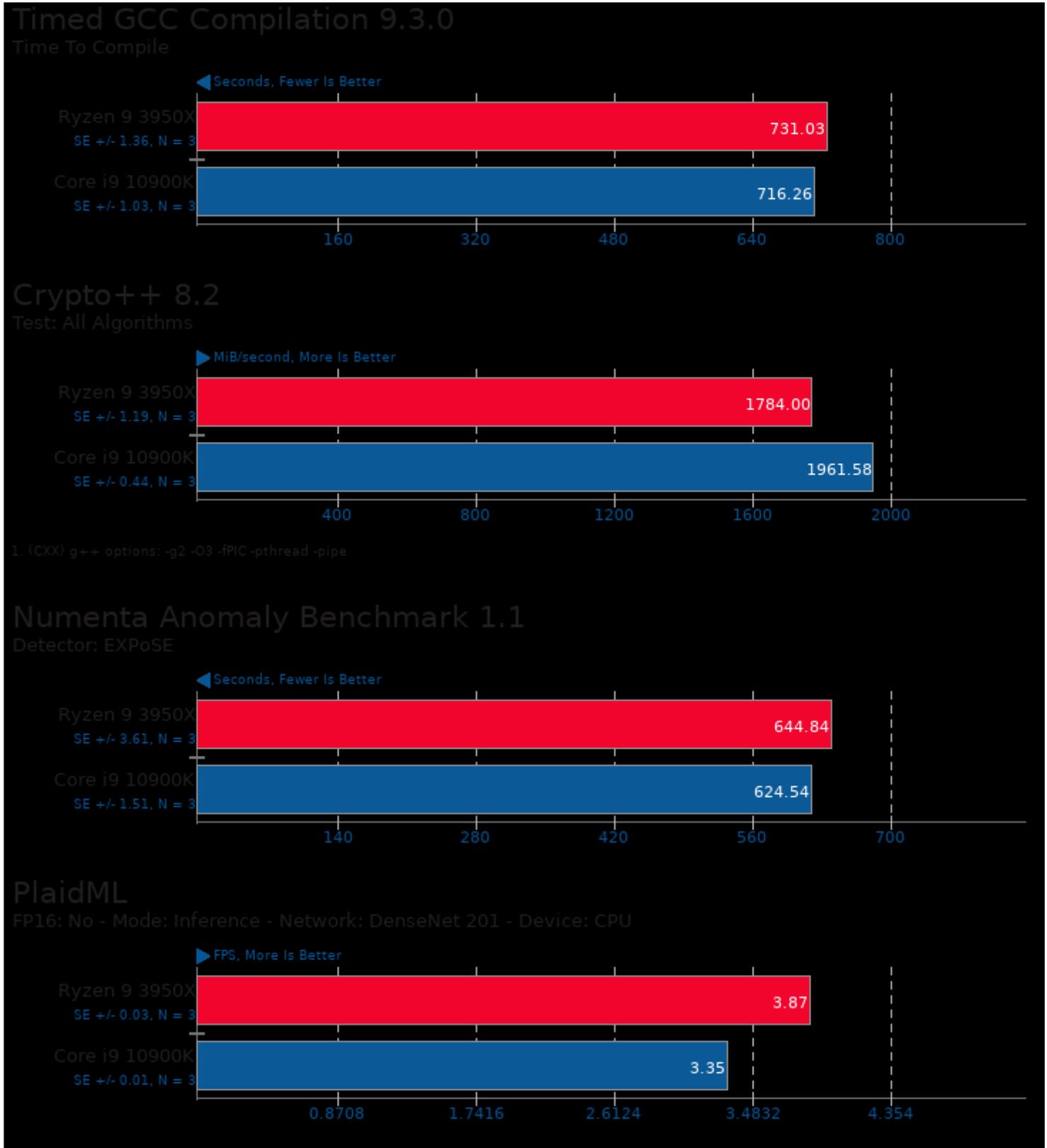
Selenium

Benchmark: MotionMark - Browser: Firefox

Score, More Is Better

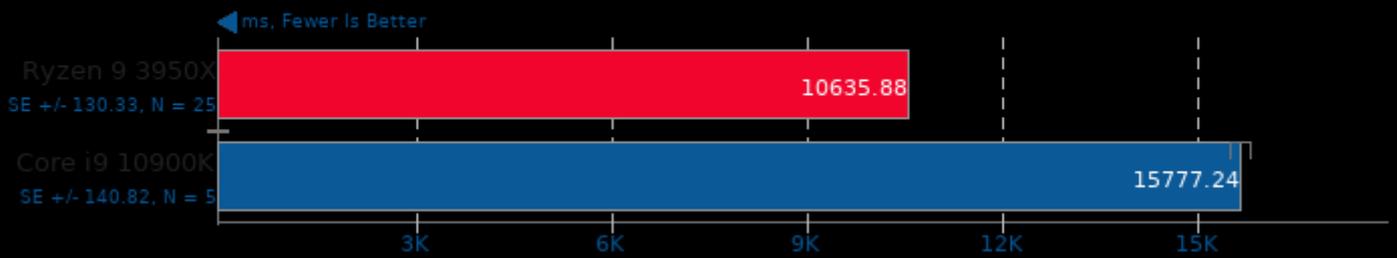


1. firefox 76.0.1



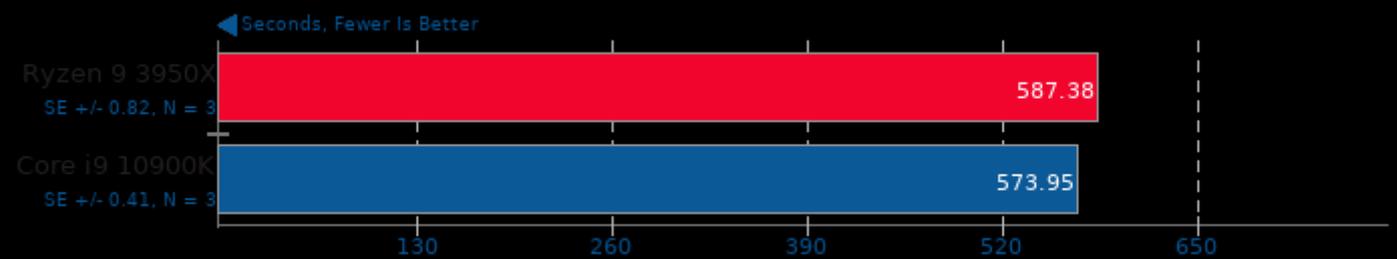
Renaissance 0.10.0

Test: Savina Reactors.IO



Basis Universal 1.12

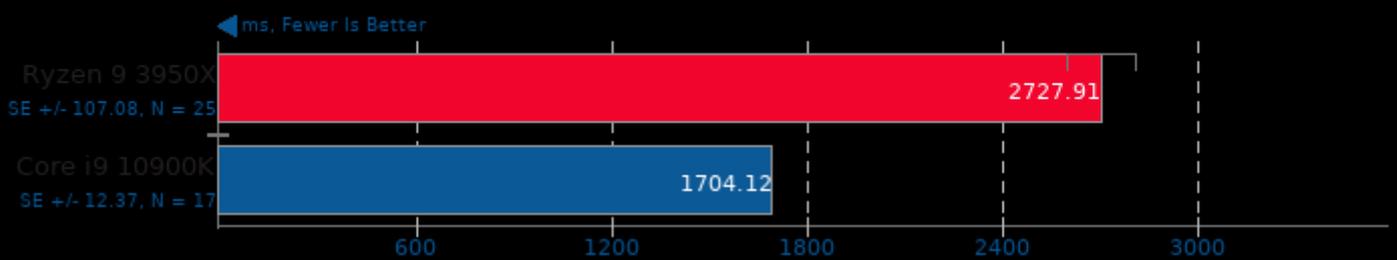
Settings: UASTC Level 2 + RDO Post-Processing



1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -pthread

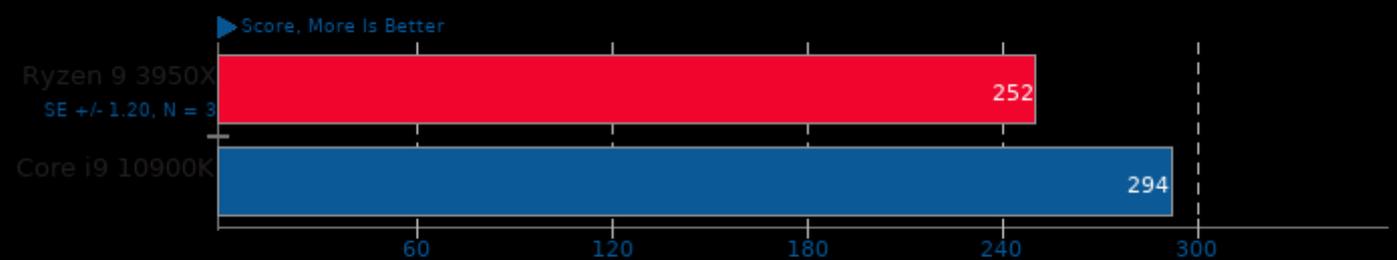
Renaissance 0.10.0

Test: Apache Spark Bayes



Selenium

Benchmark: WebXPRT - Browser: Firefox

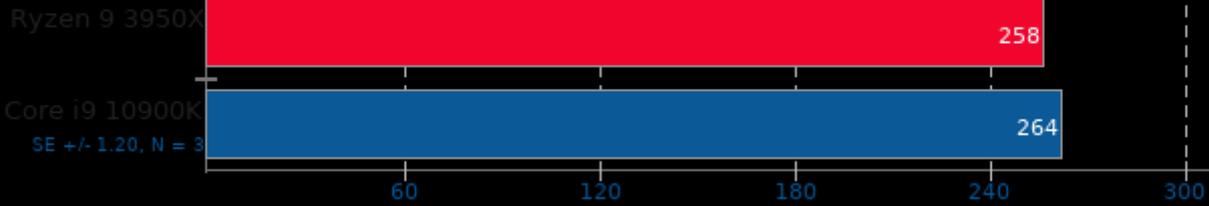


1. firefox 76.0.1

Selenium

Benchmark: WebXPRT - Browser: Google Chrome

▶ Score, More Is Better

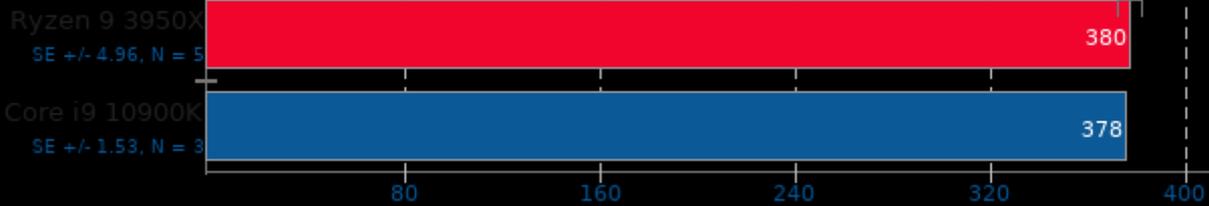


1. chrome 83.0.4103.61

LeelaChessZero 0.25

Backend: BLAS

▶ Nodes Per Second, More Is Better

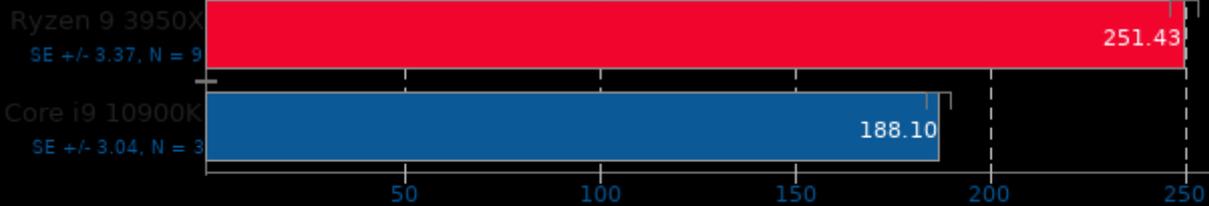


1. (CXX) g++ options: -pthread

Java Gradle Build

Gradle Build: Reactor

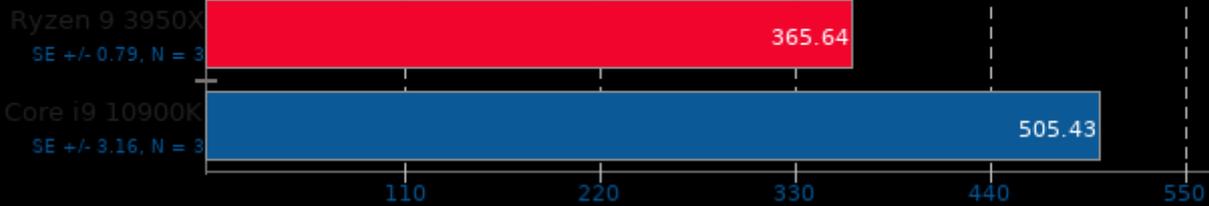
◀ Seconds, Fewer Is Better



Timed LLVM Compilation 10.0

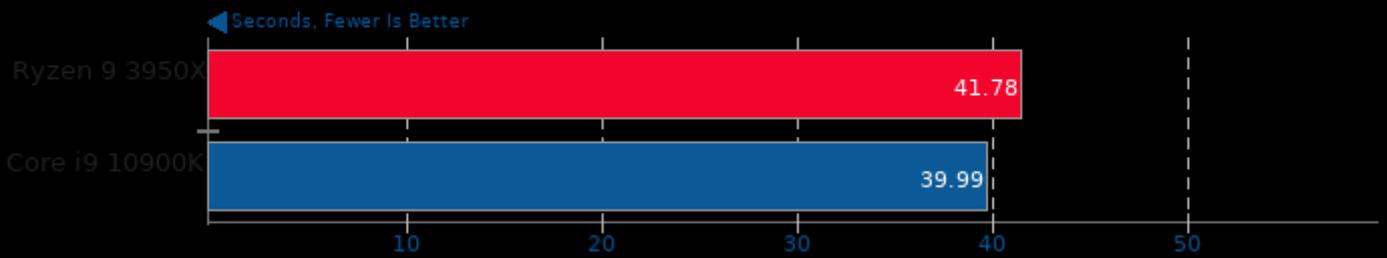
Time To Compile

◀ Seconds, Fewer Is Better



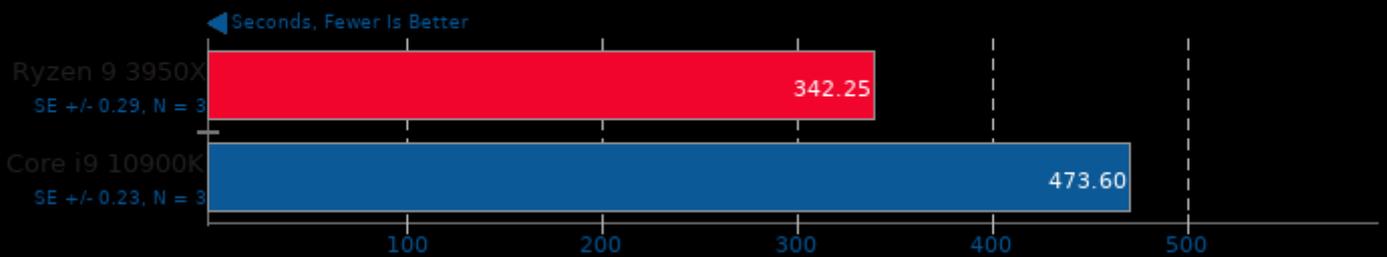
Polyhedron Fortran Benchmarks

Benchmark: gas_dyn2



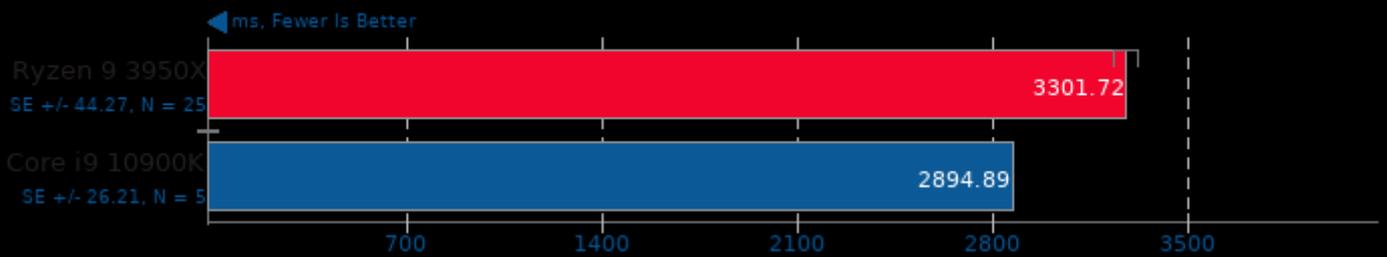
Blender 2.82

Blend File: Barbershop - Compute: CPU-Only



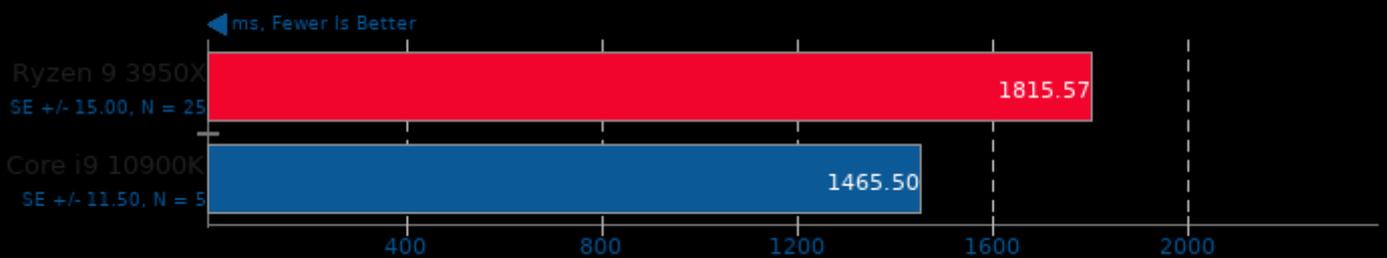
Renaissance 0.10.0

Test: Apache Spark PageRank



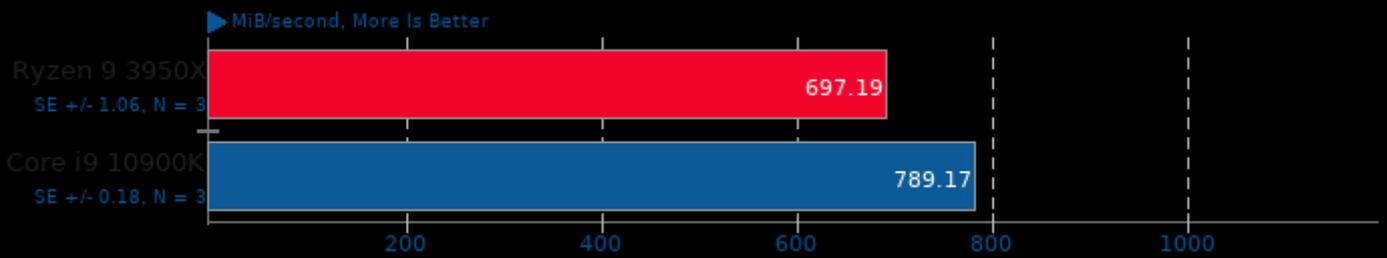
Renaissance 0.10.0

Test: Random Forest



Crypto++ 8.2

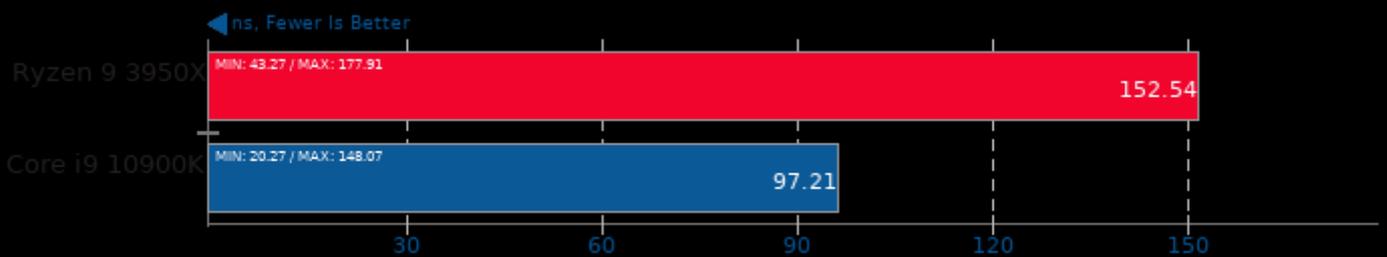
Test: Keyed Algorithms



1. (CXX) g++ options: -g2 -O3 -fPIC -pthread -pipe

Core-Latency

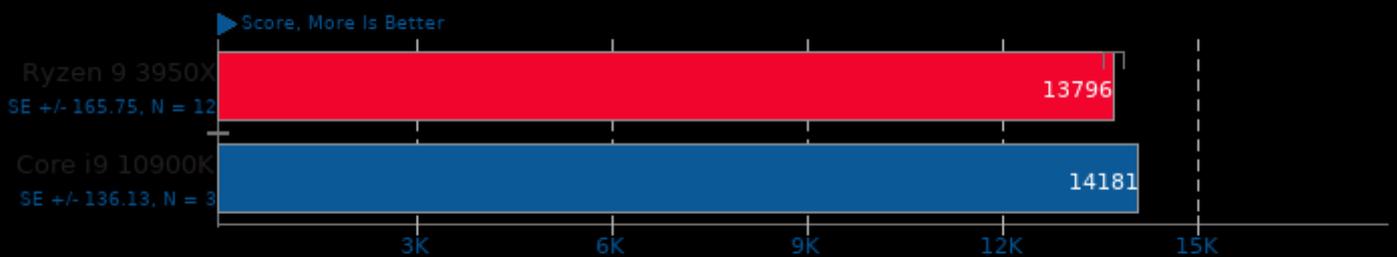
Average Latency Between CPU Cores



1. (CXX) g++ options: -std=c++11 -pthread -O3

Selenium

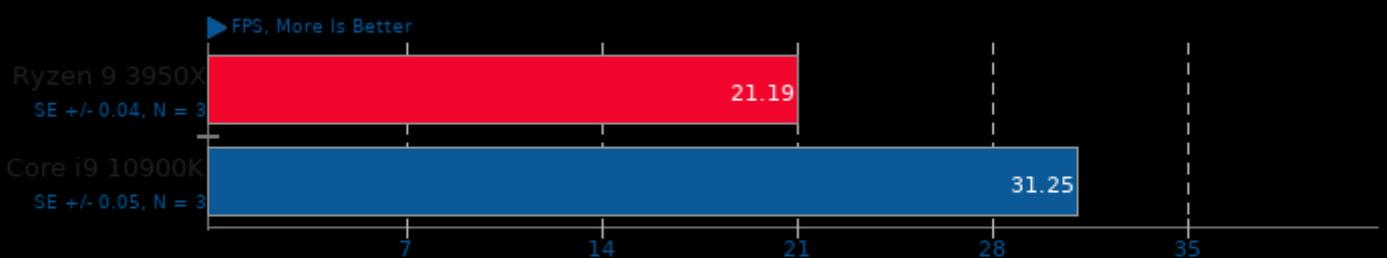
Benchmark: CanvasMark - Browser: Firefox



1. firefox 76.0.1

libgav1 2019-10-05

Video Input: Chimera 1080p 10-bit

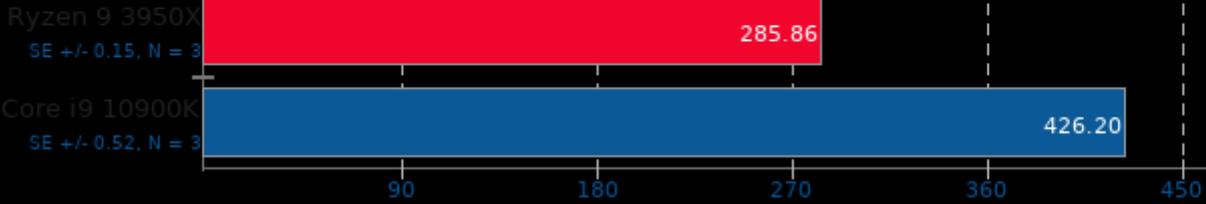


1. (CXX) g++ options: -O3 -pthread

Blender 2.82

Blend File: Pabellon Barcelona - Compute: CPU-Only

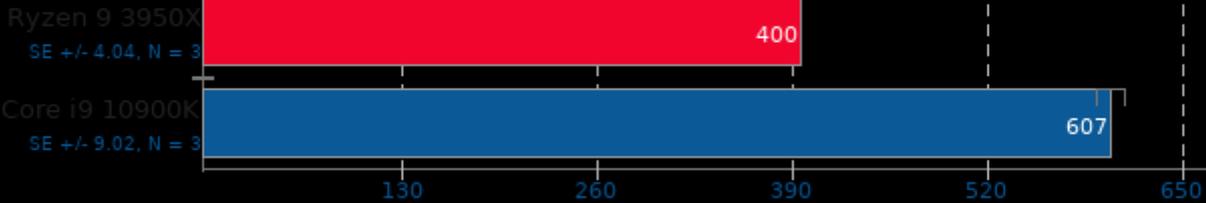
← Seconds, Fewer Is Better



LeelaChessZero 0.25

Backend: Eigen

▶ Nodes Per Second, More Is Better

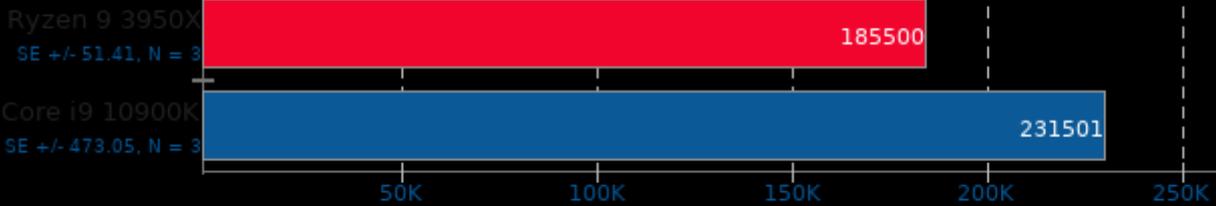


1. (CXX) g++ options: -pthread

LeelaChessZero 0.25

Backend: Random

▶ Nodes Per Second, More Is Better

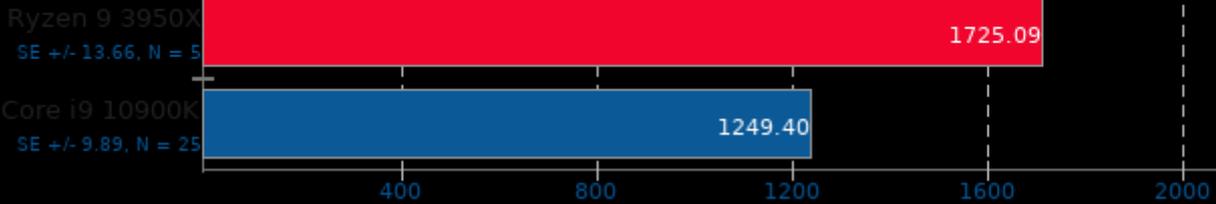


1. (CXX) g++ options: -pthread

Renaissance 0.10.0

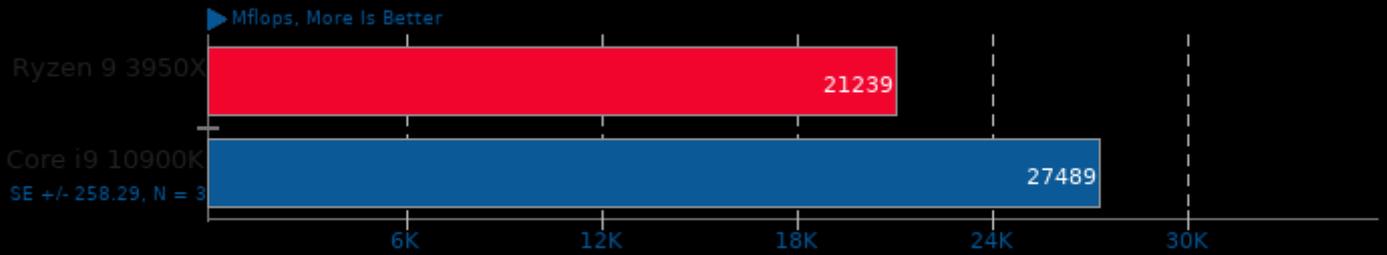
Test: Genetic Algorithm Using Jenetics + Futures

← ms, Fewer Is Better



FFTW 3.3.6

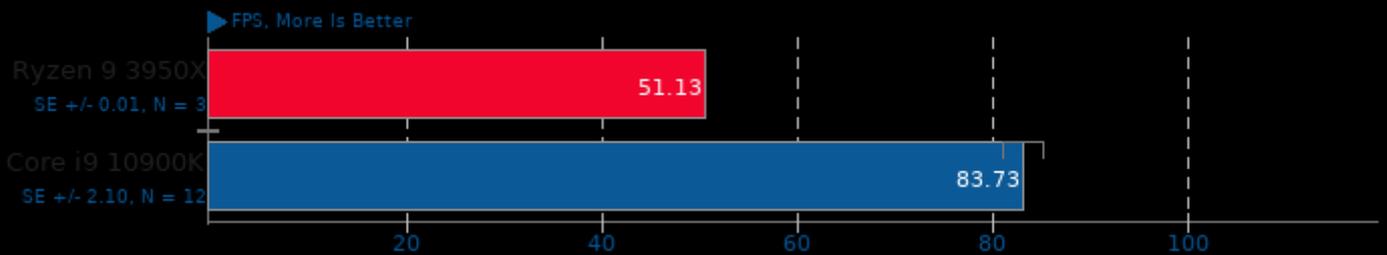
Build: Float + SSE - Size: 2D FFT Size 4096



1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm

libgav1 2019-10-05

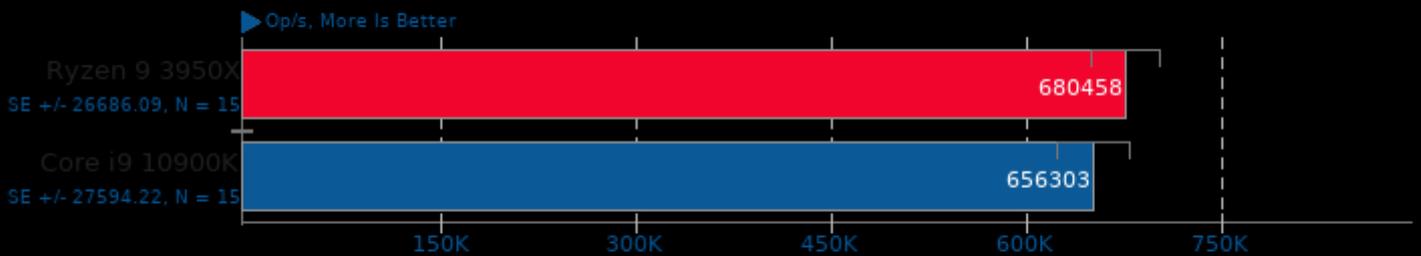
Video Input: Chimera 1080p



1. (CXX) g++ options: -O3 -pthread

Facebook RocksDB 6.3.6

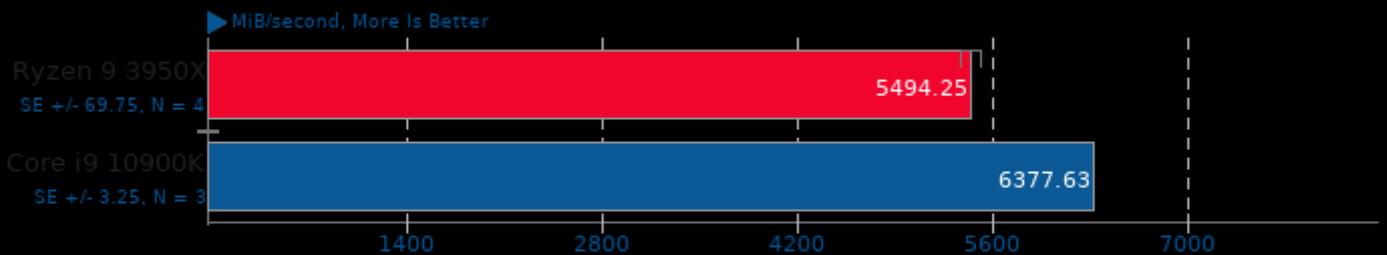
Test: Random Fill



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fno-builtin-memcmp -fno-rtti -rdynamic -pthread

Crypto++ 8.2

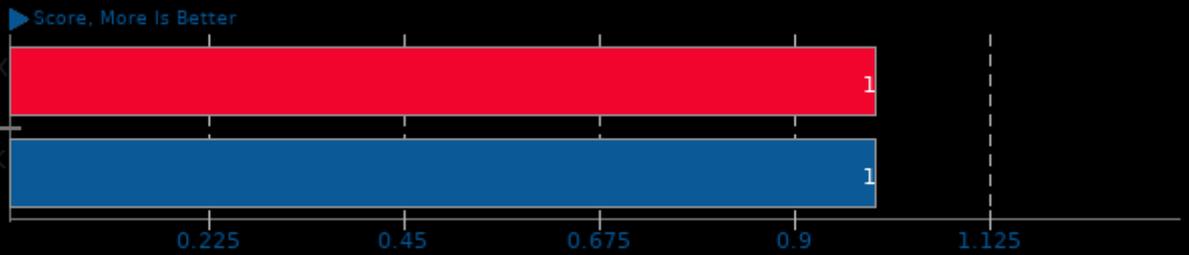
Test: Integer + Elliptic Curve Public Key Algorithms



1. (CXX) g++ options: -g2 -O3 -fPIC -pthread -pipe

Selenium

Benchmark: MotionMark - Browser: Google Chrome



1. chrome 83.0.4103.61

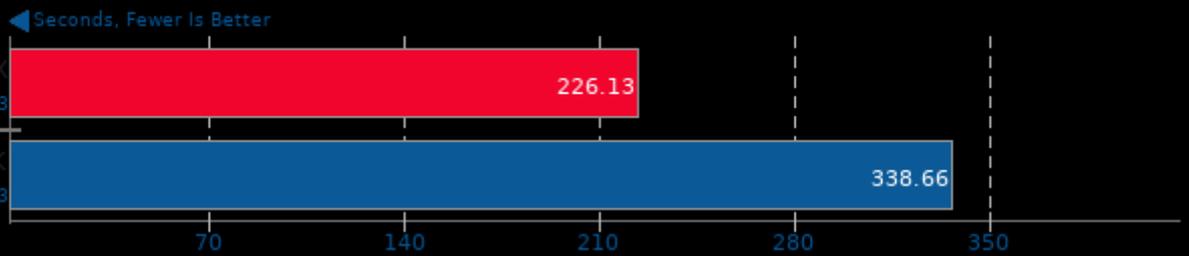
PlaidML

FP16: No - Mode: Inference - Network: ResNet 50 - Device: CPU



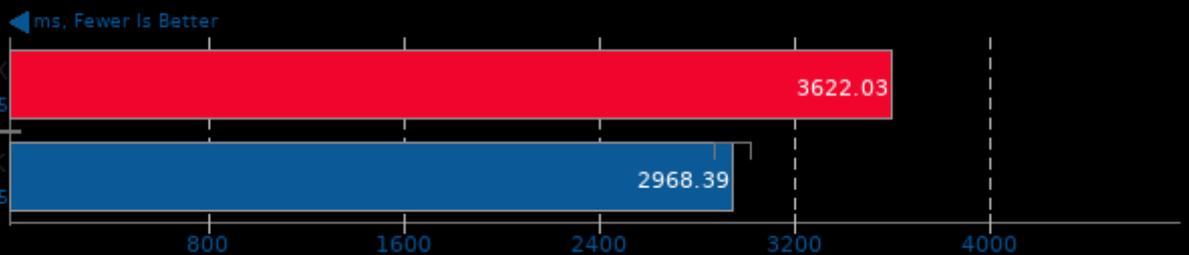
Blender 2.82

Blend File: Classroom - Compute: CPU-Only



Renaissance 0.10.0

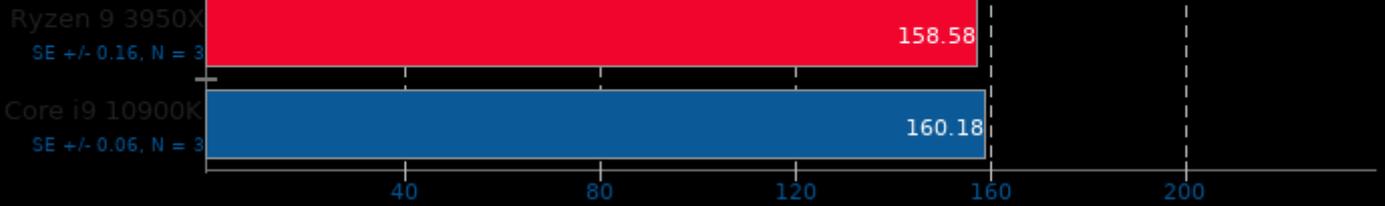
Test: In-Memory Database Shootout



Unigine Heaven 4.0

Resolution: 1920 x 1080 - Mode: Windowed - Renderer: OpenGL

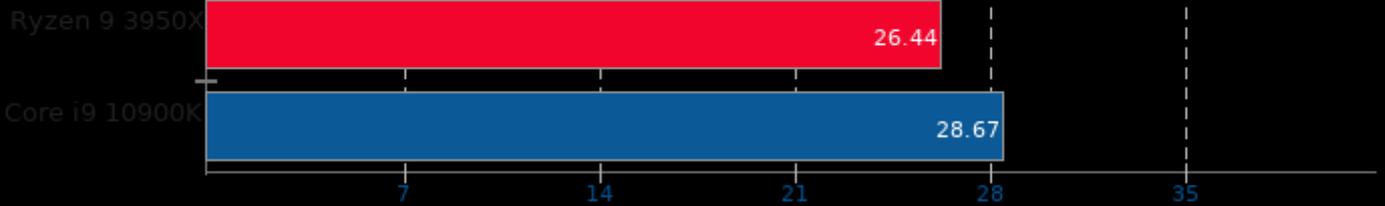
► Frames Per Second, More Is Better



Polyhedron Fortran Benchmarks

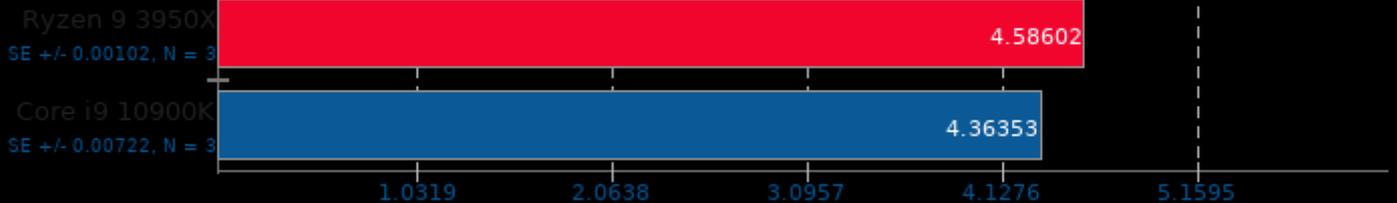
Benchmark: test_fpu2

◄ Seconds, Fewer Is Better



High Performance Conjugate Gradient 3.1

► GFLOP/s, More Is Better

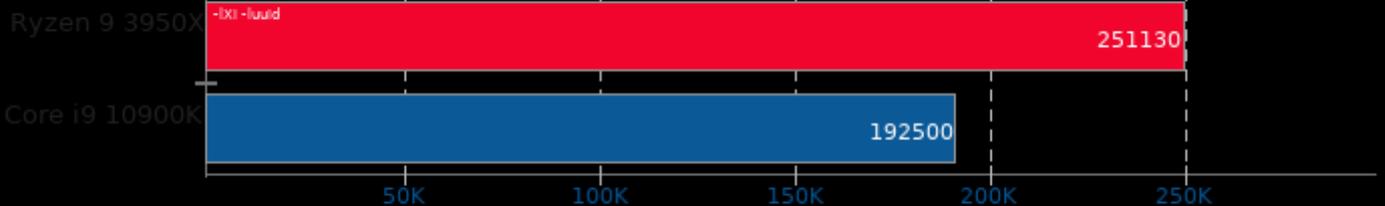


1. (CXX) g++ options: -O3 -ffast-math -ftree-vectorize -pthread -lmpi_cxx -lmpi

BRL-CAD 7.30.8

VGR Performance Metric

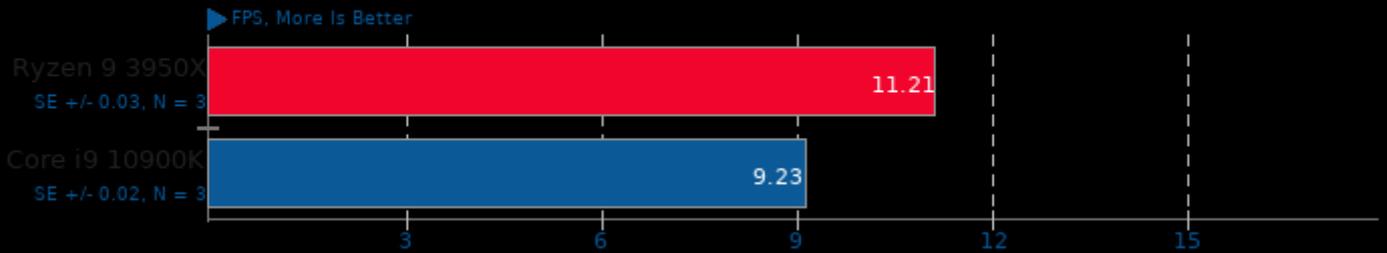
► VGR Performance Metric, More Is Better



1. (CXX) g++ options: -std=c++11 -pipe -fno-strict-aliasing -fno-common -fexceptions -ftemplate-depth-128 -m64 -ggdb3 -O3 -fipa-pta -fstrength-reduce

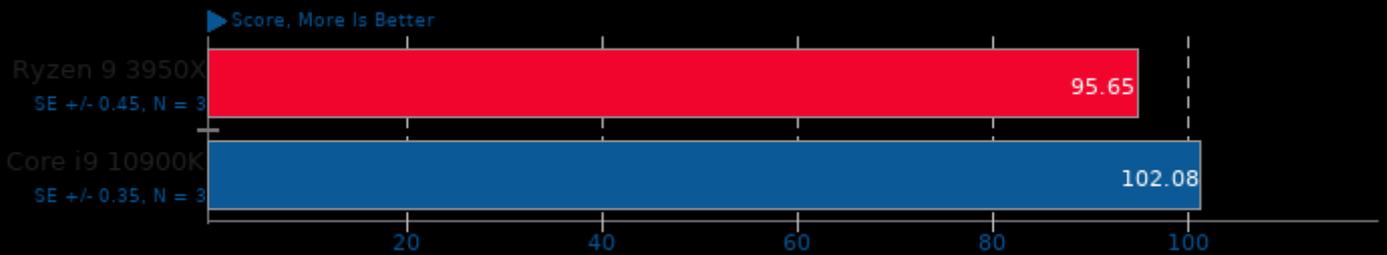
PlaidML

FP16: No - Mode: Inference - Network: Inception V3 - Device: CPU



Selenium

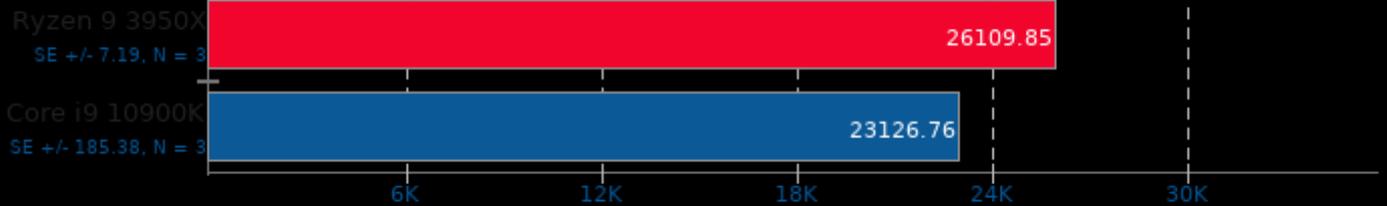
Benchmark: Jetstream 2 - Browser: Firefox



1. firefox 76.0.1

Algebraic Multi-Grid Benchmark

Figure Of Merit, More Is Better

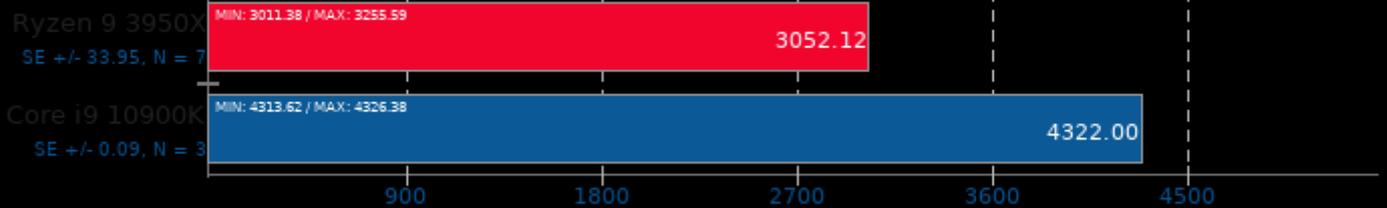


1. (CC) gcc options: -lparcsr_ls -lparcsr_mv -lseq_mv -llj_mv -lkrylov -lHYPRE_utilities -lm -fopenmp -pthread -lmpi

CacheBench

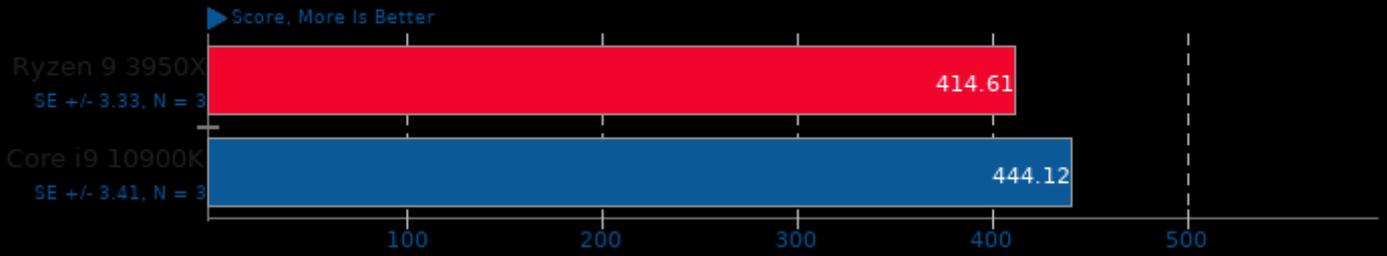
Test: Read

MB/s, More Is Better



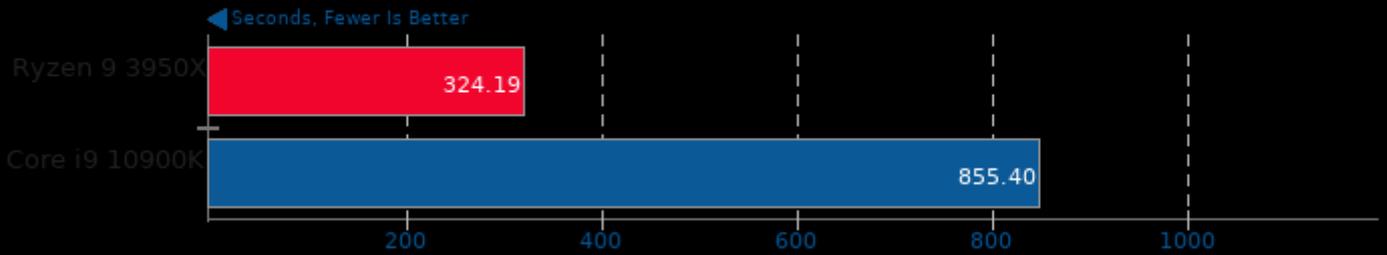
1. (CC) gcc options: -lrt

Numpy Benchmark



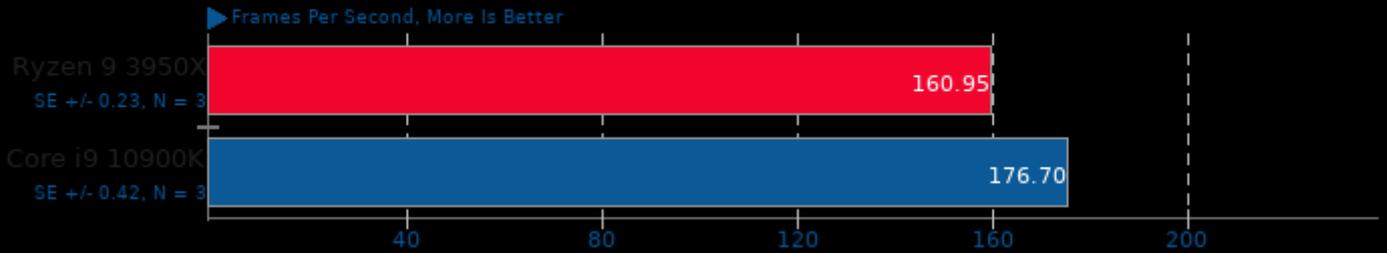
CP2K Molecular Dynamics 6.1

Fayalite-FIST Data



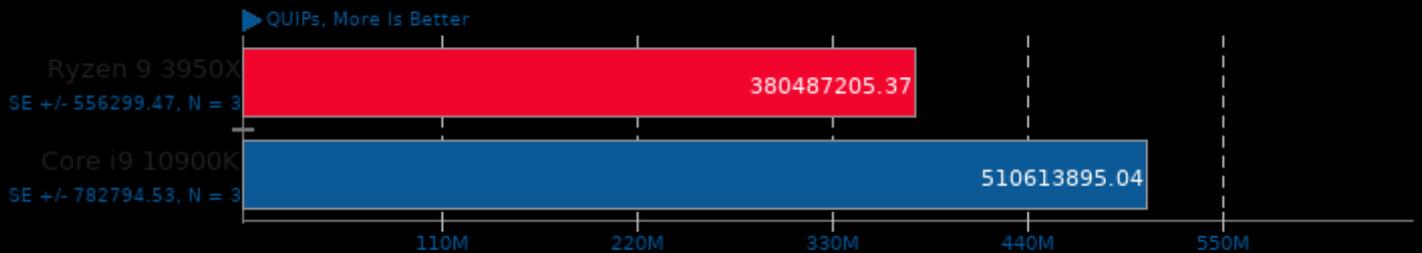
Unigine Valley 1.0

Resolution: 1920 x 1080 - Mode: Windowed - Renderer: OpenGL



Hierarchical INTegration 1.0

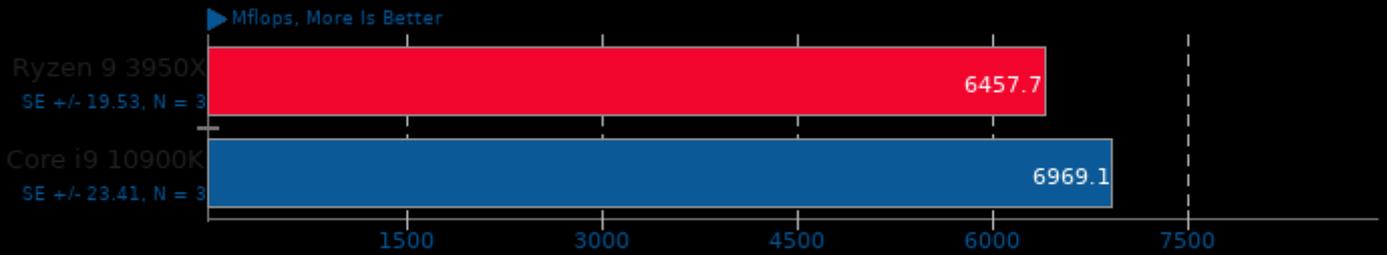
Test: FLOAT



1. (CC) gcc options: -O3 -march=native -lm

FFTW 3.3.6

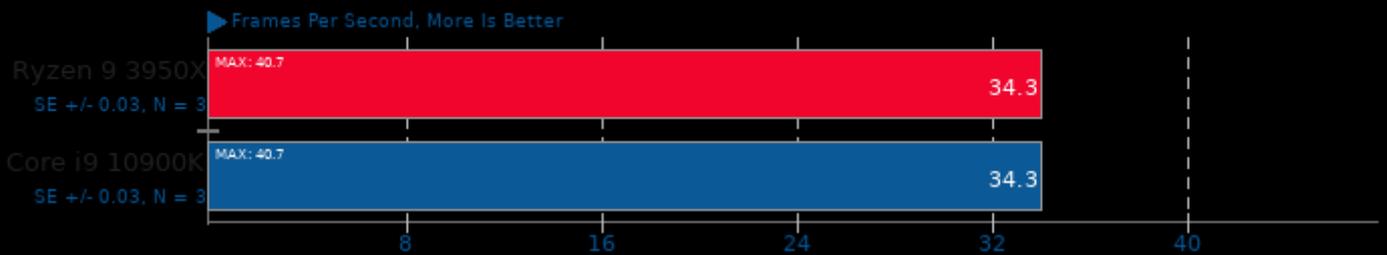
Build: Stock - Size: 2D FFT Size 4096



1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm

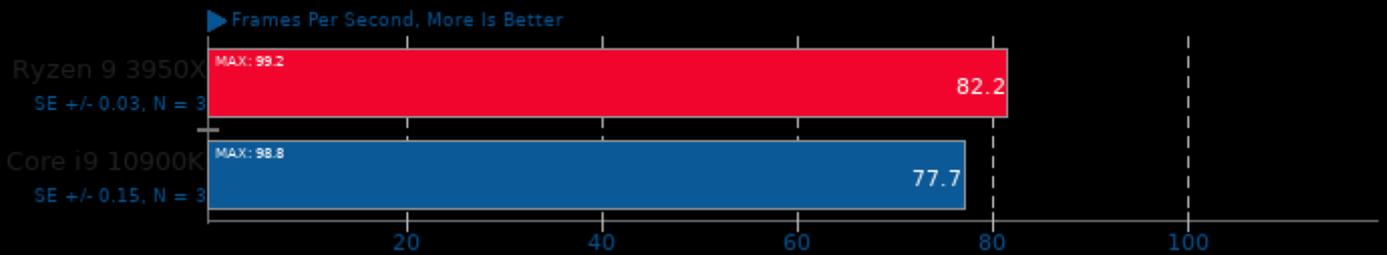
Unigine Superposition 1.0

Resolution: 1920 x 1080 - Mode: Windowed - Quality: Ultra - Renderer: OpenGL



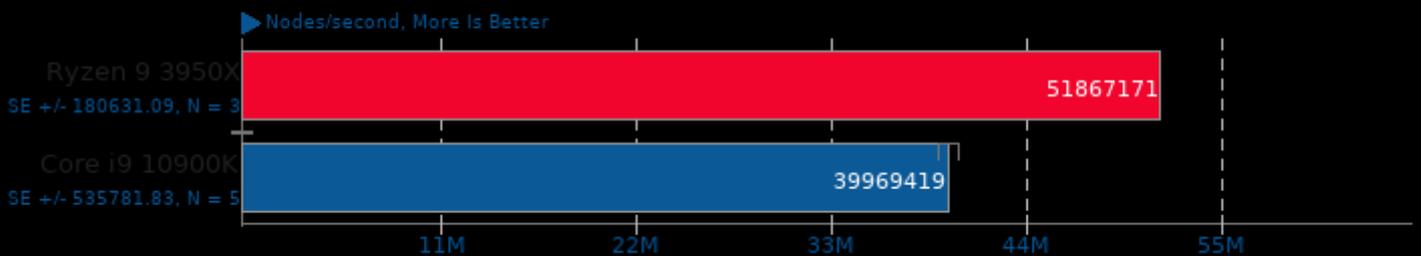
Unigine Superposition 1.0

Resolution: 1920 x 1080 - Mode: Windowed - Quality: High - Renderer: OpenGL



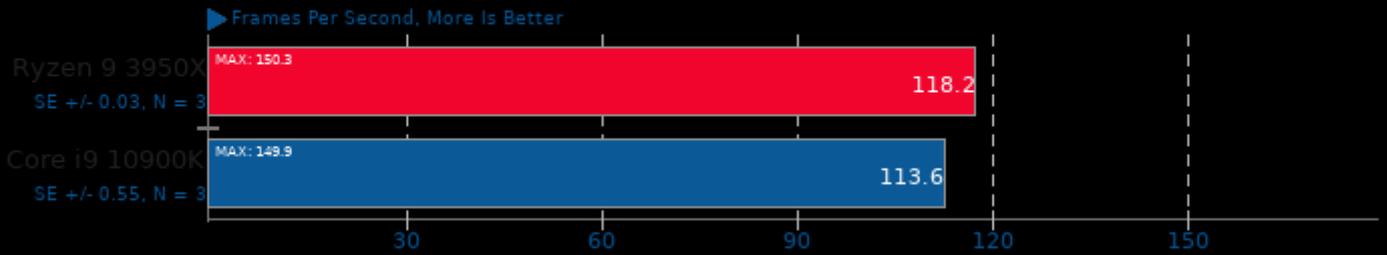
asmFish 2018-07-23

1024 Hash Memory, 26 Depth



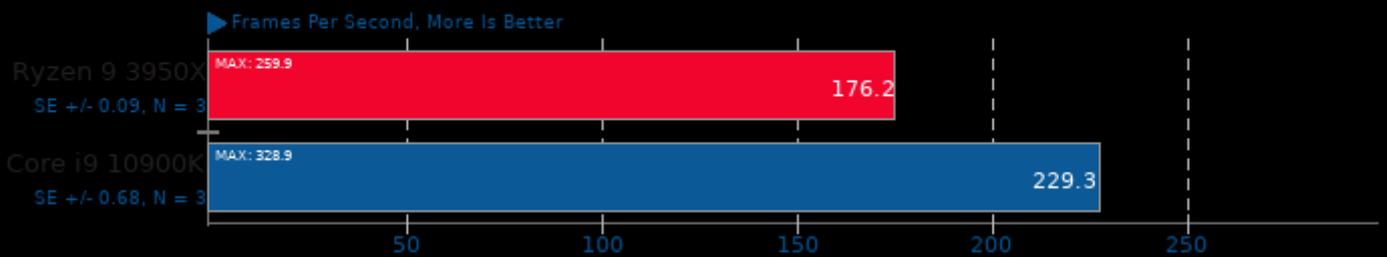
Unigine Superposition 1.0

Resolution: 1920 x 1080 - Mode: Windowed - Quality: Medium - Renderer: OpenGL



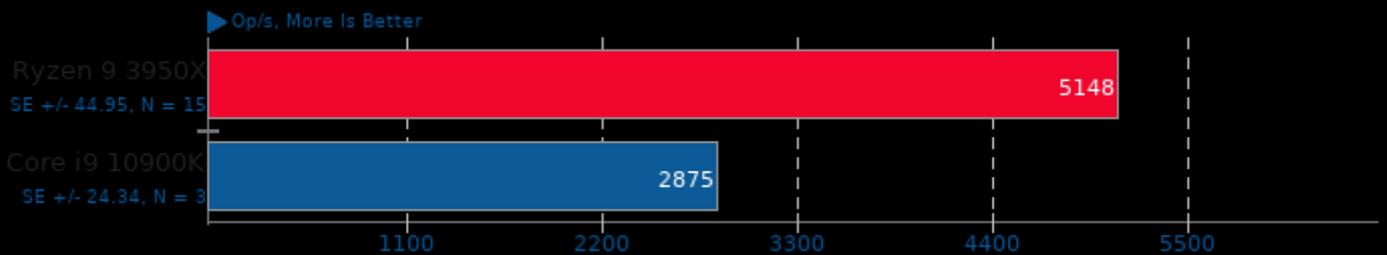
Unigine Superposition 1.0

Resolution: 1920 x 1080 - Mode: Windowed - Quality: Low - Renderer: OpenGL



Facebook RocksDB 6.3.6

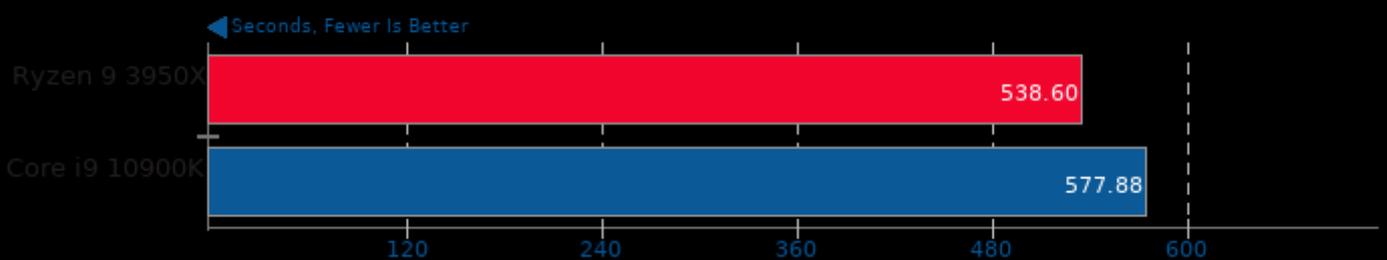
Test: Random Fill Sync



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fno-builtin-memcmp -fno-rtti -rdynamic -pthread

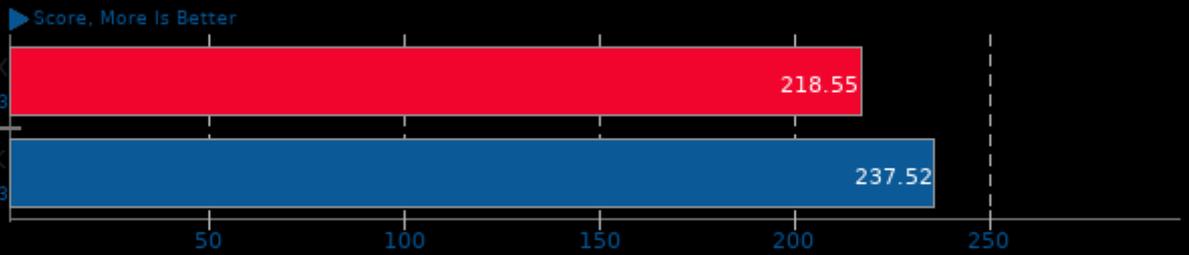
Radiance Benchmark 5.0

Test: Serial



Selenium

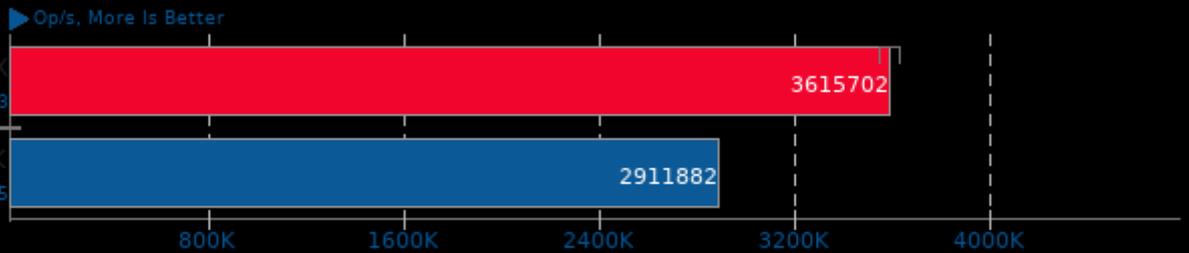
Benchmark: Jetstream - Browser: Firefox



1. firefox 76.0.1

Facebook RocksDB 6.3.6

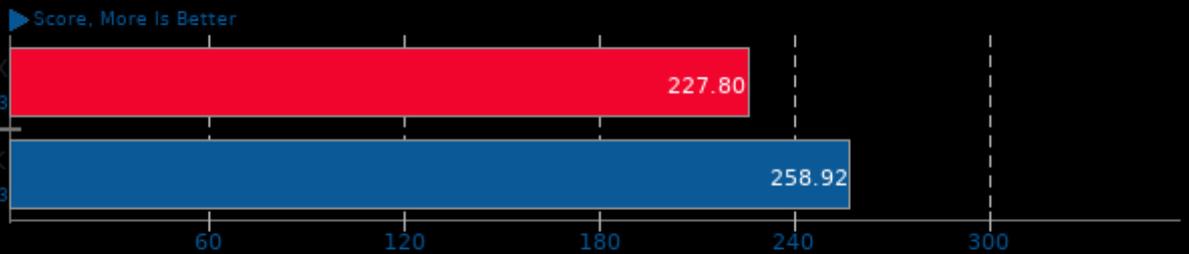
Test: Read While Writing



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fno-builtin-memcmp -fno-rtti -rdynamic -pthread

Selenium

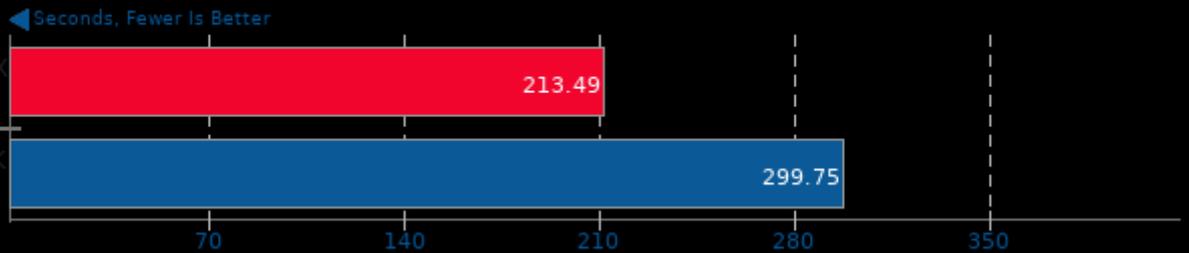
Benchmark: Jetstream - Browser: Google Chrome



1. chrome 83.0.4103.61

Appleseed 2.0 Beta

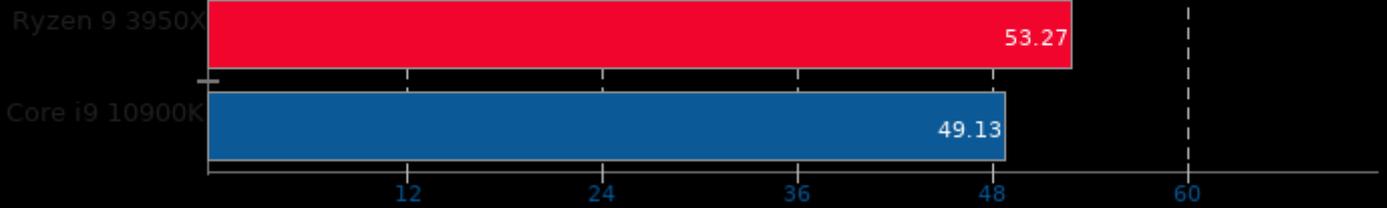
Scene: Emily



Polyhedron Fortran Benchmarks

Benchmark: mp_prop_design

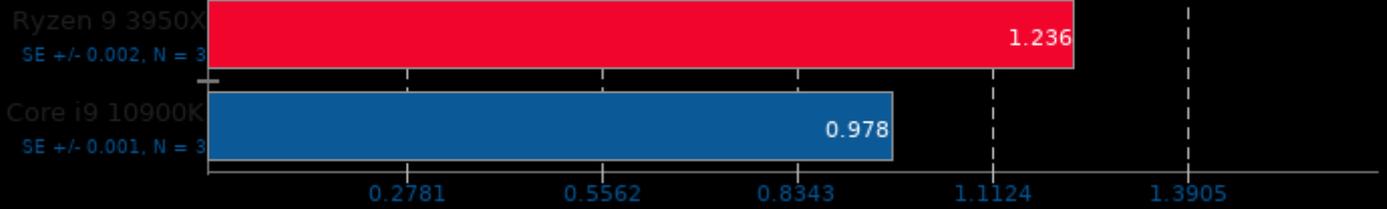
← Seconds, Fewer Is Better



GROMACS 2020.1

Water Benchmark

▶ Ns Per Day, More Is Better

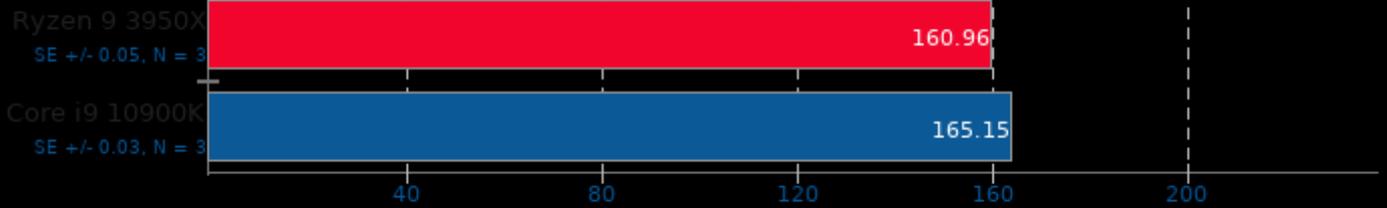


1. (CXX) g++ options: -O3 -pthread -lrt -lpthread -lm

Parboil 2.5

Test: OpenMP LBM

← Seconds, Fewer Is Better

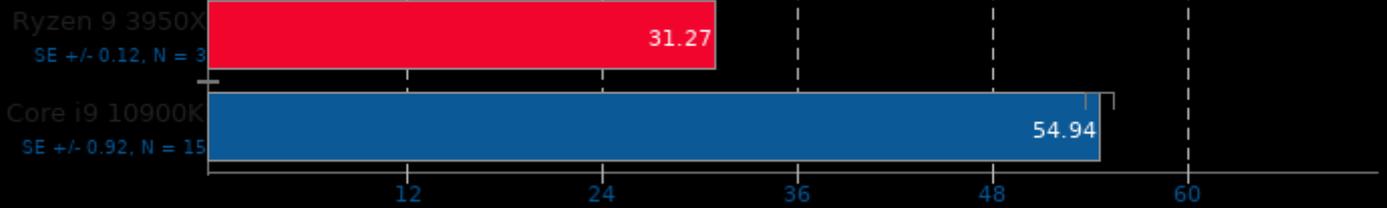


1. (CXX) g++ options: -lm -lpthread -lgomp -O3 -ffast-math -fopenmp

Parboil 2.5

Test: OpenMP MRI Gridding

← Seconds, Fewer Is Better

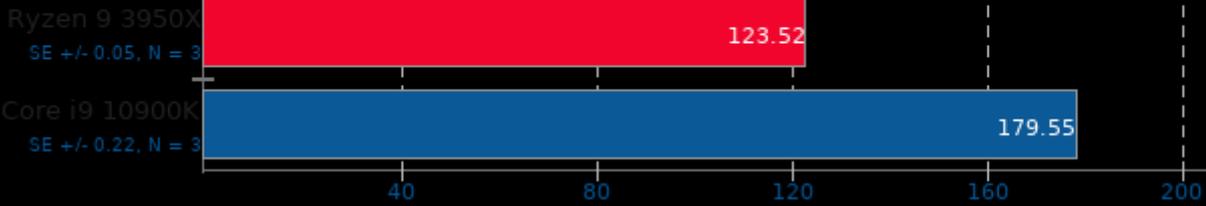


1. (CXX) g++ options: -lm -lpthread -lgomp -O3 -ffast-math -fopenmp

Blender 2.82

Blend File: Fishy Cat - Compute: CPU-Only

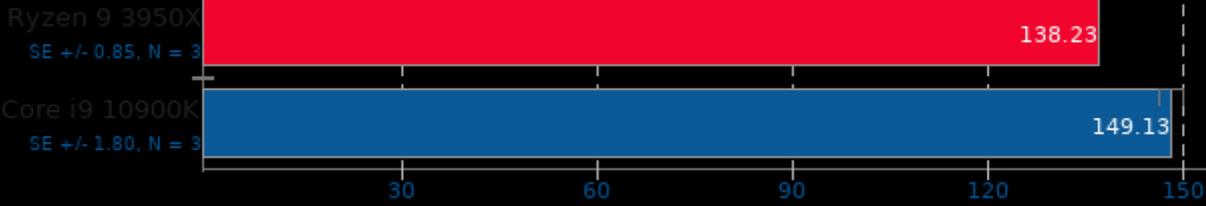
← Seconds, Fewer Is Better



Selenium

Benchmark: Jetstream 2 - Browser: Google Chrome

▶ Score, More Is Better

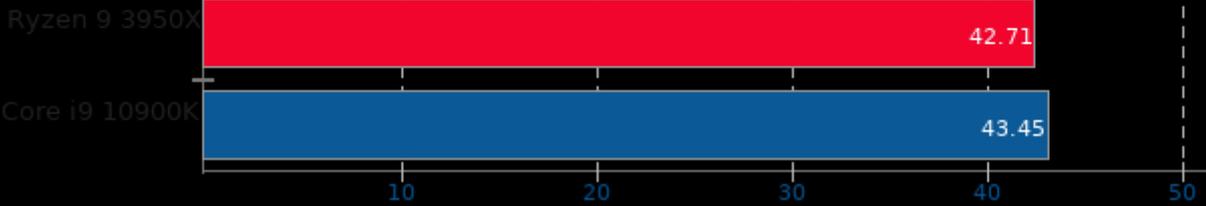


1. chrome 83.0.4103.61

Polyhedron Fortran Benchmarks

Benchmark: channel2

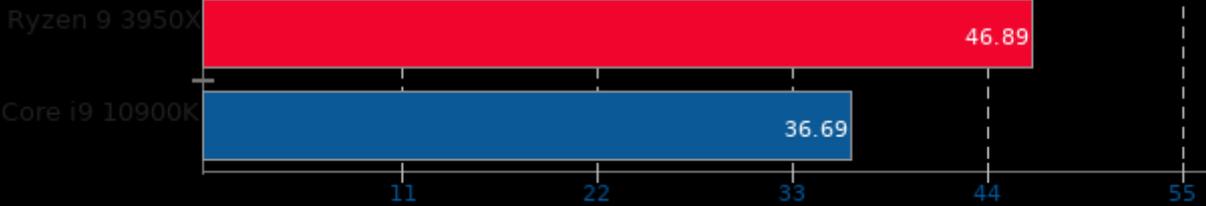
← Seconds, Fewer Is Better



Polyhedron Fortran Benchmarks

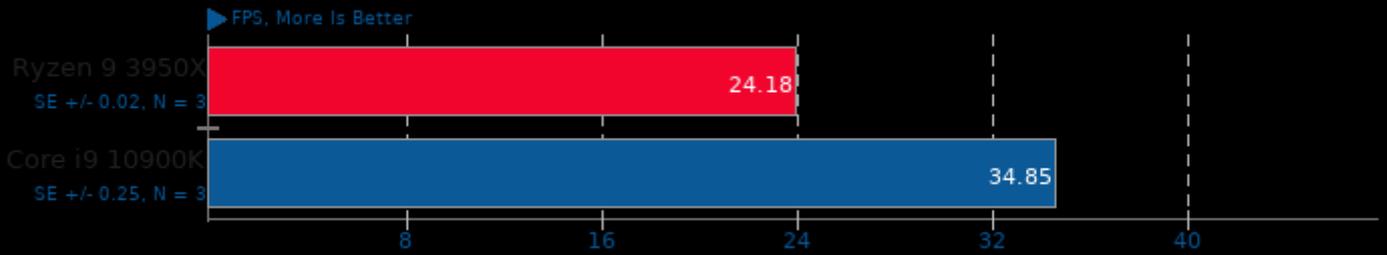
Benchmark: fatigue2

← Seconds, Fewer Is Better



libgav1 2019-10-05

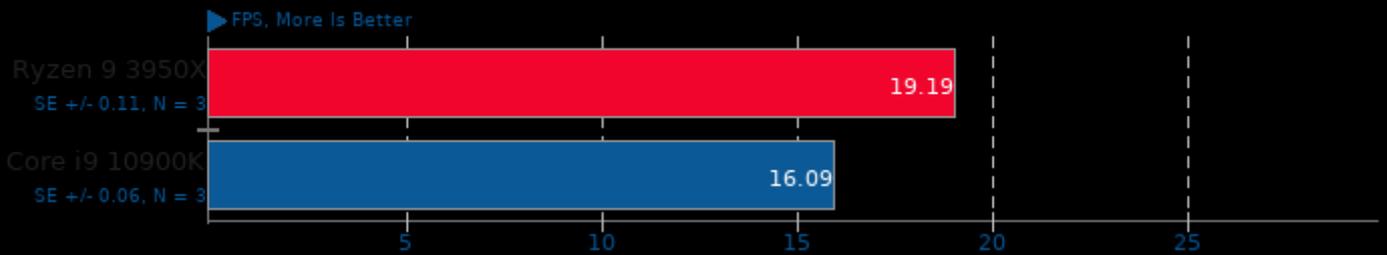
Video Input: Summer Nature 4K



1. (CXX) g++ options: -O3 -lpthread

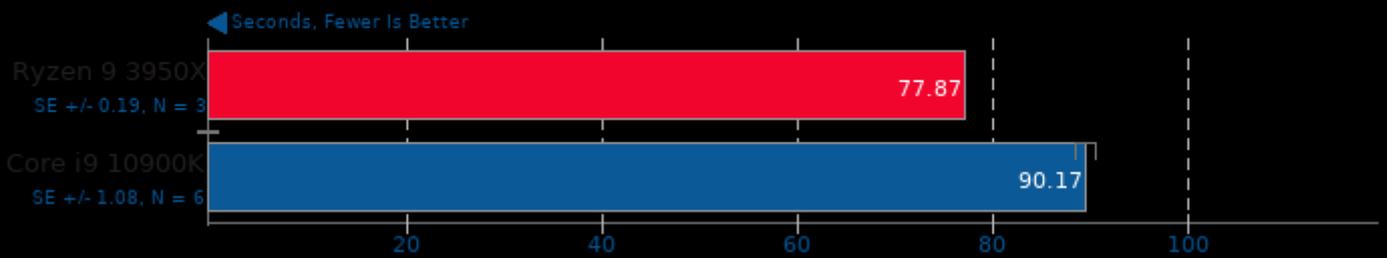
PlaidML

FP16: No - Mode: Inference - Network: VGG19 - Device: CPU



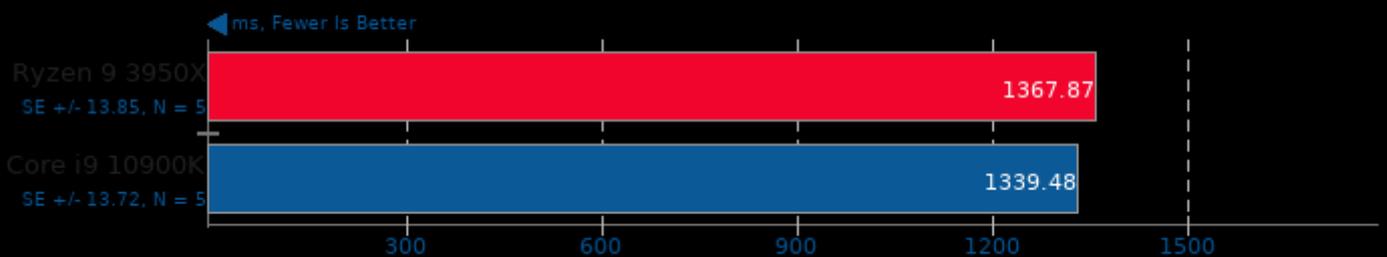
Numenta Anomaly Benchmark 1.1

Detector: Earthgecko Skyline



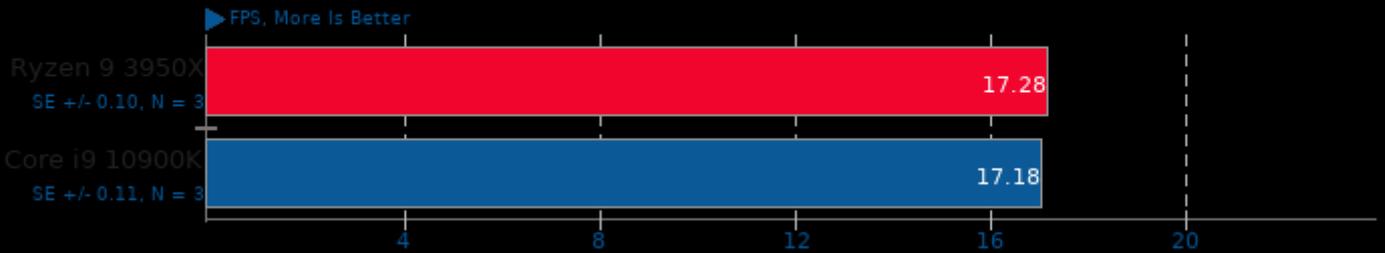
Renaissance 0.10.0

Test: Scala Dotty



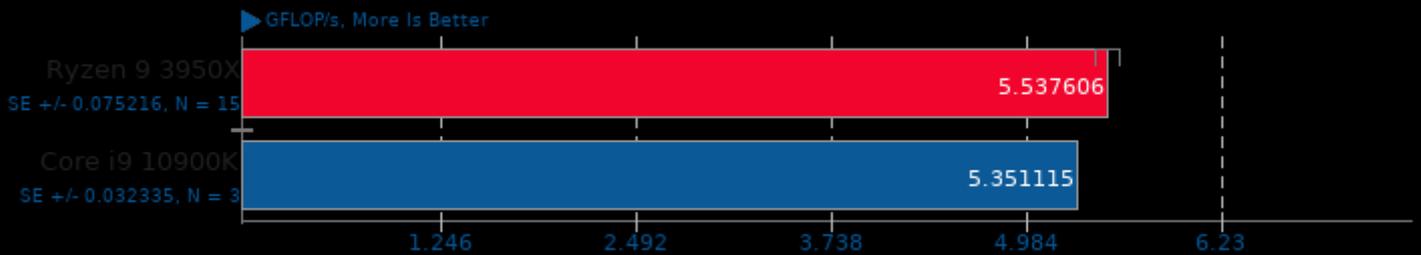
PlaidML

FP16: No - Mode: Inference - Network: Mobilenet - Device: CPU



ACES DGEMM 1.0

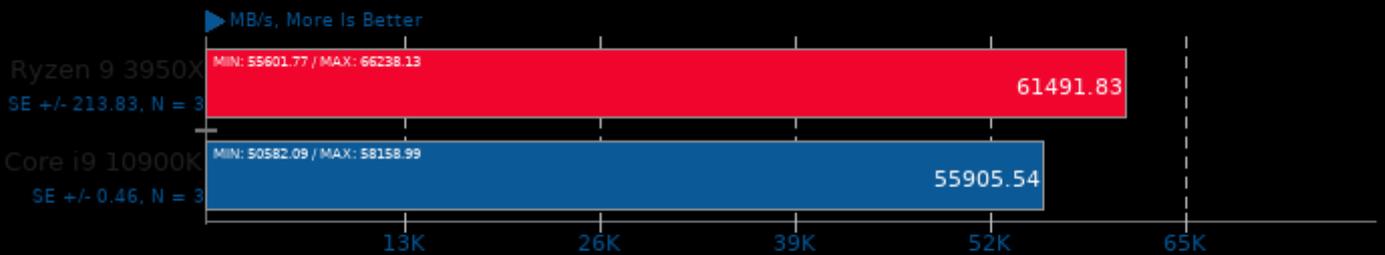
Sustained Floating-Point Rate



1. (CC) gcc options: -O3 -march=native -fopenmp

CacheBench

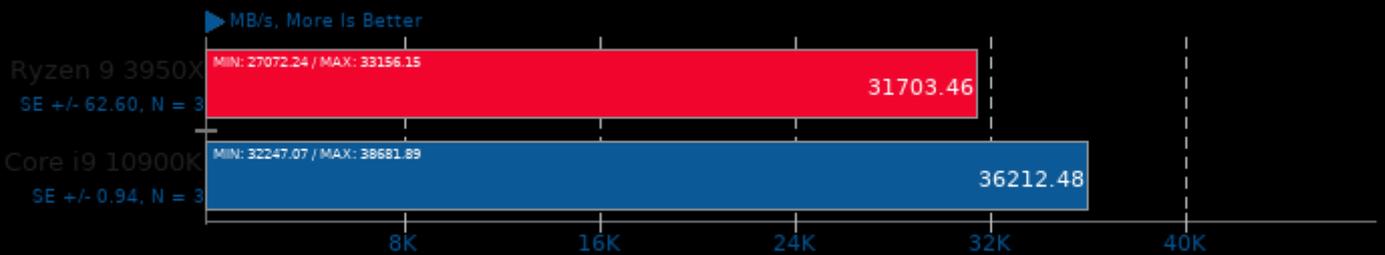
Test: Read / Modify / Write



1. (CC) gcc options: -lrt

CacheBench

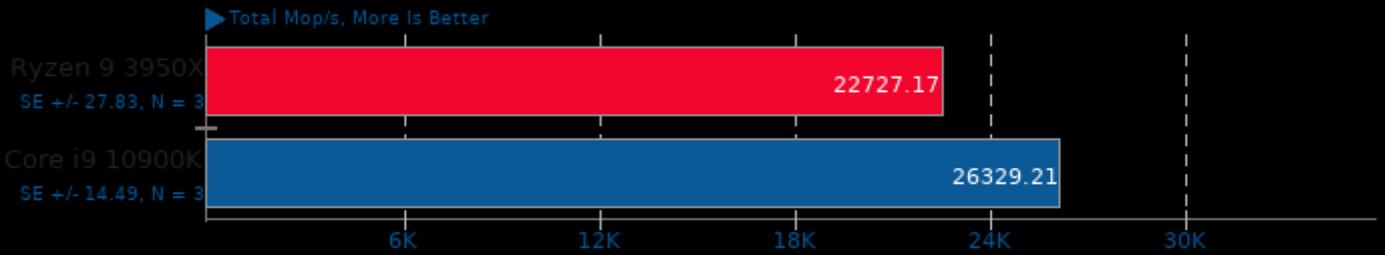
Test: Write



1. (CC) gcc options: -lrt

NAS Parallel Benchmarks 3.4

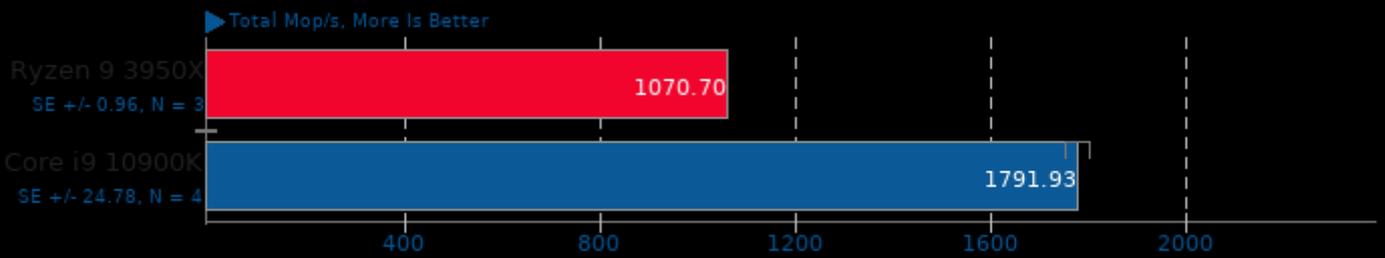
Test / Class: BT.C



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3

NAS Parallel Benchmarks 3.4

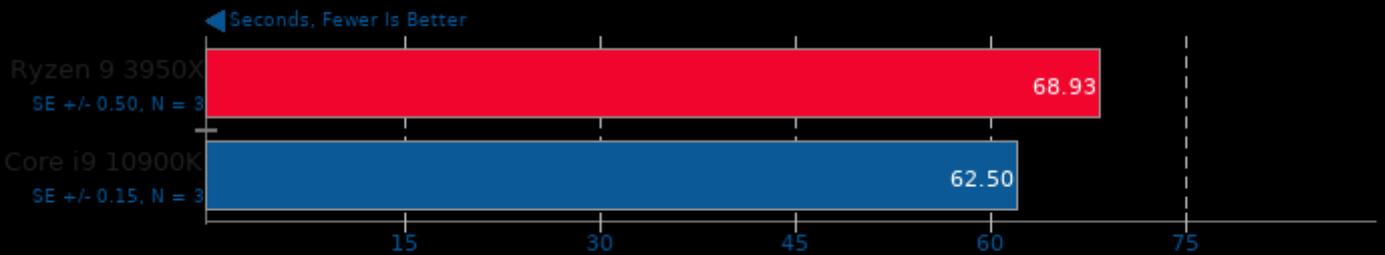
Test / Class: EP.D



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3

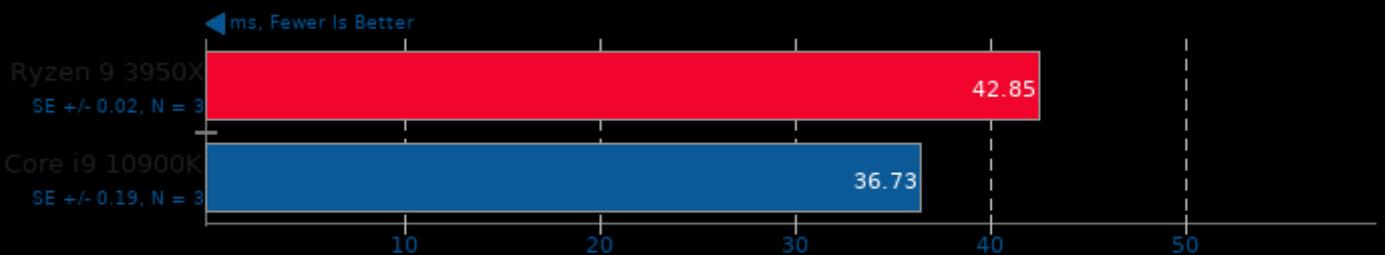
Mpack Benchmark

Benchmark: scikit_qda



Selenium

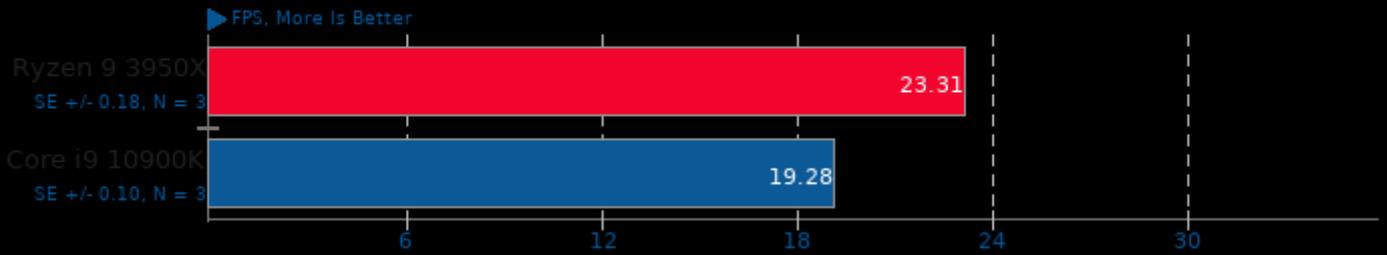
Benchmark: ARES-6 - Browser: Firefox



1. firefox 76.0.1

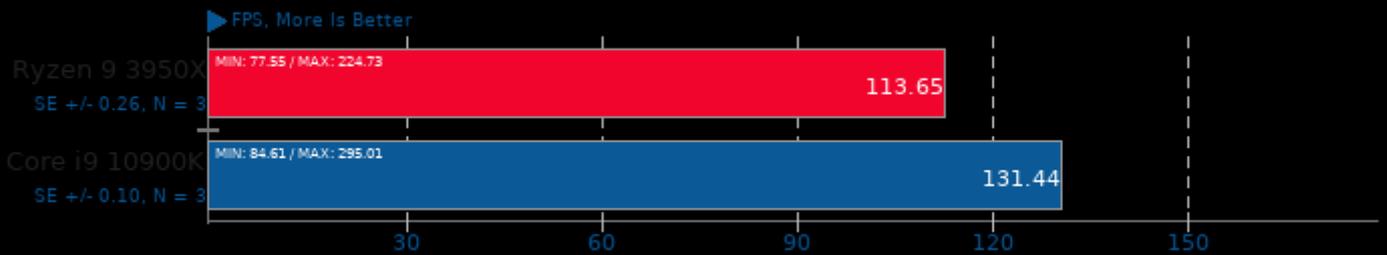
PlaidML

FP16: No - Mode: Inference - Network: VGG16 - Device: CPU



dav1d 0.6.0

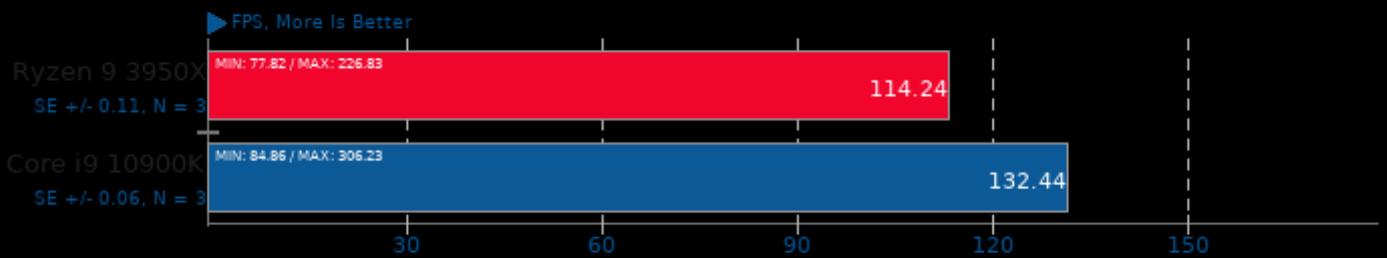
Video Input: Chimera 1080p 10-bit



1. (CC) gcc options: -pthread

dav1d 0.7.0

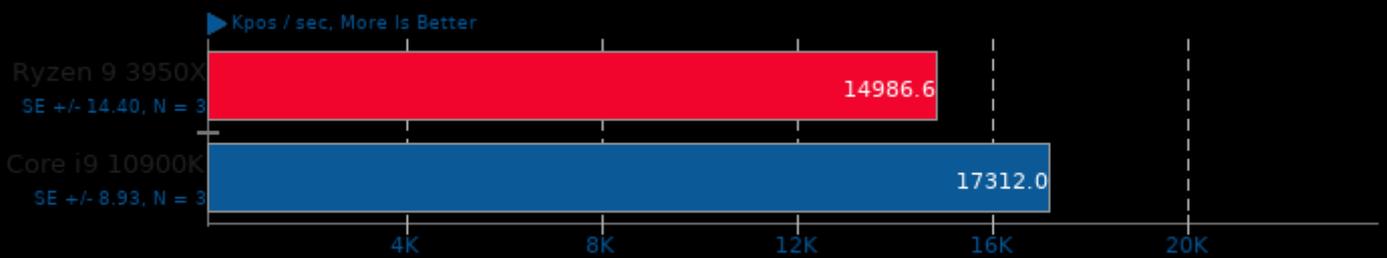
Video Input: Chimera 1080p 10-bit



1. (CC) gcc options: -pthread

Fhourstones 3.1

Complex Connect-4 Solving

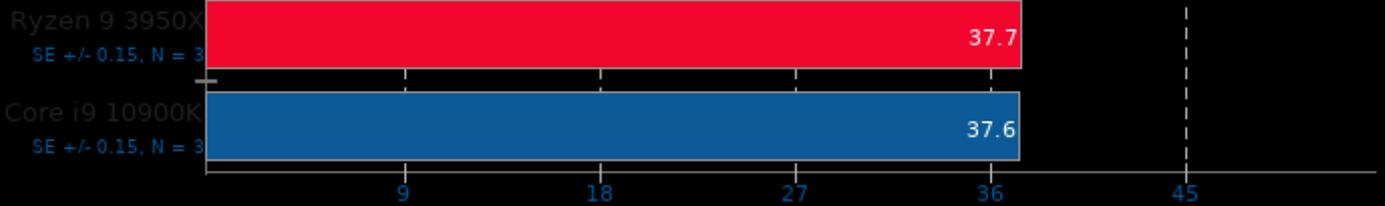


1. (CC) gcc options: -O3

Selenium

Benchmark: StyleBench - Browser: Google Chrome

Runs / Minute, More Is Better

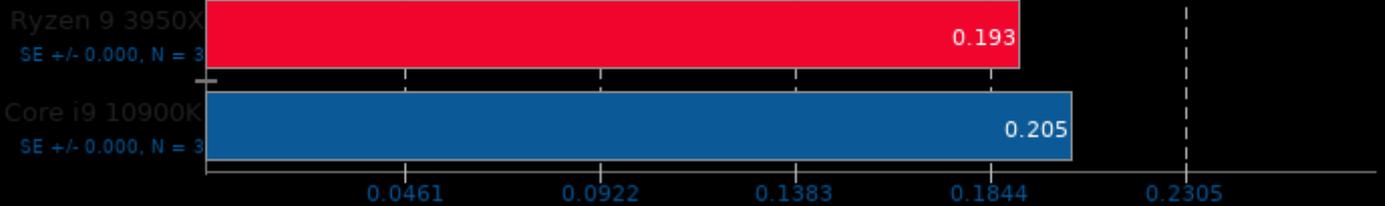


1. chrome 83.0.4103.61

rav1e 0.3.0

Speed: 1

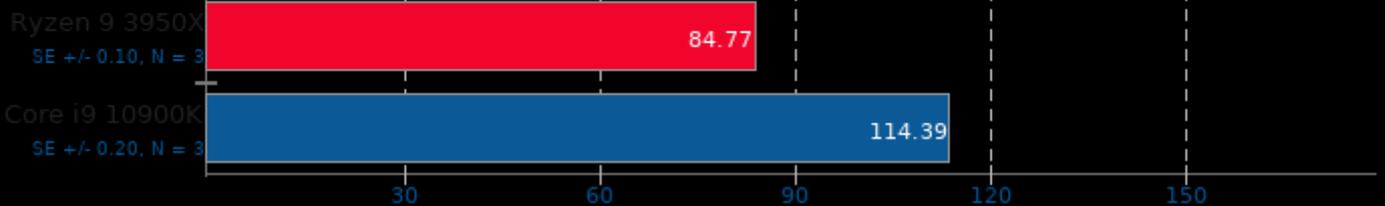
Frames Per Second, More Is Better



Blender 2.82

Blend File: BMW27 - Compute: CPU-Only

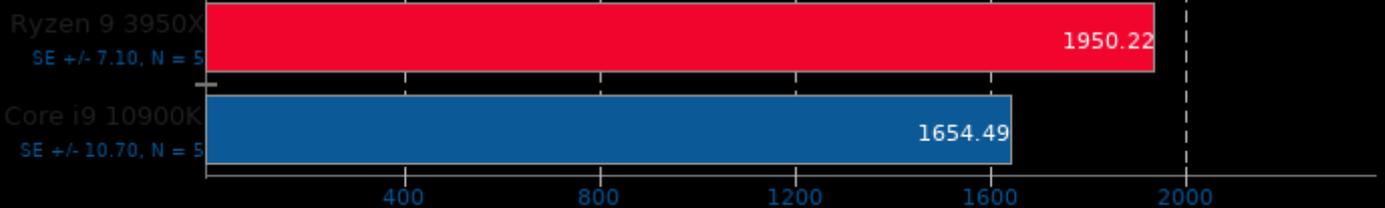
Seconds, Fewer Is Better



Renaissance 0.10.0

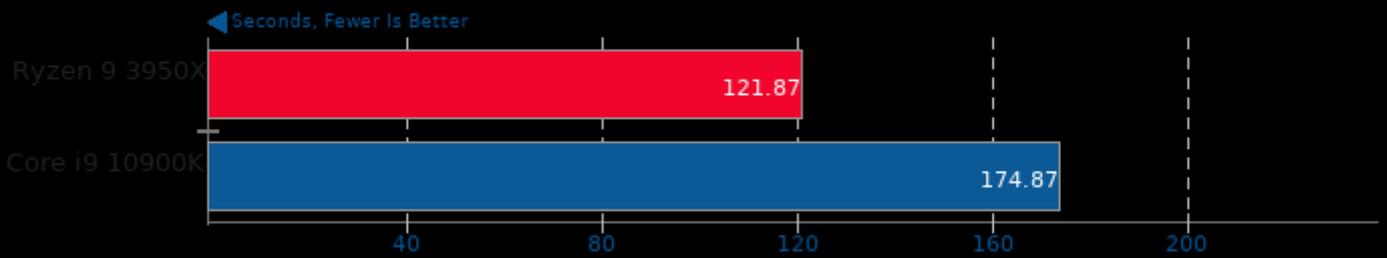
Test: Apache Spark ALS

ms, Fewer Is Better



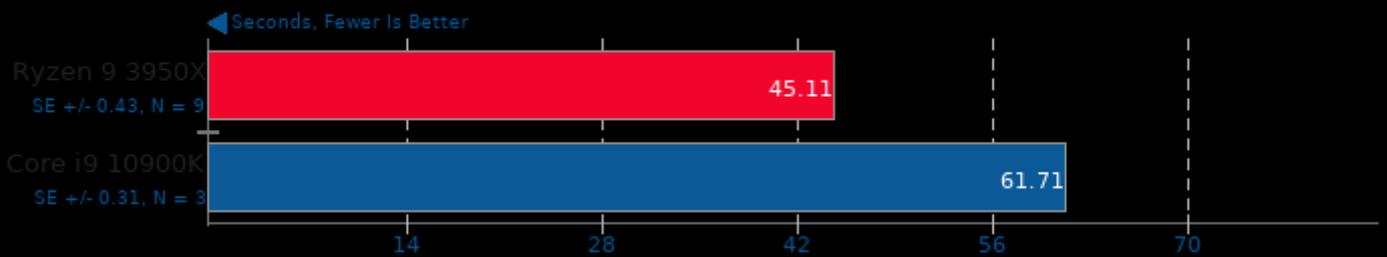
Appleseed 2.0 Beta

Scene: Disney Material



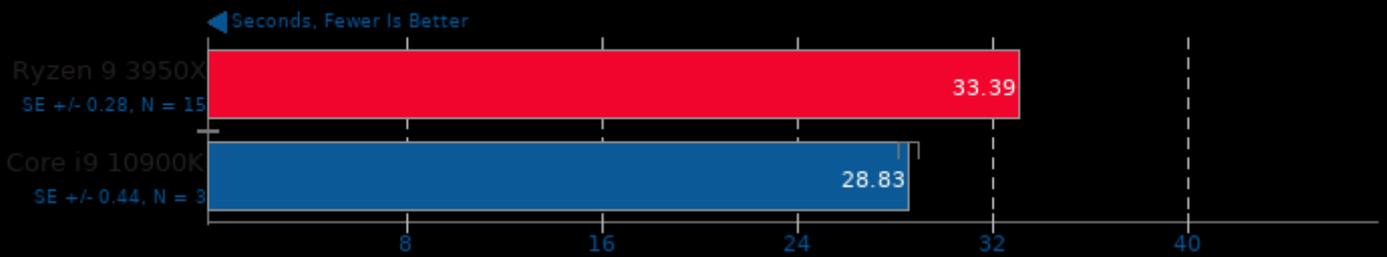
Timed Linux Kernel Compilation 5.4

Time To Compile



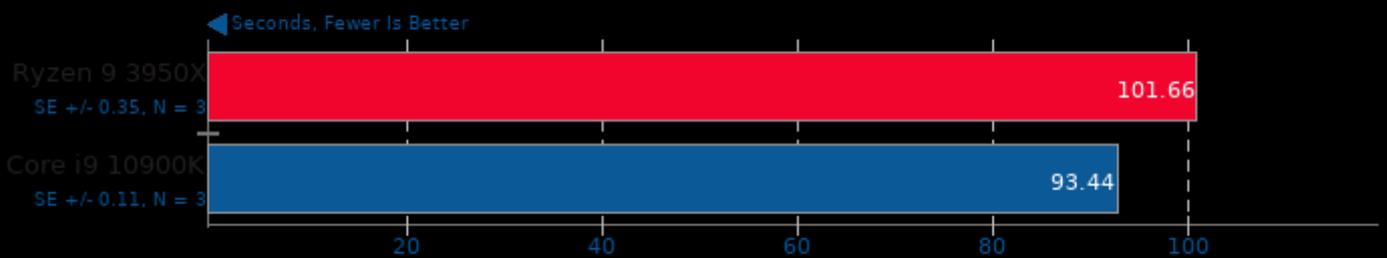
Gzip Compression

Linux Source Tree Archiving To .tar.gz



Minion 1.8

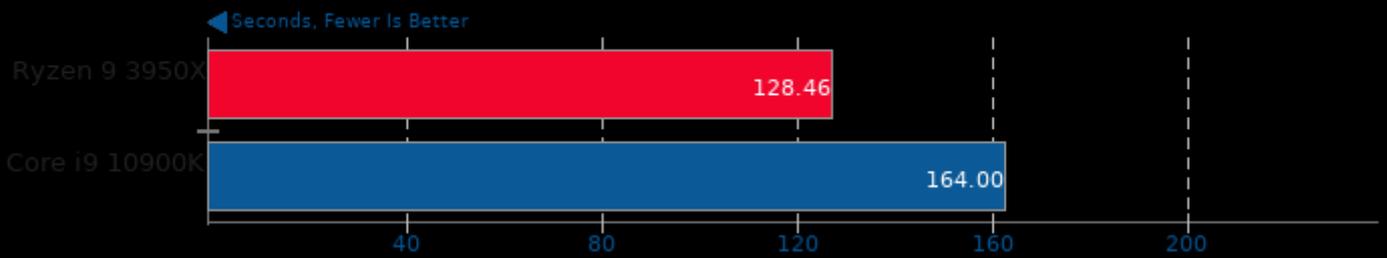
Benchmark: Quasigroup



1. (CXX) g++ options: -std=gnu++11 -O3 -fomit-frame-pointer -rdynamic

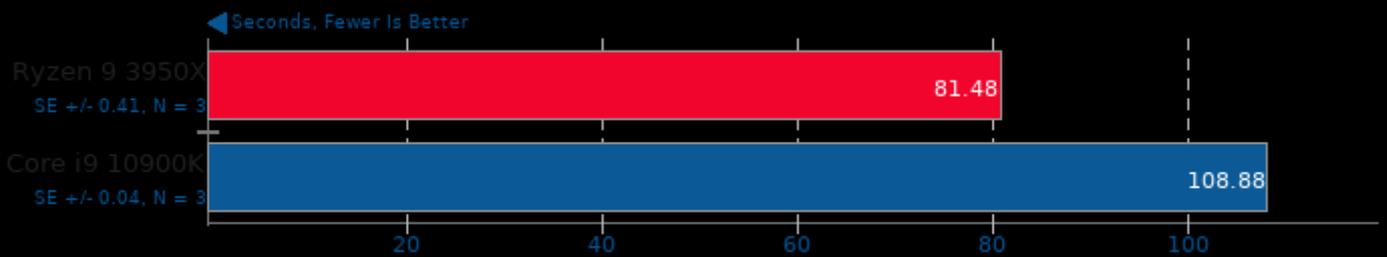
Appleseed 2.0 Beta

Scene: Material Tester



YafaRay 3.4.1

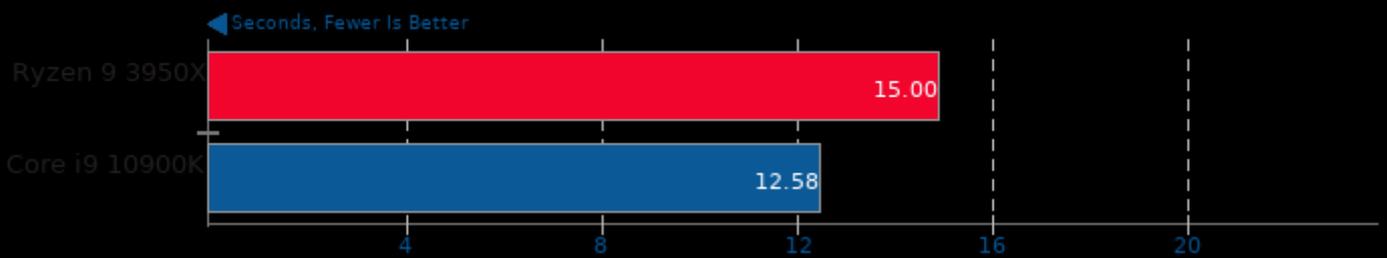
Total Time For Sample Scene



1. (CXX) g++ options: -std=c++11 -O3 -ffast-math -rdynamic -ldl -lm -lmf -llex -lHalf -lz -llmThread -lxml2 -lfreetype -lpthread

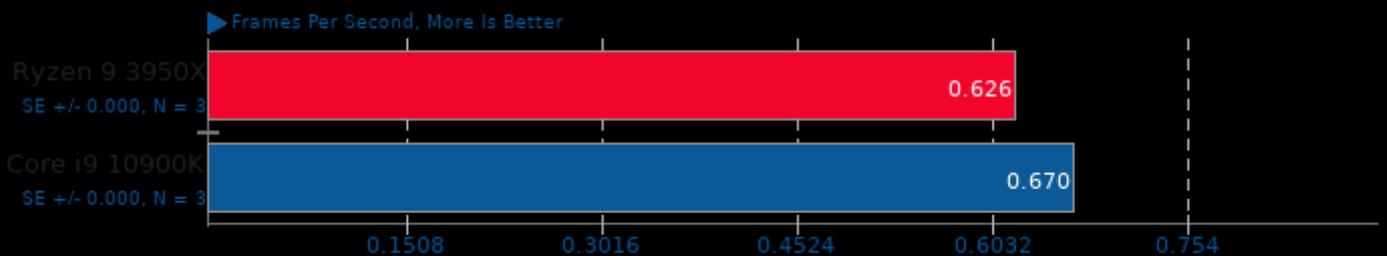
Polyhedron Fortran Benchmarks

Benchmark: rnflo



rav1e 0.3.0

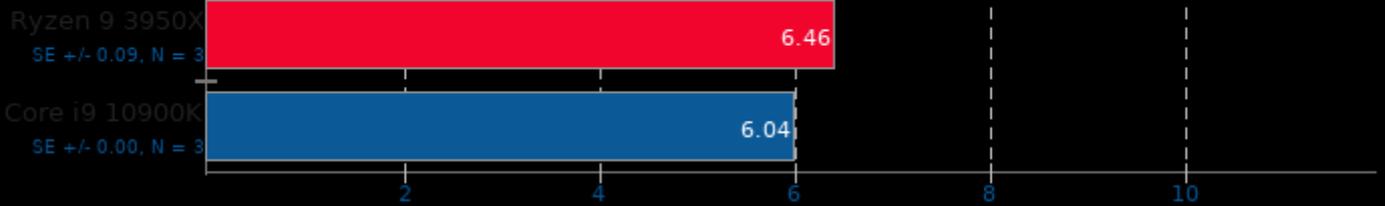
Speed: 5



PyPerformance 1.0.0

Benchmark: python_startup

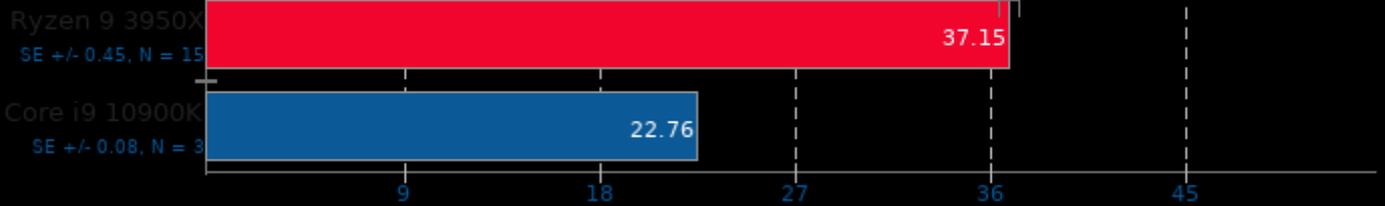
← Milliseconds, Fewer Is Better



Stress-NG 0.11.07

Test: CPU Cache

▶ Bogo Ops/s, More Is Better

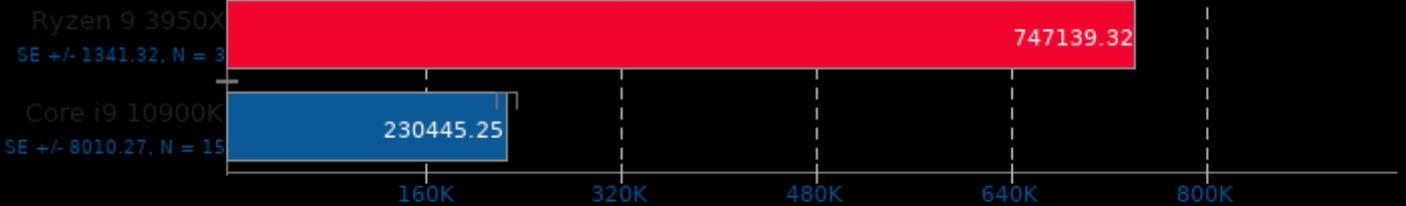


1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lz -ldl -lpthread -lc

Stress-NG 0.11.07

Test: Atomic

▶ Bogo Ops/s, More Is Better

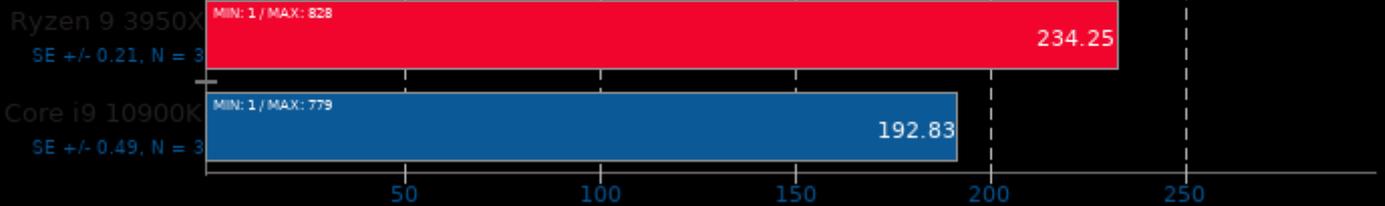


1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lz -ldl -lpthread -lc

OpenVKL 0.9

Benchmark: vklBenchmark

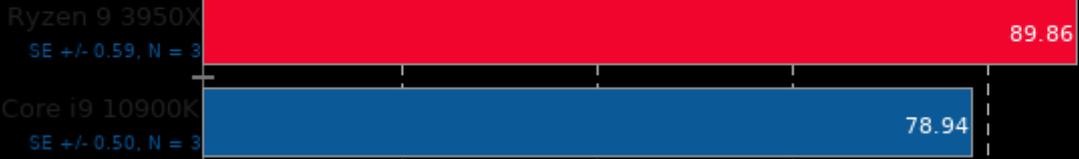
▶ Items / Sec, More Is Better



GEGL

Operation: Cartoon

← Seconds, Fewer Is Better



Timed GDB GNU Debugger Compilation 9.1

Time To Compile

← Seconds, Fewer Is Better



Selenium

Benchmark: Speedometer - Browser: Firefox

▶ Runs Per Minute, More Is Better



1. firefox 76.0.1

Build2 0.12

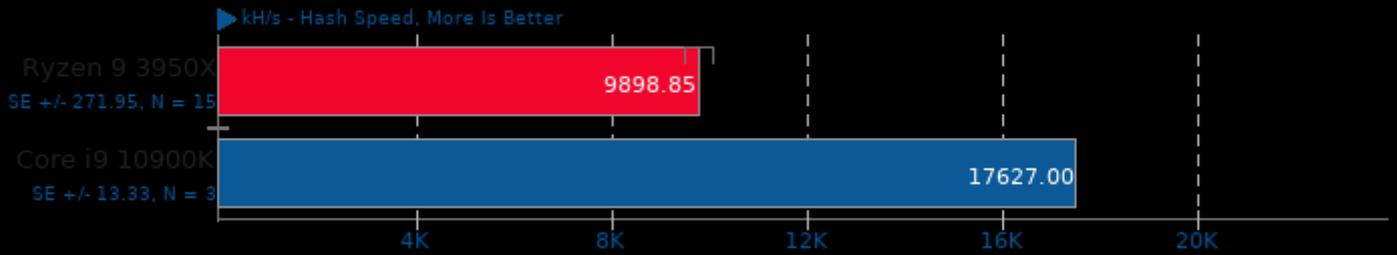
Time To Compile

← Seconds, Fewer Is Better



Cpuminer-Opt 3.8.8.1

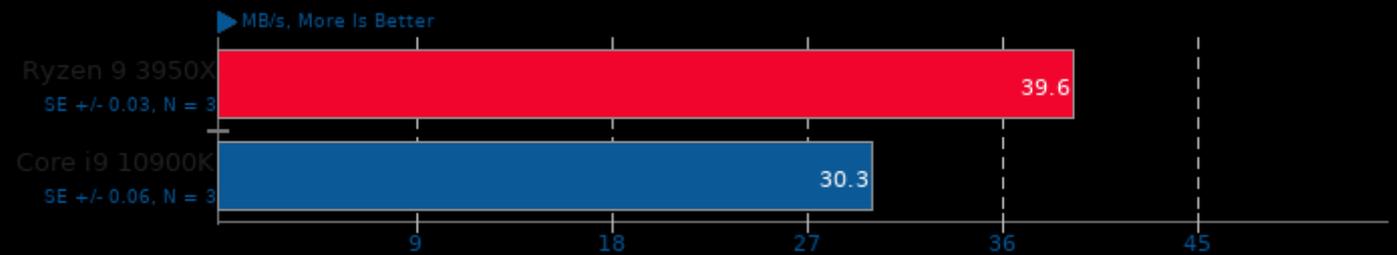
Algorithm: myr-gr



1. (CXX) g++ options: -O2 -lcurl -lz -pthread -lssl -lcrypto -lgmp

Zstd Compression 1.4.5

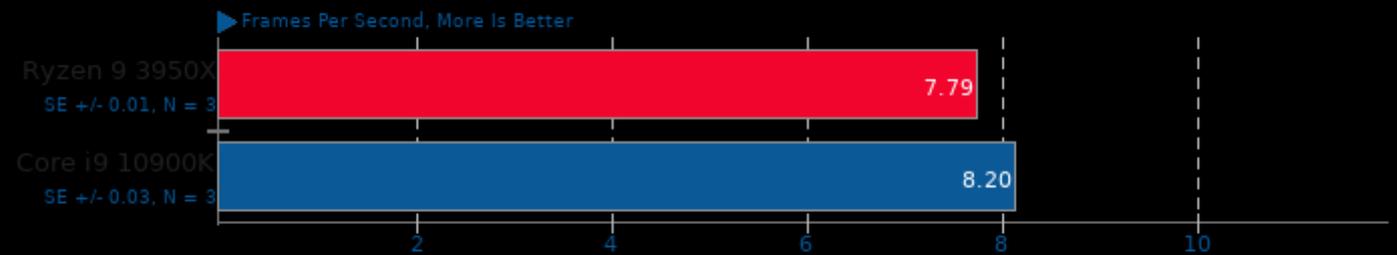
Compression Level: 19



1. (CC) gcc options: -O3 -pthread -lz -lzma

VP9 libvpx Encoding 1.8.2

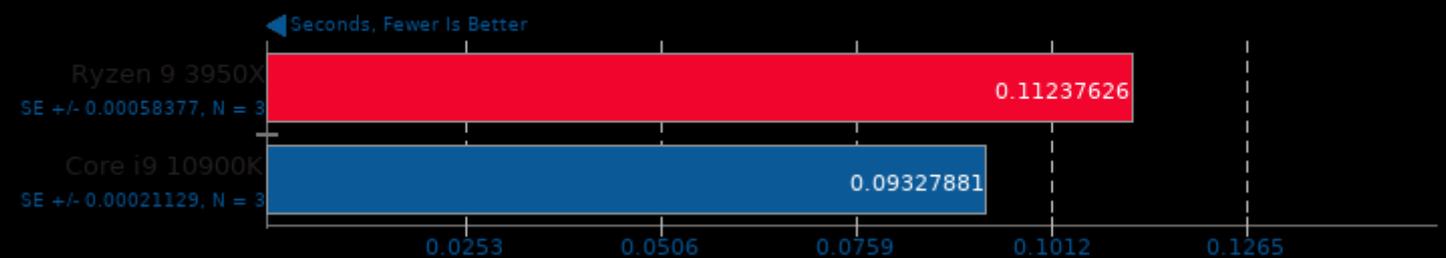
Speed: Speed 0



1. (CXX) g++ options: -m64 -lm -pthread -O3 -fPIC -U_FORTIFY_SOURCE -std=c++11

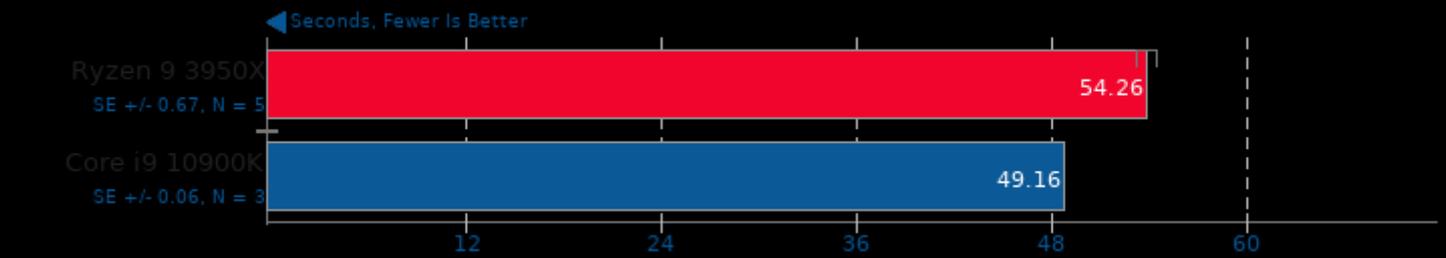
Perl Benchmarks

Test: Pod2html



Hackbench

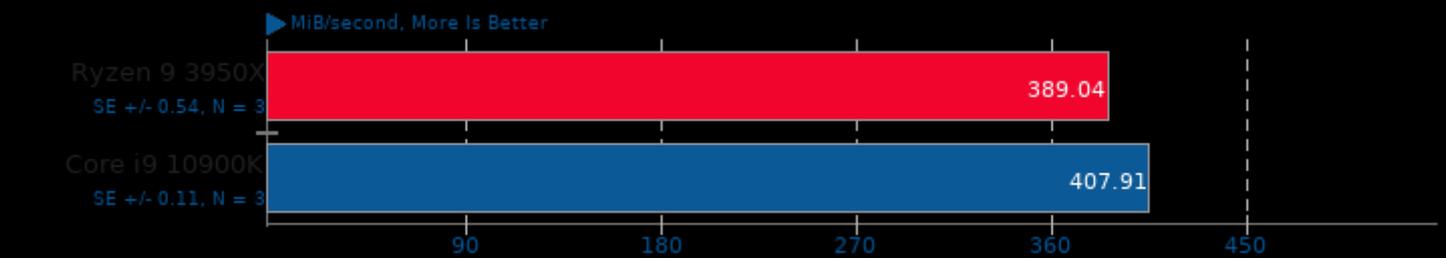
Count: 32 - Type: Process



1. (CC) gcc options: -pthread

Crypto++ 8.2

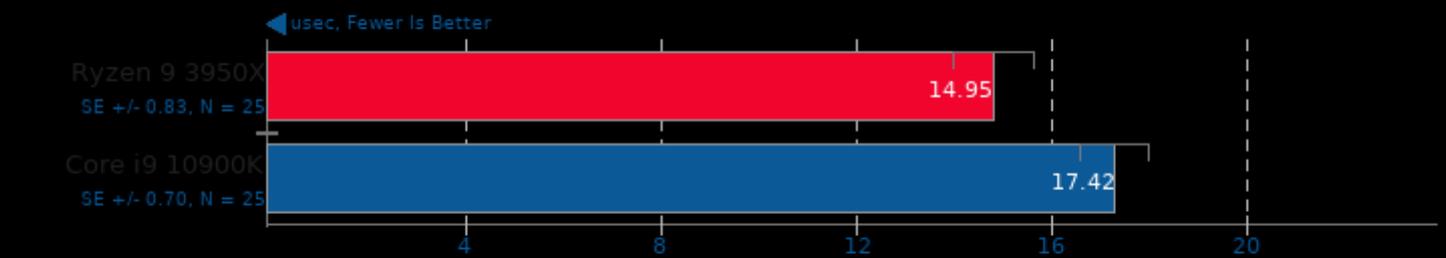
Test: Unkeyed Algorithms



1. (CXX) g++ options: -g2 -O3 -fPIC -pthread -pipe

Socketperf 3.4

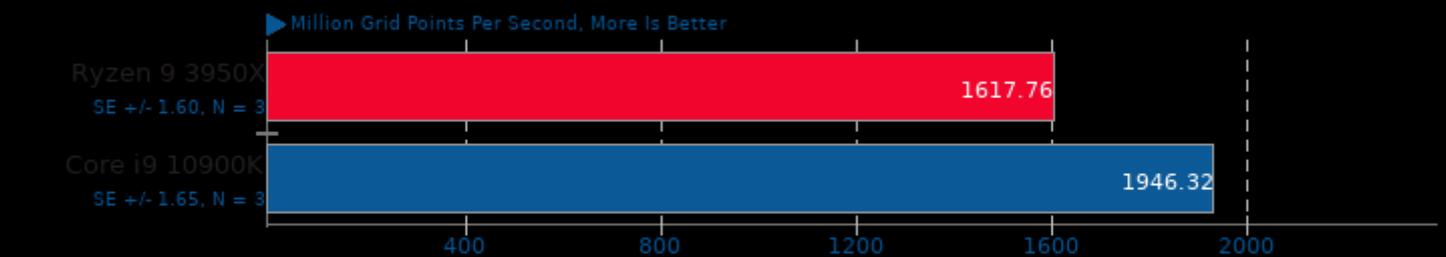
Test: Latency Under Load



1. (CXX) g++ options: -param -O3 -rdynamic -ldl -pthread

ASKAP 2018-11-10

Test: tConvolve MT - Degriding

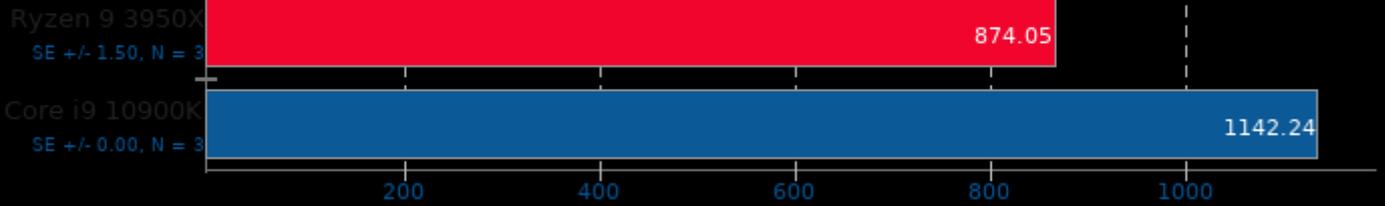


1. (CXX) g++ options: -pthread

ASKAP 2018-11-10

Test: tConvolve MT - Gridding

▶ Million Grid Points Per Second, More Is Better

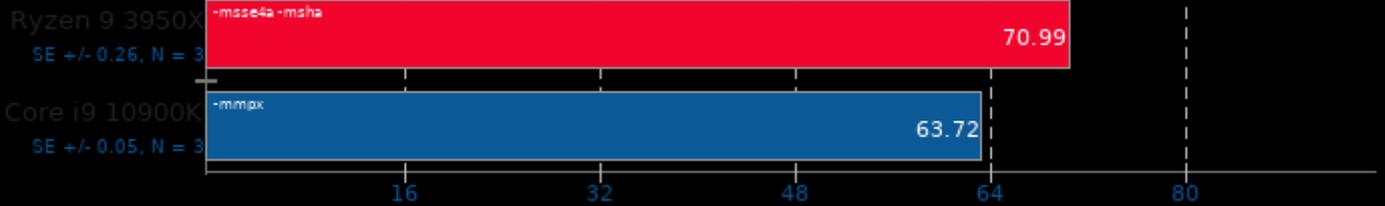


1. (CXX) g++ options: -lpthread

Timed MrBayes Analysis 3.2.7

Primate Phylogeny Analysis

◀ Seconds, Fewer Is Better

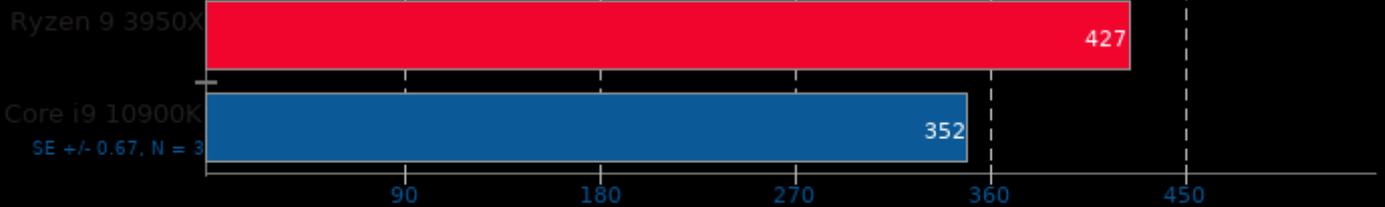


1. (C) gcc options: -mmmx -msse -msse2 -msse3 -msse3.1 -msse4.1 -msse4.2 -maes -mavx -mfma -mavx2 -mrdnd -mbmi -mbmi2 -madx -mabm -O3 -std=c++11

PyPerformance 1.0.0

Benchmark: raytrace

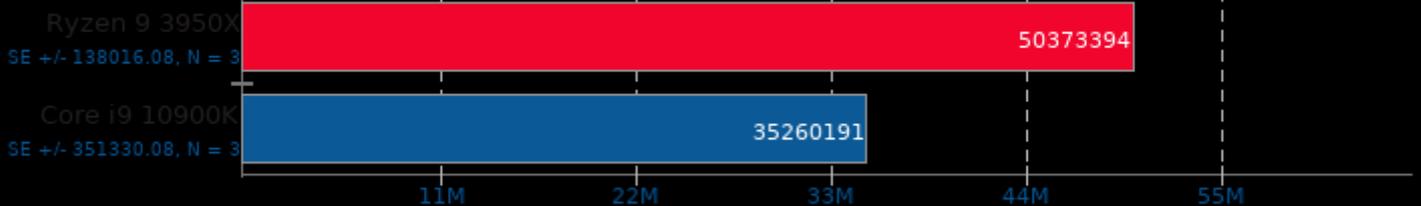
◀ Milliseconds, Fewer Is Better



Stockfish 9

Total Time

▶ Nodes Per Second, More Is Better

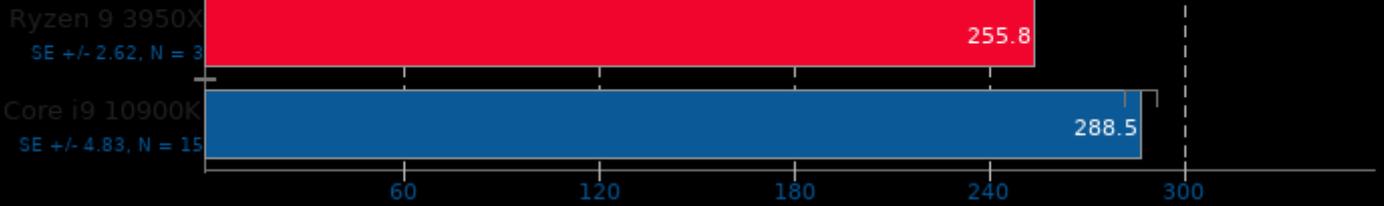


1. (CXX) g++ options: -m64 -lpthread -fno-exceptions -std=c++11 -pedantic -O3 -msse -msse3 -mpopcnt -fno

ET: Legacy 2.75

Renderer: Renderer2 - Resolution: 3840 x 2160

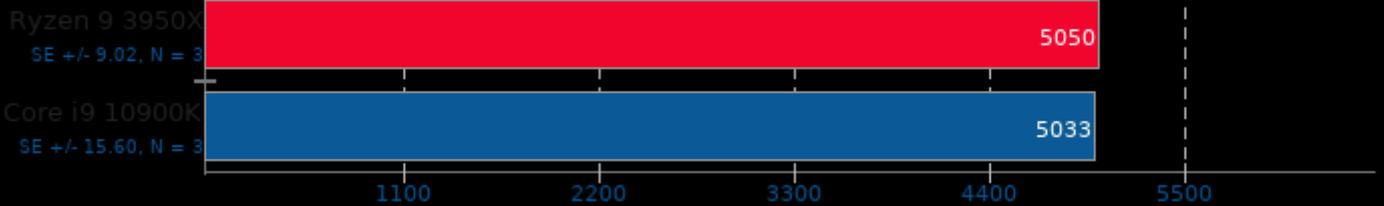
▶ Frames Per Second, More Is Better



Selenium

Benchmark: CanvasMark - Browser: Google Chrome

▶ Score, More Is Better

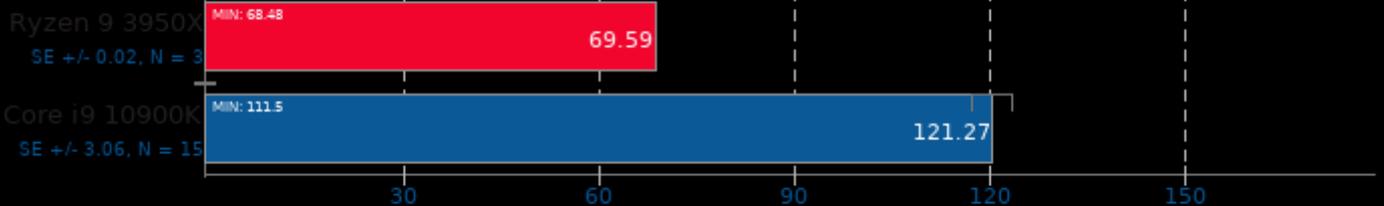


1. chrome 83.0.4103.61

oneDNN MKL-DNN 1.3

Harness: Deconvolution Batch deconv_1d - Data Type: u8s8f32

◀ ms, Fewer Is Better



1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -pthread -ldl

toyBrot Fractal Generator

Implementation: OpenMP

◀ ms, Fewer Is Better

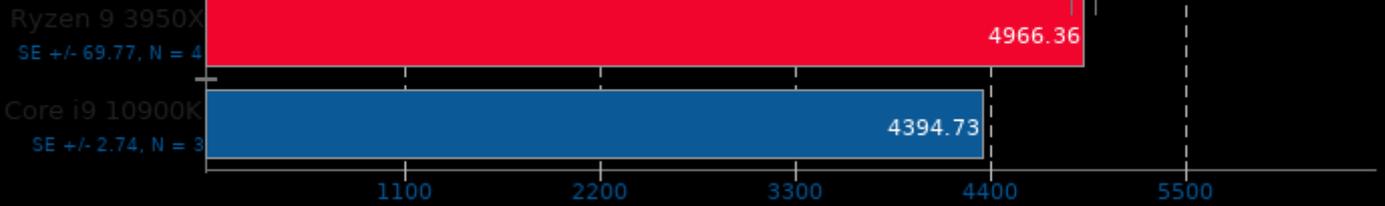


1. (CXX) g++ options: -pthread -isystem -fopenmp -std=c++14

Himeno Benchmark 3.0

Poisson Pressure Solver

MFLOPS, More Is Better

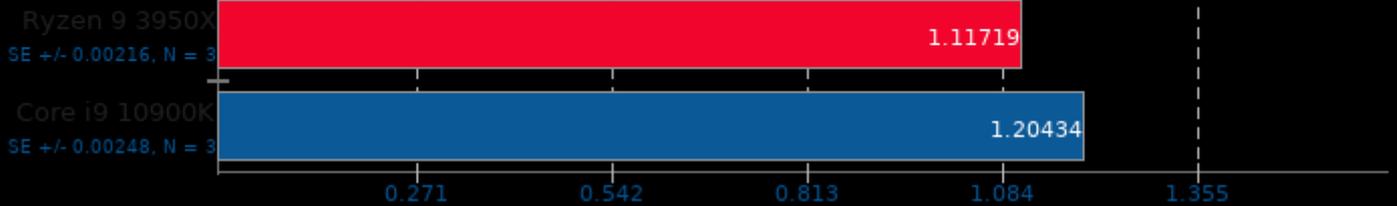


1. (CC) gcc options: -O3 -mavx2

NAMD 2.13

ATPase Simulation - 327,506 Atoms

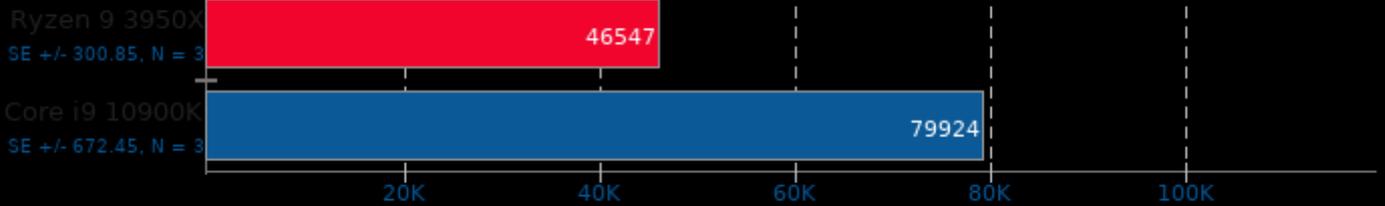
days/ns, Fewer Is Better



toyBrot Fractal Generator

Implementation: TBB

ms, Fewer Is Better

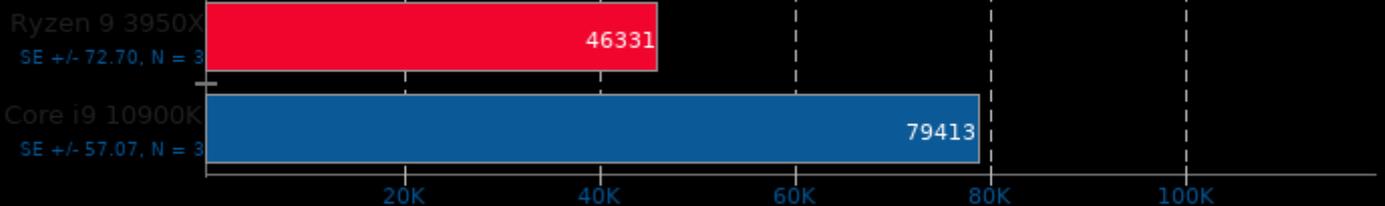


1. (CXX) g++ options: -lpthread -isystem -fopenmp -std=c++14

toyBrot Fractal Generator

Implementation: C++ Threads

ms, Fewer Is Better

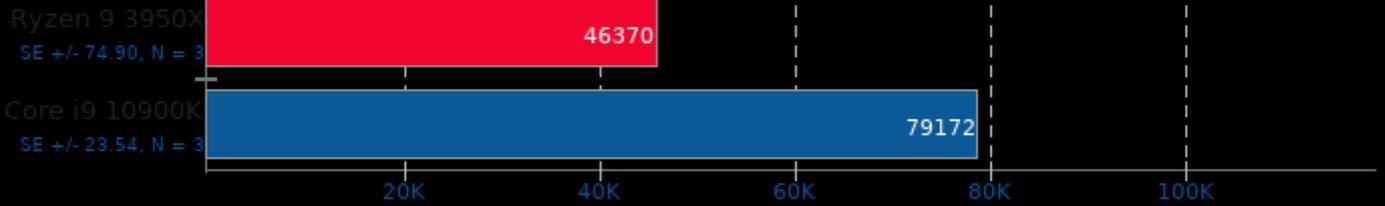


1. (CXX) g++ options: -lpthread -isystem -fopenmp -std=c++14

toyBrot Fractal Generator

Implementation: C++ Tasks

ms, Fewer Is Better

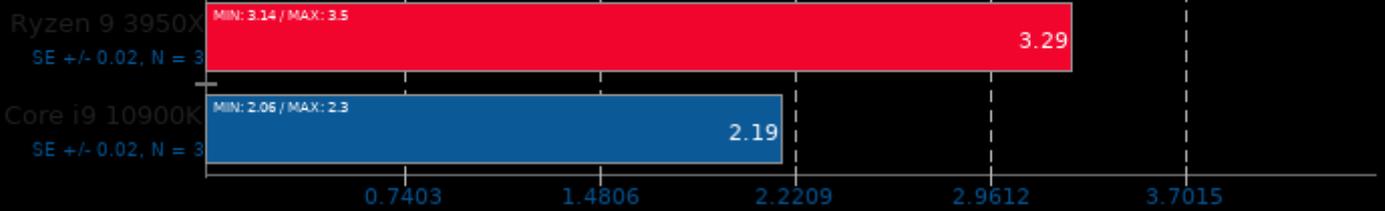


1. (CXX) g++ options: -lthread -system -fopenmp -std=c++14

LuxCoreRender 2.3

Scene: DLSC

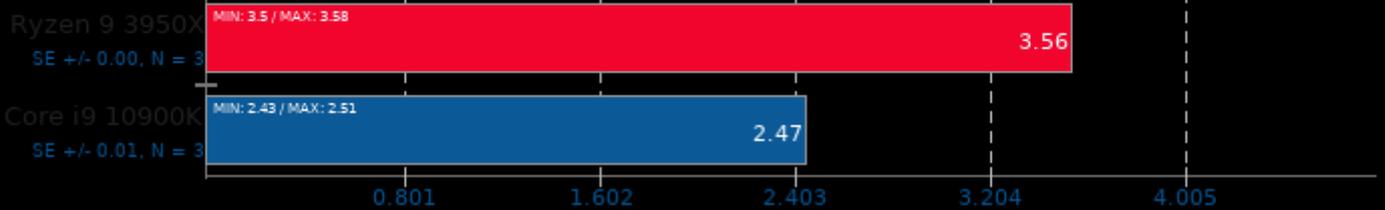
M samples/sec, More Is Better



LuxCoreRender 2.3

Scene: Rainbow Colors and Prism

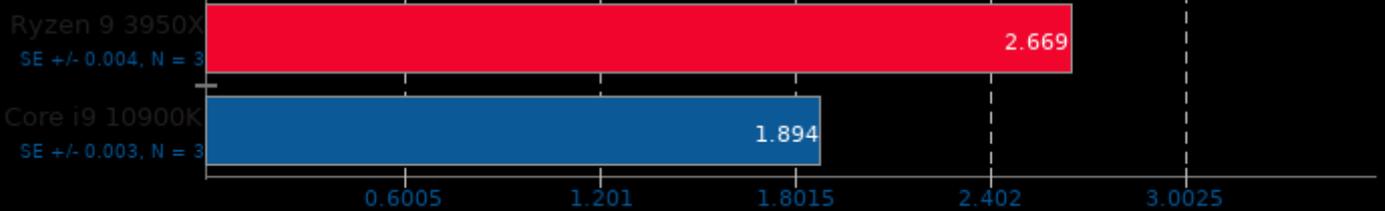
M samples/sec, More Is Better



IndigoBench 4.0.64

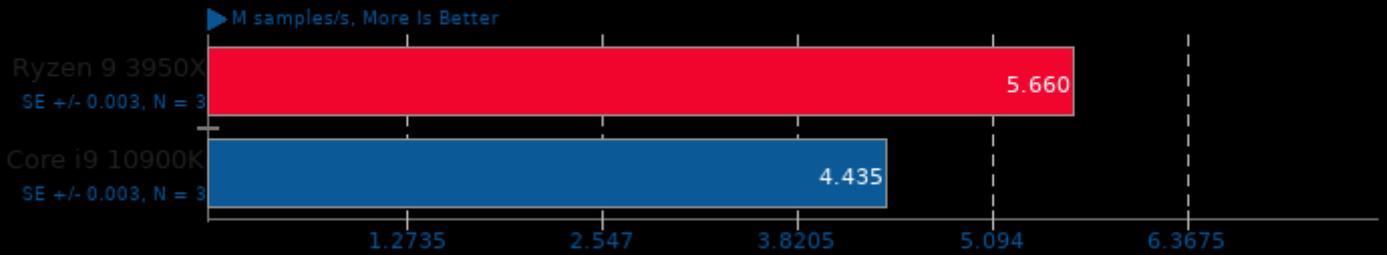
Scene: Bedroom

M samples/s, More Is Better



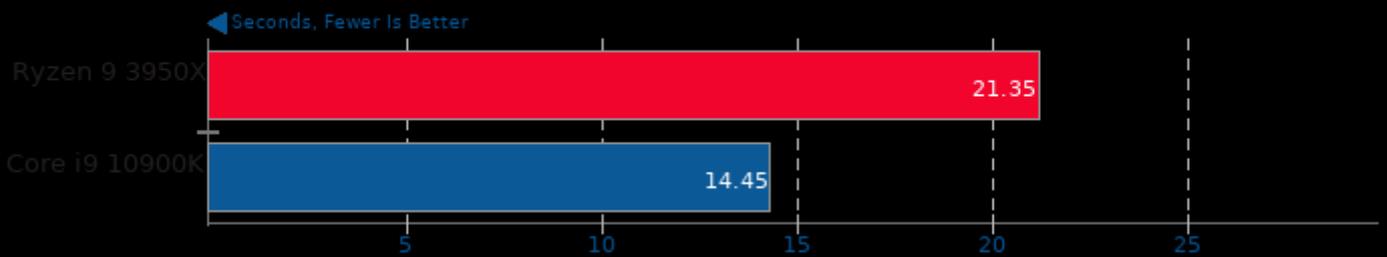
IndigoBench 4.0.64

Scene: Supercar



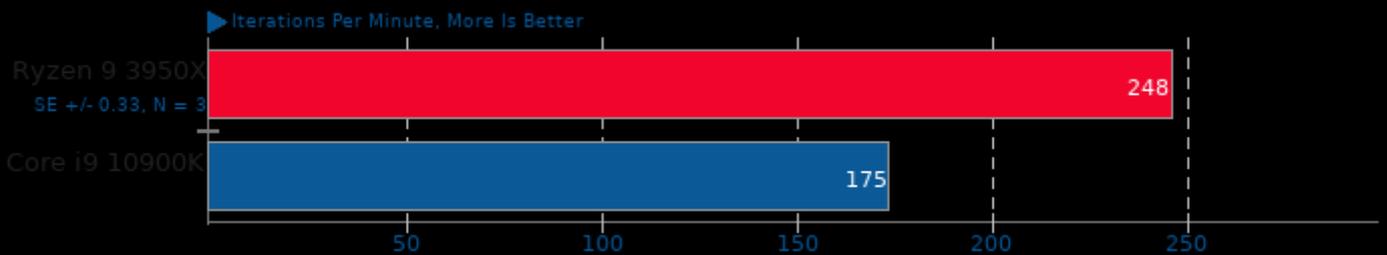
Polyhedron Fortran Benchmarks

Benchmark: induct2



GraphicsMagick 1.3.33

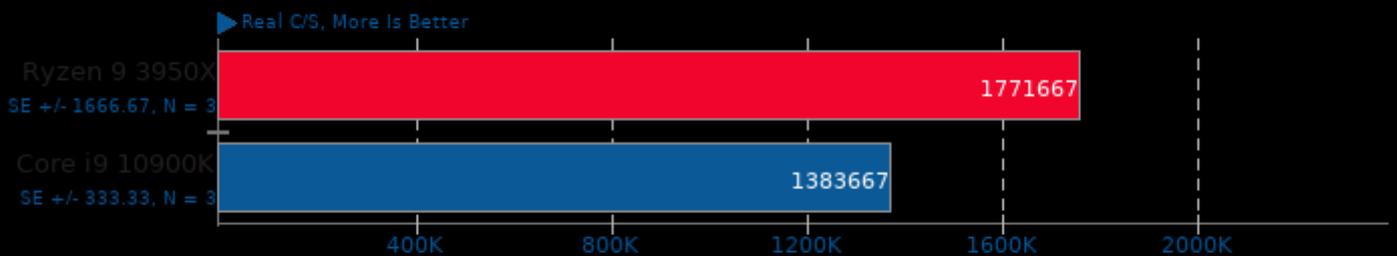
Operation: Sharpen



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lwebp -lwebpmux -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

John The Ripper 1.9.0-jumbo-1

Test: MD5

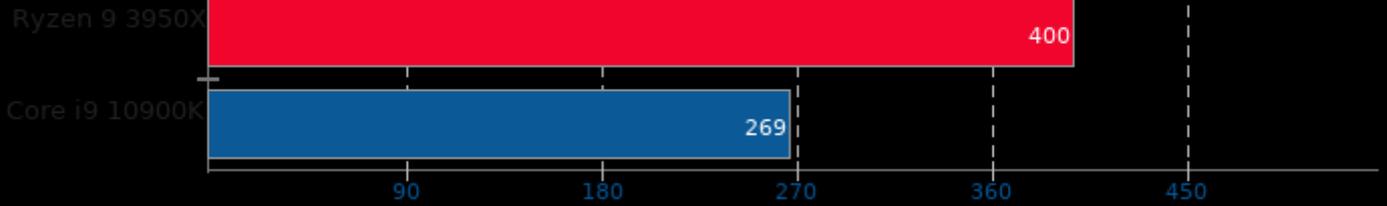


1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt -lbz2

GraphicsMagick 1.3.33

Operation: Enhanced

Iterations Per Minute, More Is Better

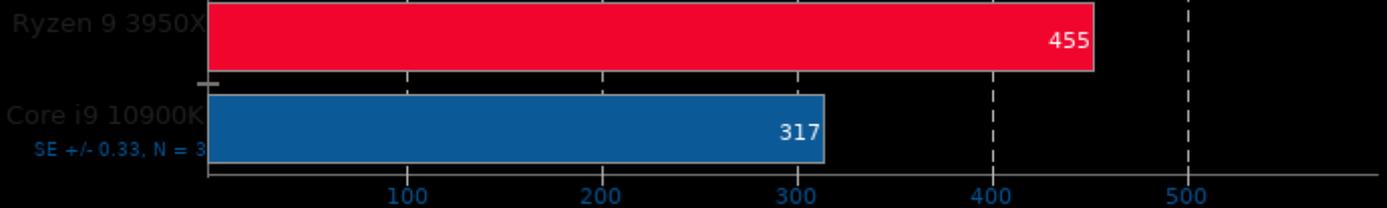


1. (CC) gcc options: -fopenmp -O2 -pthread -ljbig -lwebp -lwebpmux -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

Operation: Noise-Gaussian

Iterations Per Minute, More Is Better



1. (CC) gcc options: -fopenmp -O2 -pthread -ljbig -lwebp -lwebpmux -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

Facebook RocksDB 6.3.6

Test: Random Read

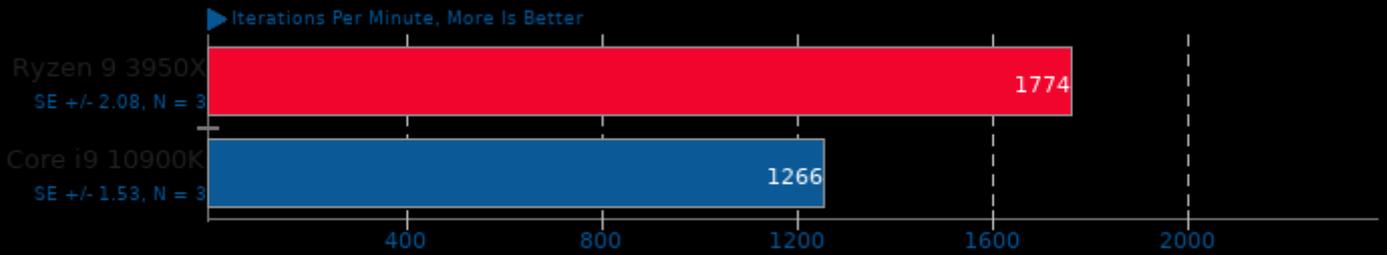
Op/s, More Is Better



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fno-builtin-memcmp -fno-rtti -rdynamic -lpthread

GraphicsMagick 1.3.33

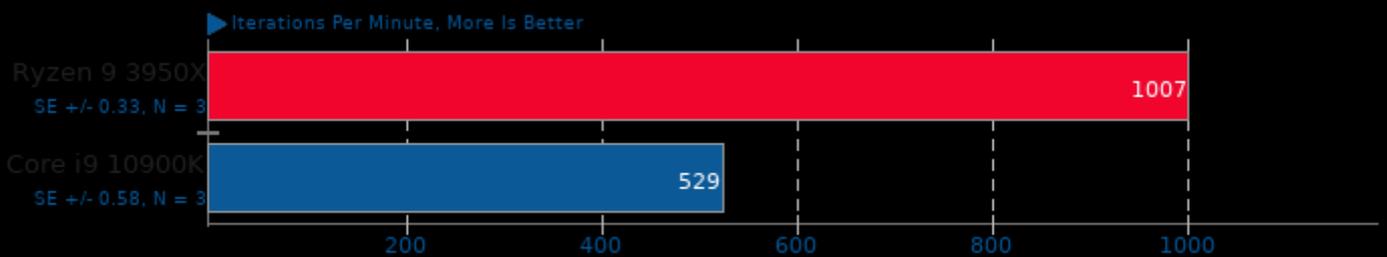
Operation: Resizing



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lwebp -lwebpmux -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

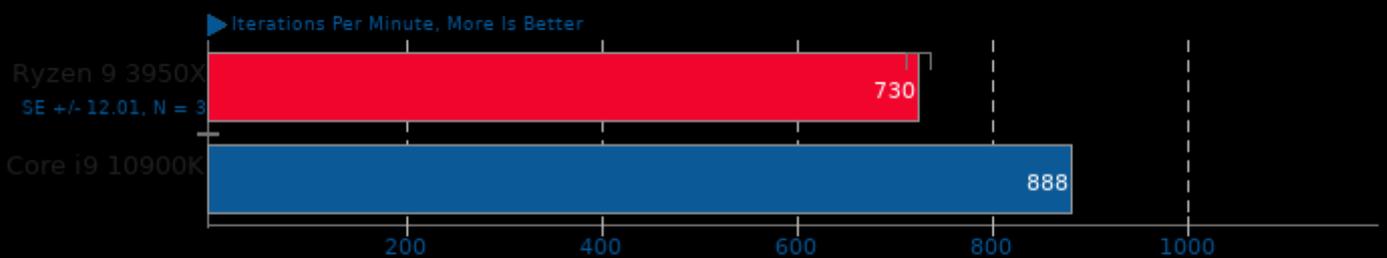
Operation: Swirl



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lwebp -lwebpmux -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

Operation: Rotate

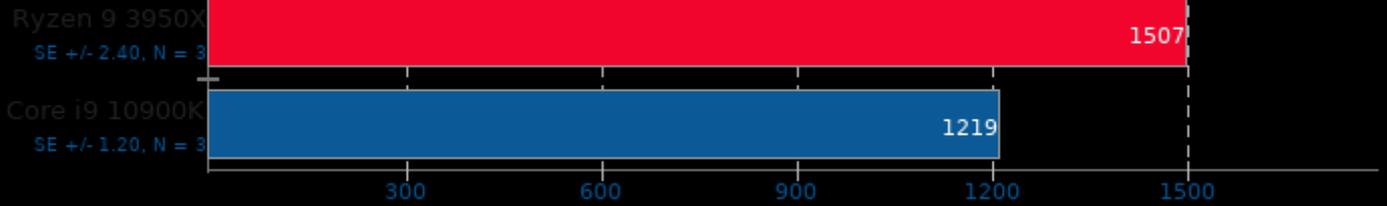


1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lwebp -lwebpmux -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

Operation: HWB Color Space

Iterations Per Minute, More Is Better

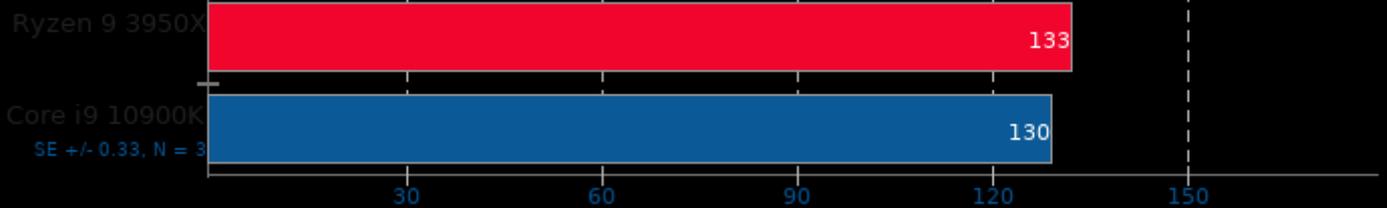


1. (ICC) gcc options: -fopenmp -O2 -pthread -ljpeg -lwebp -lwebpmux -ltiff -lfreetype -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lxml2 -lz -lm -lpthread

Selenium

Benchmark: Speedometer - Browser: Google Chrome

Runs Per Minute, More Is Better

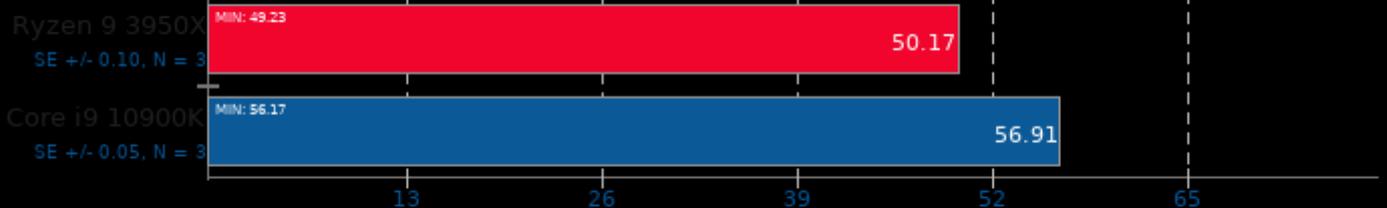


1. chrome 83.0.4103.61

oneDNN MKL-DNN 1.3

Harness: IP Batch All - Data Type: f32

ms, Fewer Is Better

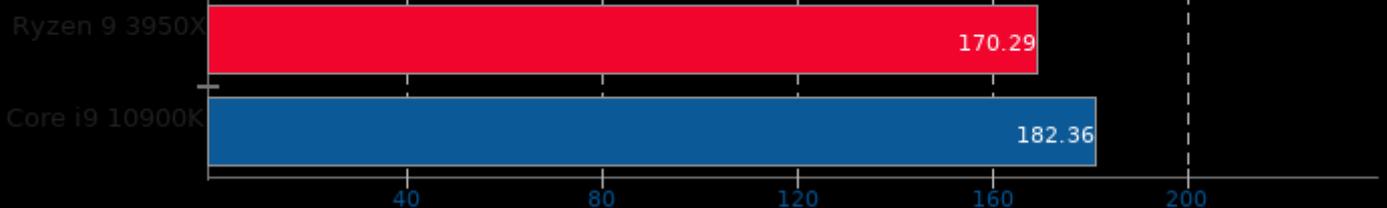


1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fpic -fopenmp -pie -lpthread -ldl

Radiance Benchmark 5.0

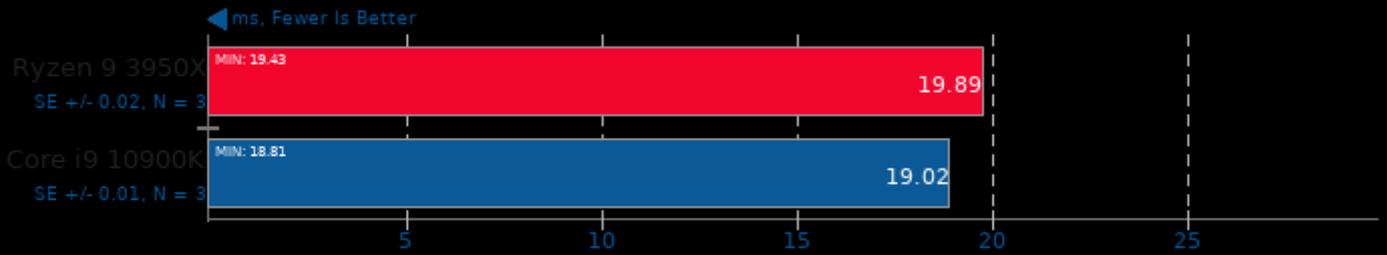
Test: SMP Parallel

Seconds, Fewer Is Better



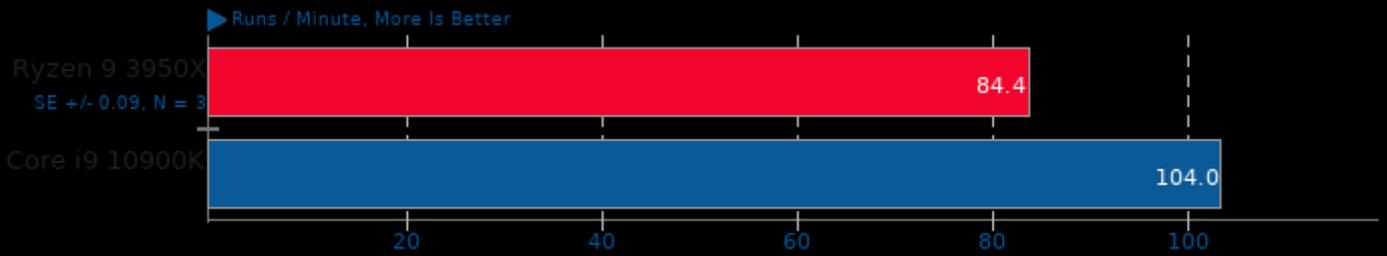
oneDNN MKL-DNN 1.3

Harness: IP Batch All - Data Type: u8s8f32



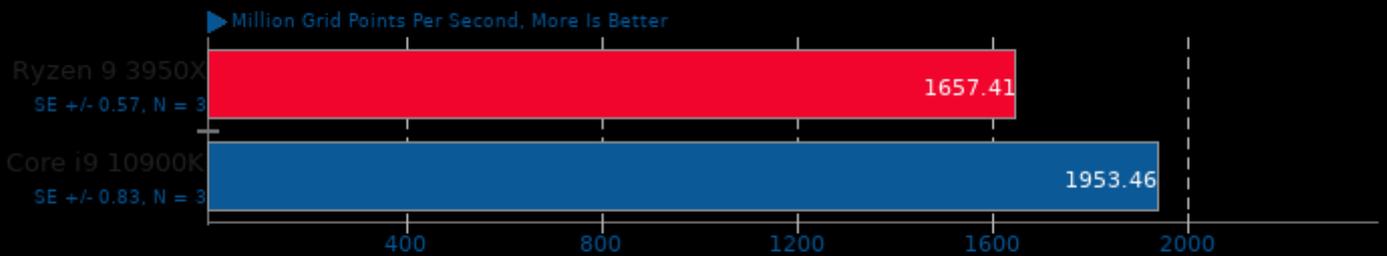
Selenium

Benchmark: StyleBench - Browser: Firefox



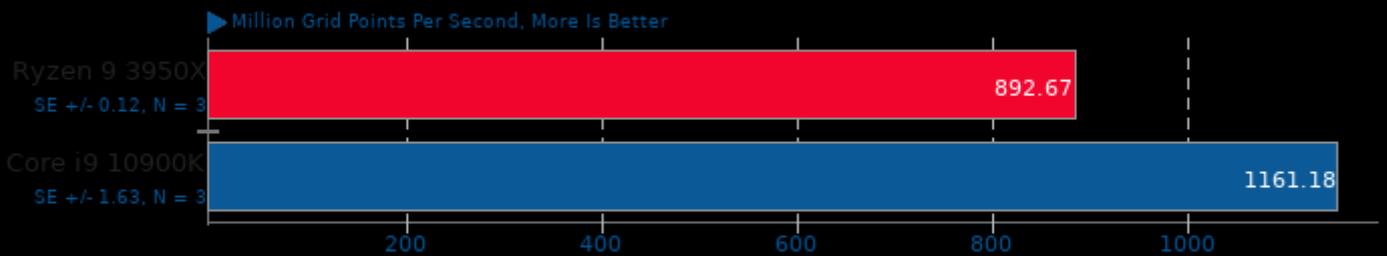
ASKAP 2018-11-10

Test: tConvolve MPI - Degriding



ASKAP 2018-11-10

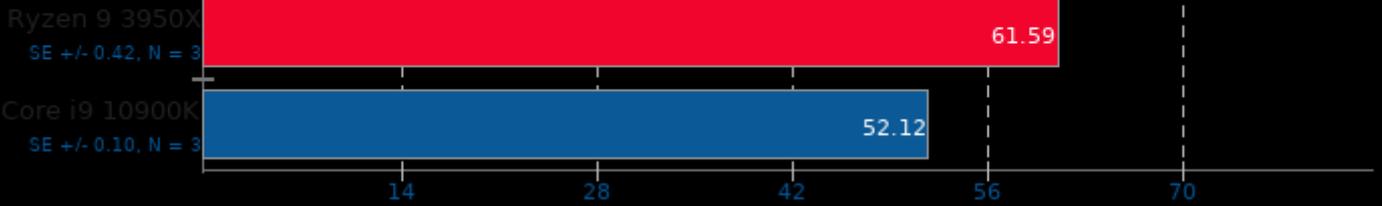
Test: tConvolve MPI - Gridding



GEGL

Operation: Wavelet Blur

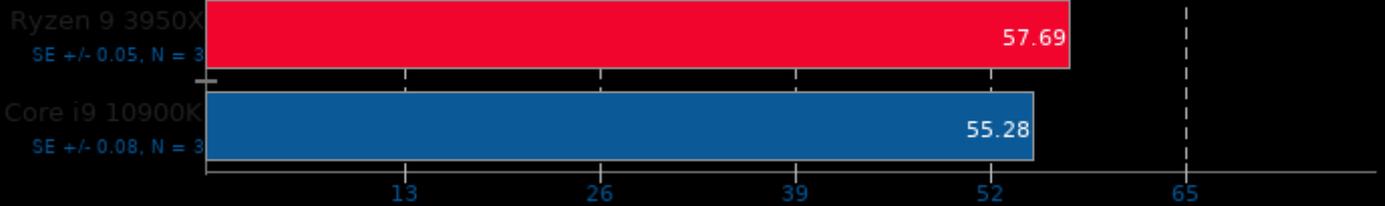
← Seconds, Fewer Is Better



Minion 1.8

Benchmark: Solitaire

← Seconds, Fewer Is Better

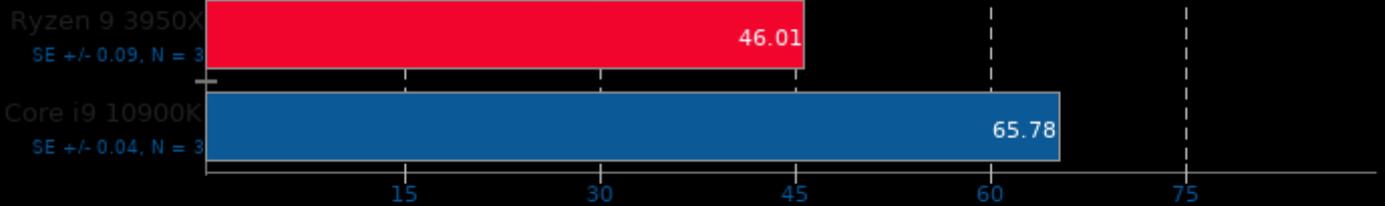


1. (CXX) g++ options: -std=gnu++11 -O3 -fomit-frame-pointer -rdynamic

Tachyon 0.99b6

Total Time

← Seconds, Fewer Is Better

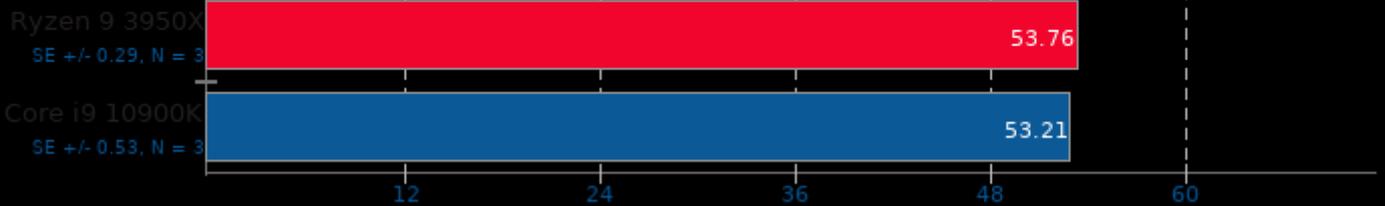


1. (CC) gcc options: -m64 -O3 -fomit-frame-pointer -ffast-math -ltachyon -lm -lpthread

Mlpack Benchmark

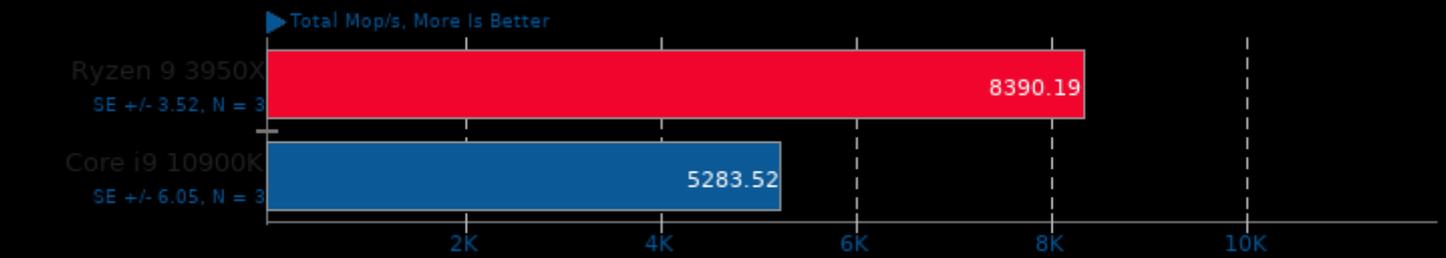
Benchmark: scikit_ica

← Seconds, Fewer Is Better



NAS Parallel Benchmarks 3.4

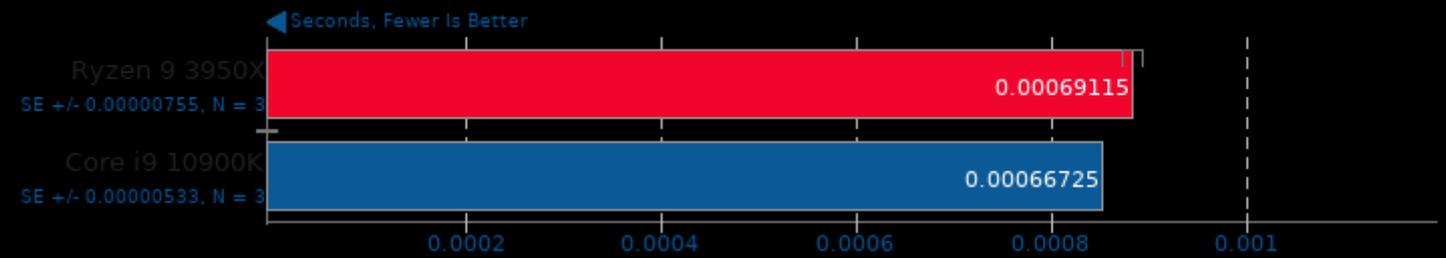
Test / Class: SP.B



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3

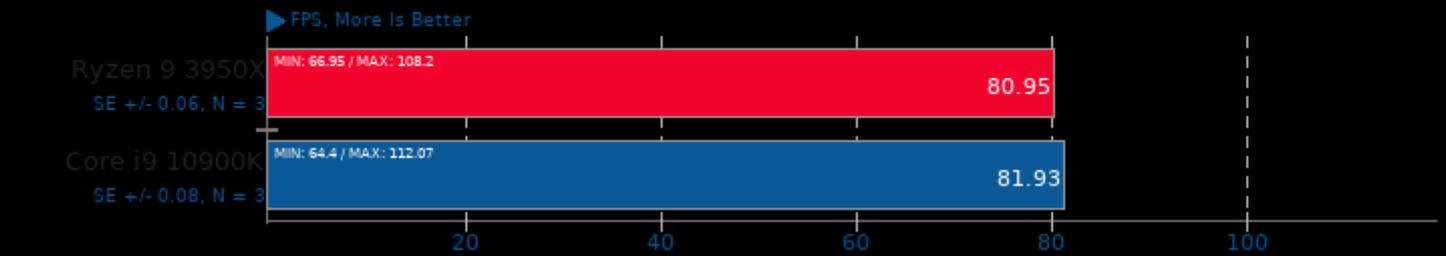
Perl Benchmarks

Test: Interpreter



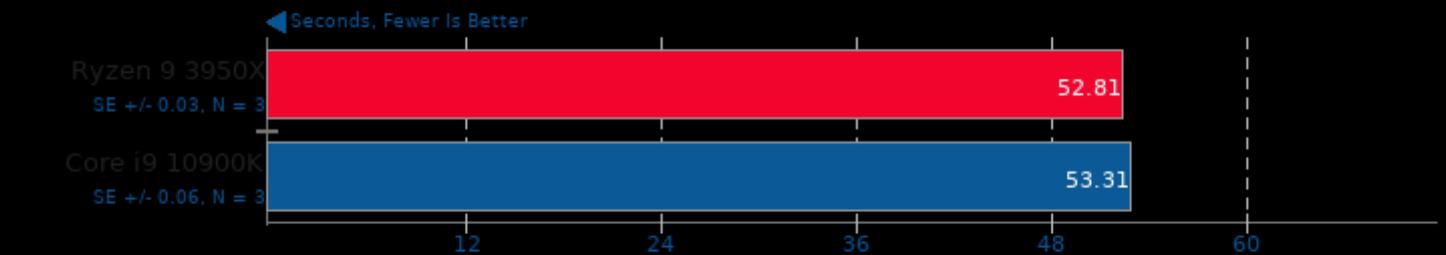
Basemark GPU 1.2

Renderer: Vulkan - Resolution: 3840 x 2160 - Graphics Preset: High



RawTherapee

Total Benchmark Time

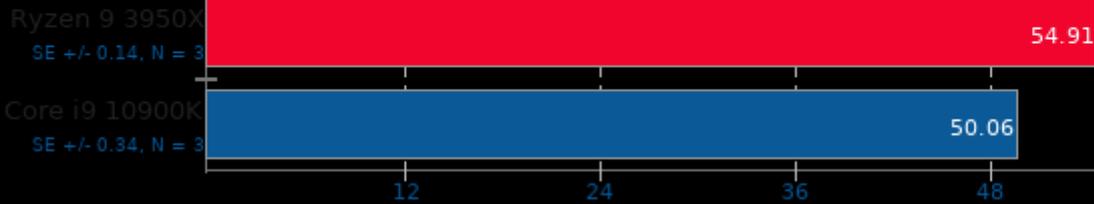


1. RawTherapee, version 5.8, command line.

GEGL

Operation: Color Enhance

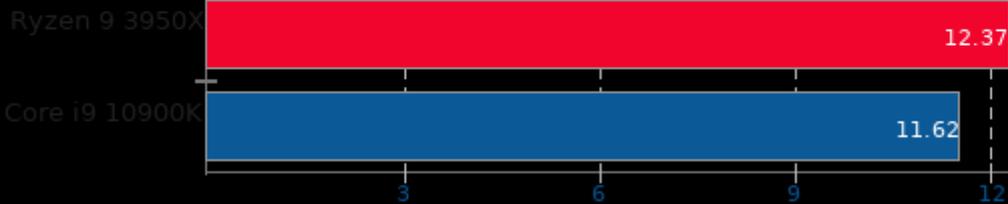
← Seconds, Fewer Is Better



Polyhedron Fortran Benchmarks

Benchmark: protein

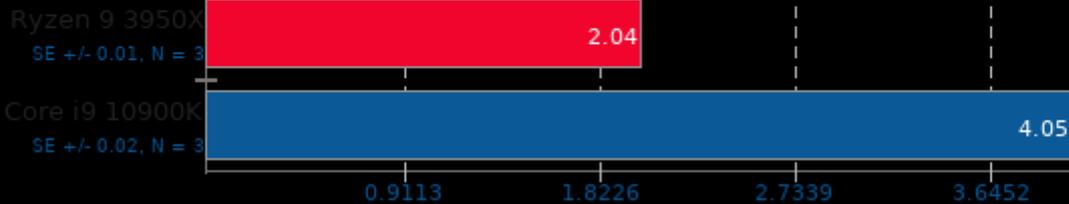
← Seconds, Fewer Is Better



Mlpack Benchmark

Benchmark: scikit_linearidgegression

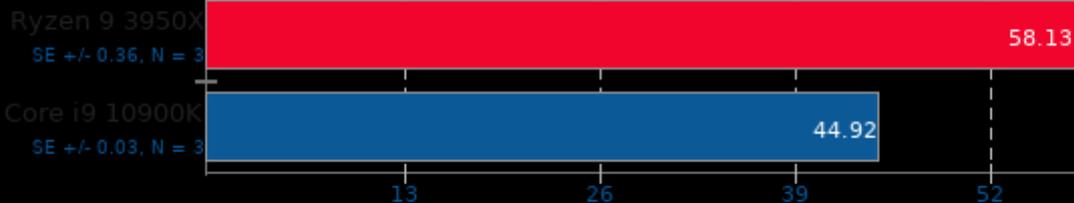
← Seconds, Fewer Is Better



SQLite Speedtest 3.30

Timed Time - Size 1,000

← Seconds, Fewer Is Better

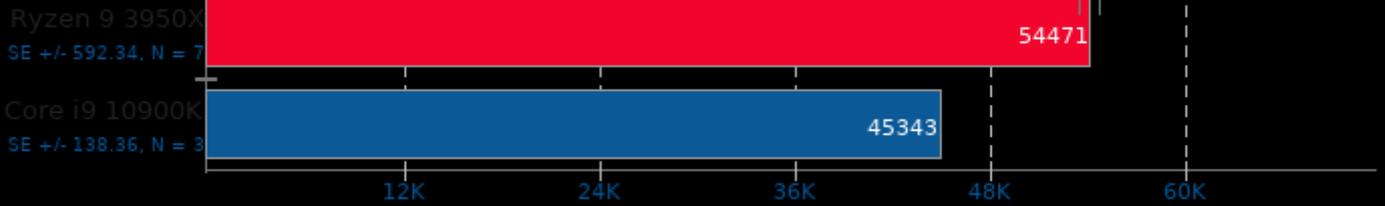


1. (CC) gcc options: -O2 -ldl -lz -lpthread

Cpuminer-Opt 3.8.8.1

Algorithm: skein

▶ kWh/s - Hash Speed, More Is Better

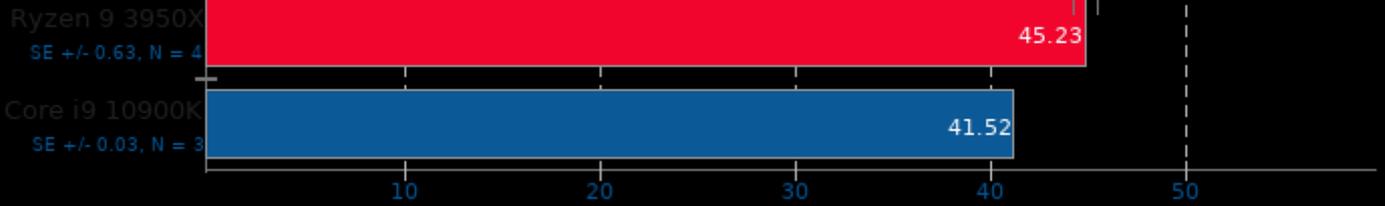


1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

Git

Time To Complete Common Git Commands

◀ Seconds, Fewer Is Better

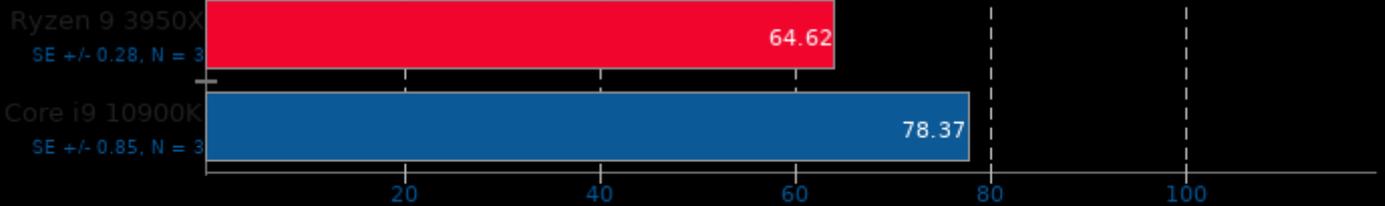


1. git version 2.25.1

DeepSpeech 0.6

Acceleration: CPU

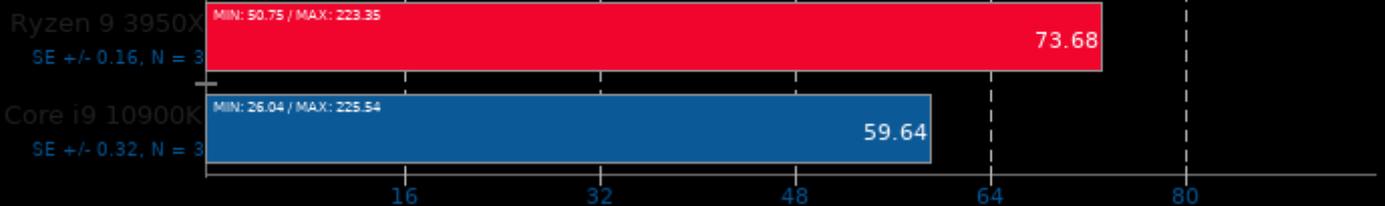
◀ Seconds, Fewer Is Better



Basemark GPU 1.2

Renderer: OpenGL - Resolution: 3840 x 2160 - Graphics Preset: High

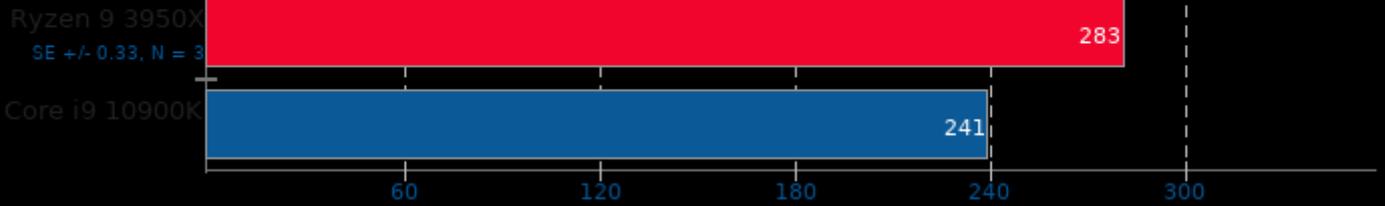
▶ FPS, More Is Better



PyPerformance 1.0.0

Benchmark: 2to3

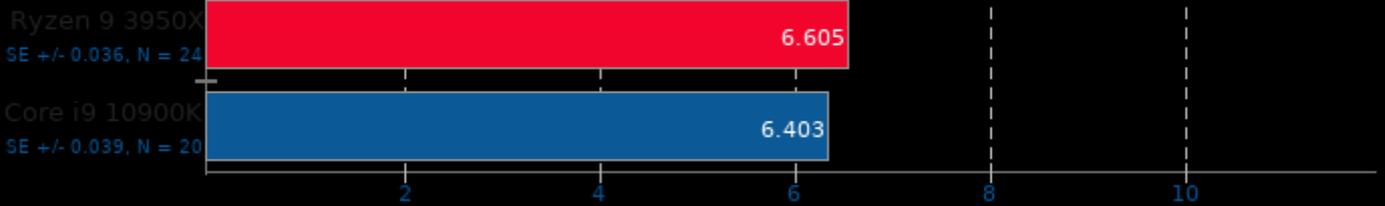
← Milliseconds, Fewer Is Better



LibreOffice

Test: 20 Documents To PDF

← Seconds, Fewer Is Better

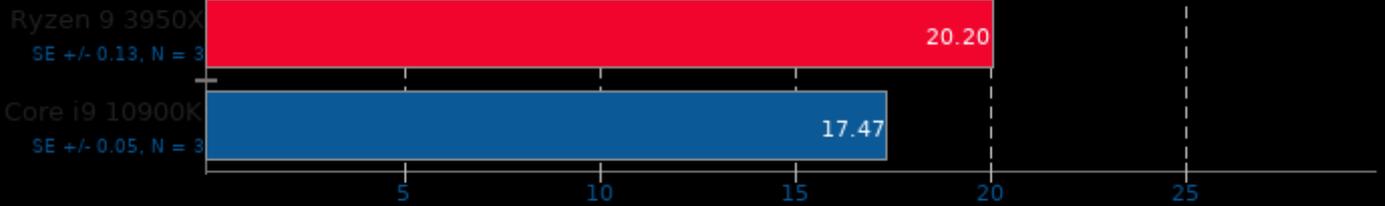


1. LibreOffice 6.4.3.2 40(Build:2)

Selenium

Benchmark: ARES-6 - Browser: Google Chrome

← ms, Fewer Is Better

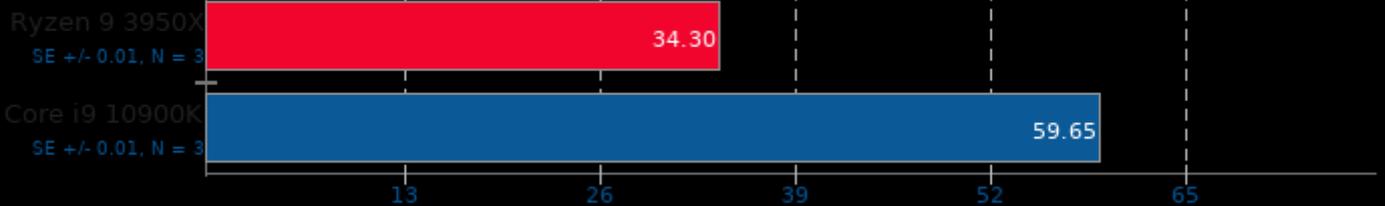


1. chrome 83.0.4103.61

m-queens 1.2

Time To Solve

← Seconds, Fewer Is Better

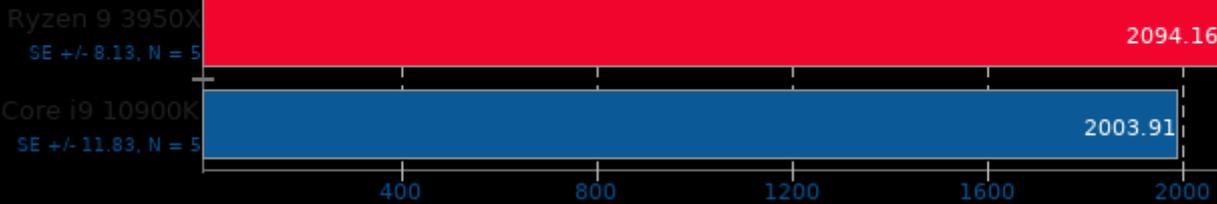


1. (CXX) g++ options: -fopenmp -O2 -march=native

Renaissance 0.10.0

Test: Twitter HTTP Requests

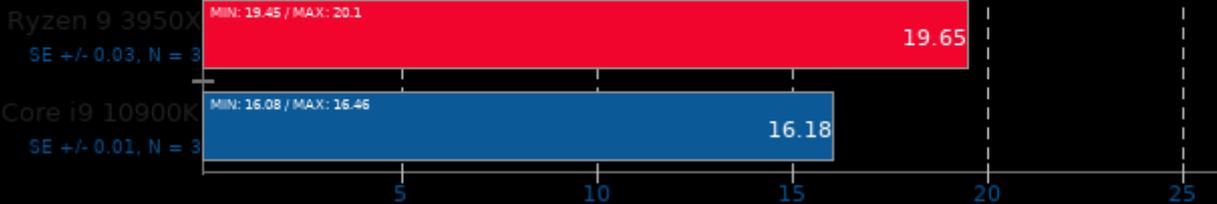
ms, Fewer Is Better



Embree 3.9.0

Binary: Pathtracer - Model: Asian Dragon Obj

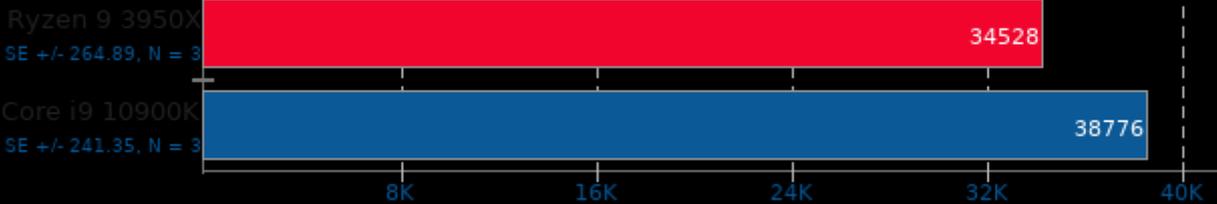
Frames Per Second, More Is Better



Selenium

Benchmark: Octane - Browser: Firefox

Geometric Mean, More Is Better

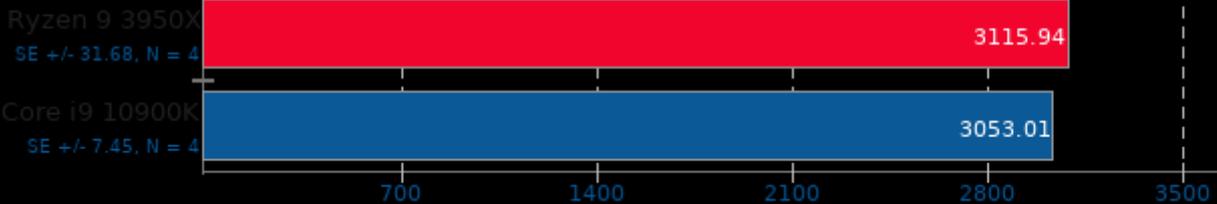


1. firefox 76.0.1

Java SciMark 2.0

Computational Test: Composite

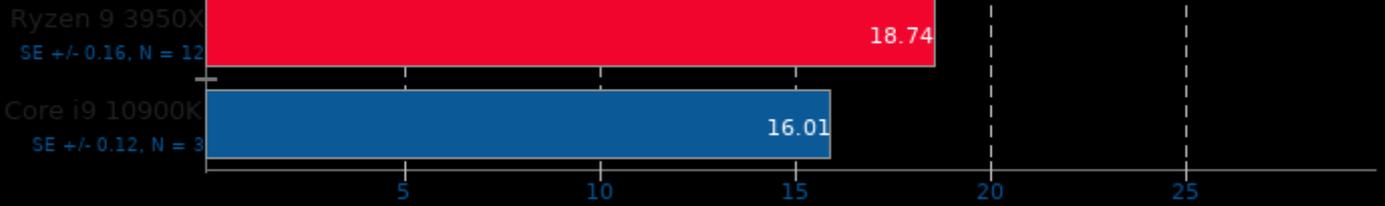
Mflops, More Is Better



G'MIC

Test: Plotting Isosurface Of A 3D Volume, 1000 Times

← Seconds, Fewer Is Better



1. Version 2.4.5. Copyright (c) 2008-2019, David Tschumperle.

Timed PHP Compilation 7.4.2

Time To Compile

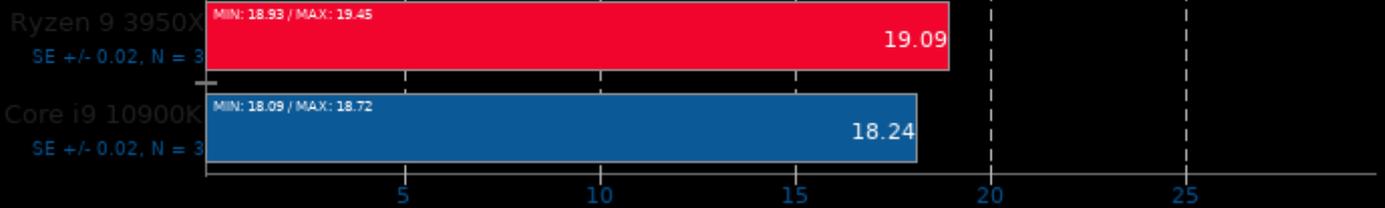
← Seconds, Fewer Is Better



Embree 3.9.0

Binary: Pathtracer ISPC - Model: Asian Dragon Obj

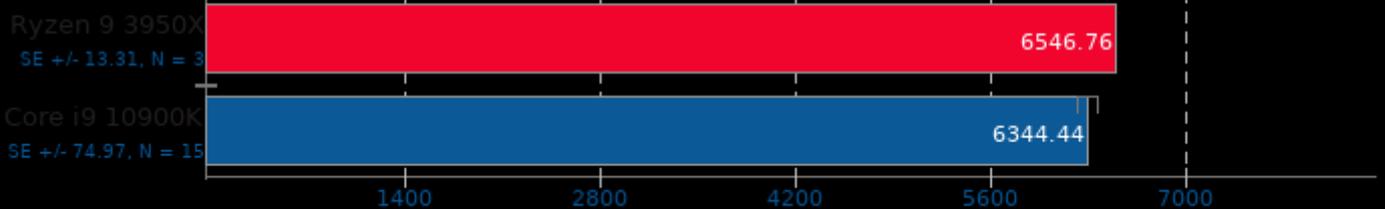
▶ Frames Per Second, More Is Better



ParaView 5.4.1

Test: Many Spheres - Resolution: 3840 x 2160

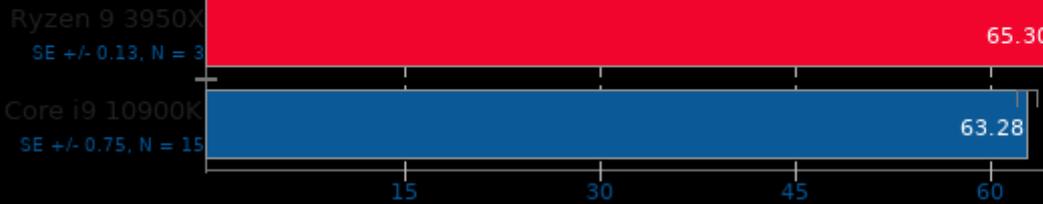
▶ MiPolys / Sec, More Is Better



ParaView 5.4.1

Test: Many Spheres - Resolution: 3840 x 2160

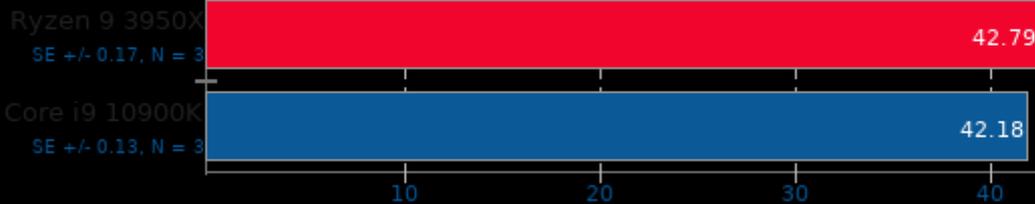
▶ Frames / Sec, More Is Better



Basis Universal 1.12

Settings: ETC1S

◀ Seconds, Fewer Is Better

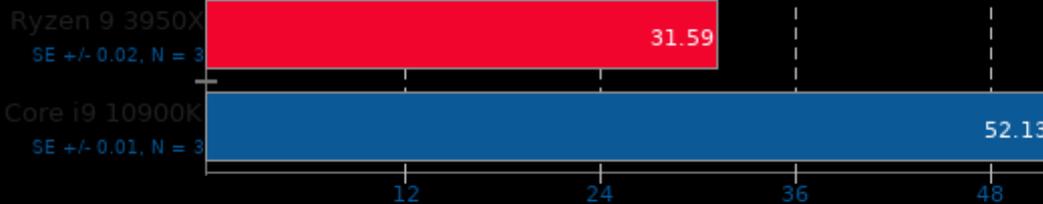


1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

C-Ray 1.1

Total Time - 4K, 16 Rays Per Pixel

◀ Seconds, Fewer Is Better

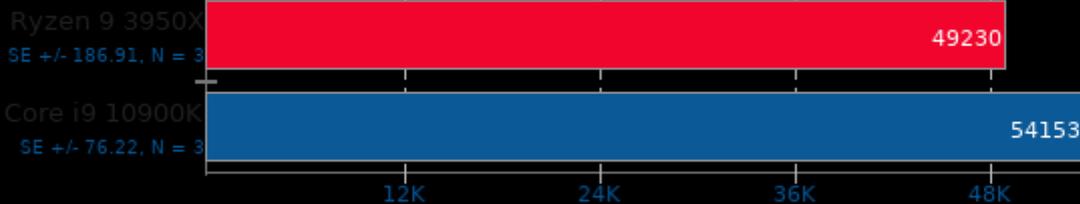


1. (CC) gcc options: -lm -lpthread -O3

Selenium

Benchmark: Octane - Browser: Google Chrome

▶ Geometric Mean, More Is Better

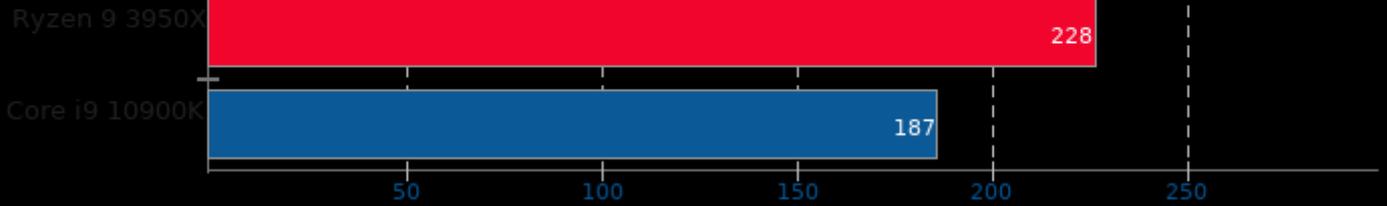


1. chrome 83.0.4103.61

PyPerformance 1.0.0

Benchmark: go

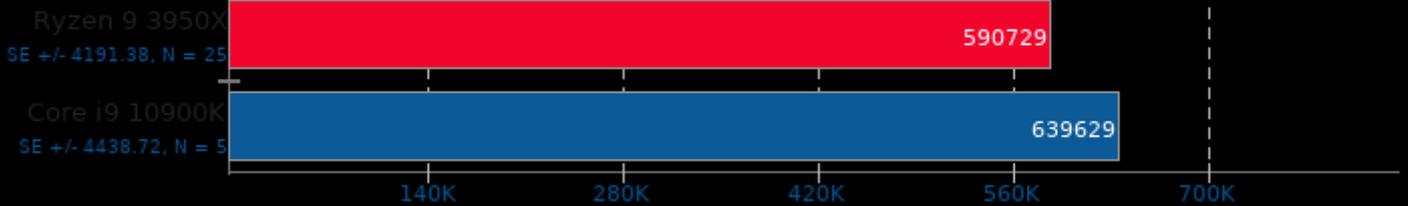
← Milliseconds, Fewer Is Better



Socketperf 3.4

Test: Throughput

▶ Messages Per Second, More Is Better

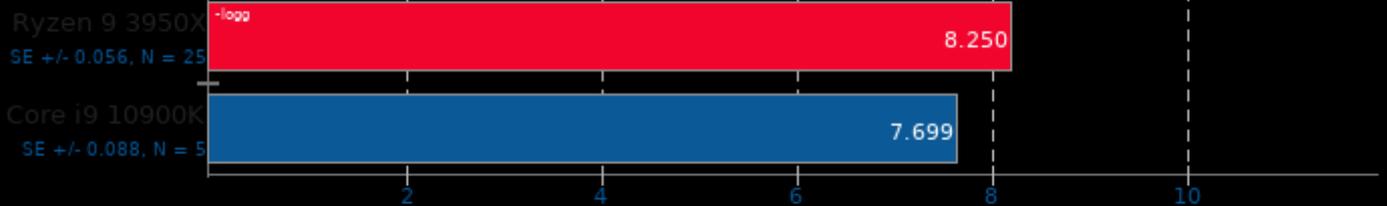


1. (CXX) g++ options: -param -O3 -rdynamic -ldl -lpthread

FLAC Audio Encoding 1.3.2

WAV To FLAC

← Seconds, Fewer Is Better

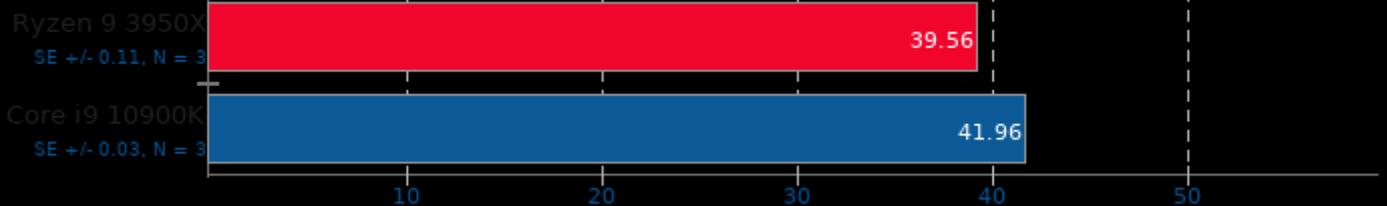


1. (CXX) g++ options: -O2 -fvisibility=hidden -lm

Minion 1.8

Benchmark: Graceful

← Seconds, Fewer Is Better

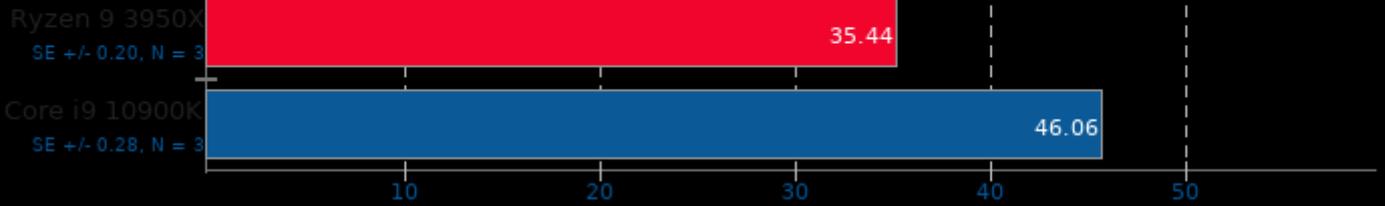


1. (CXX) g++ options: -std=gnu++11 -O3 -fomit-frame-pointer -rdynamic

Timed FFmpeg Compilation 4.2.2

Time To Compile

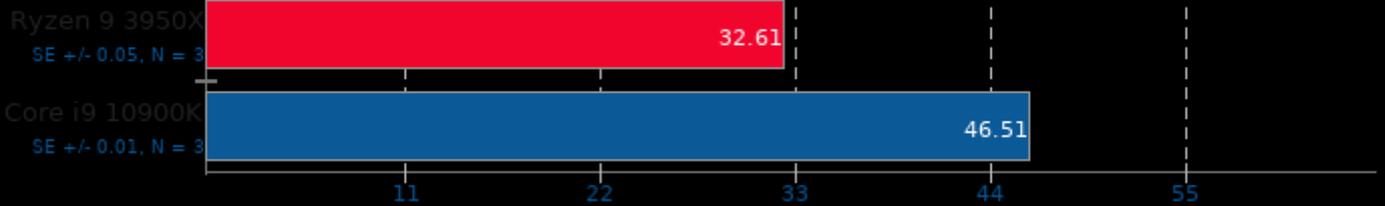
← Seconds, Fewer Is Better



Basis Universal 1.12

Settings: UASTC Level 3

← Seconds, Fewer Is Better

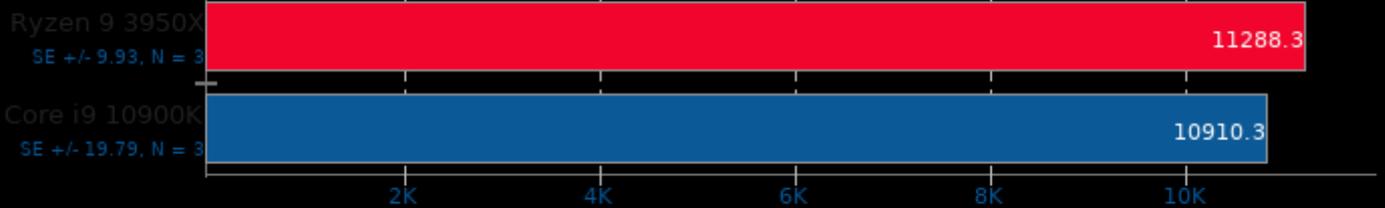


1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -pthread

C-Blosc 2.0 Beta 5

Compressor: blosclz

▶ MB/s, More Is Better

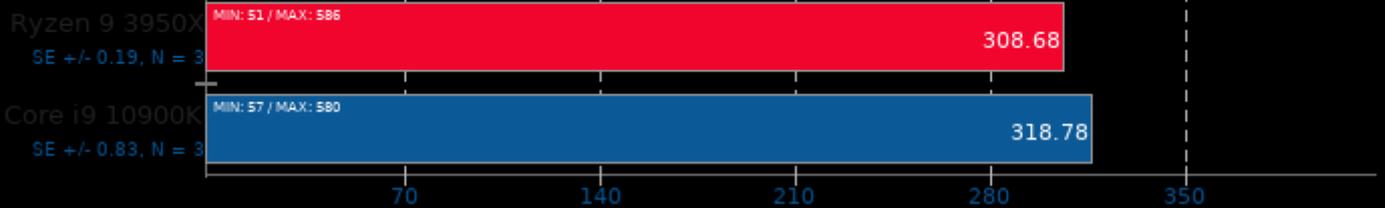


1. (CXX) g++ options: -rdynamic

Xonotic 0.8.2

Resolution: 3840 x 2160 - Effects Quality: Ultimate

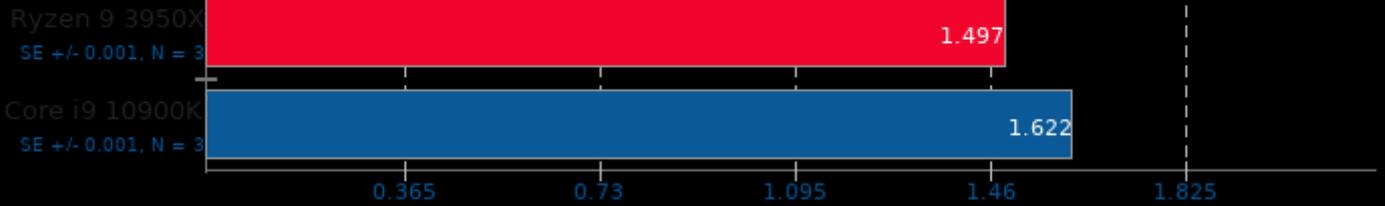
▶ Frames Per Second, More Is Better



rav1e 0.3.0

Speed: 6

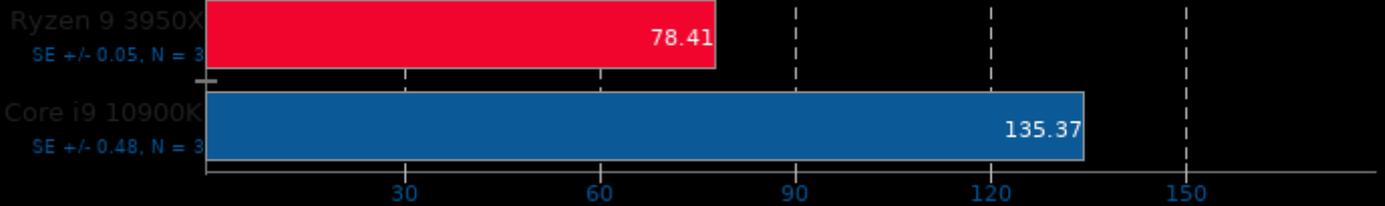
▶ Frames Per Second, More Is Better



libgav1 2019-10-05

Video Input: Summer Nature 1080p

▶ FPS, More Is Better

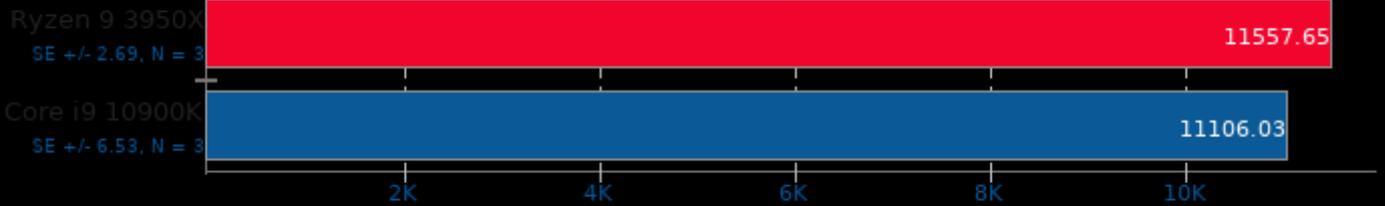


1. (CXX) g++ options: -O3 -pthread

NAS Parallel Benchmarks 3.4

Test / Class: FT.C

▶ Total Mop/s, More Is Better

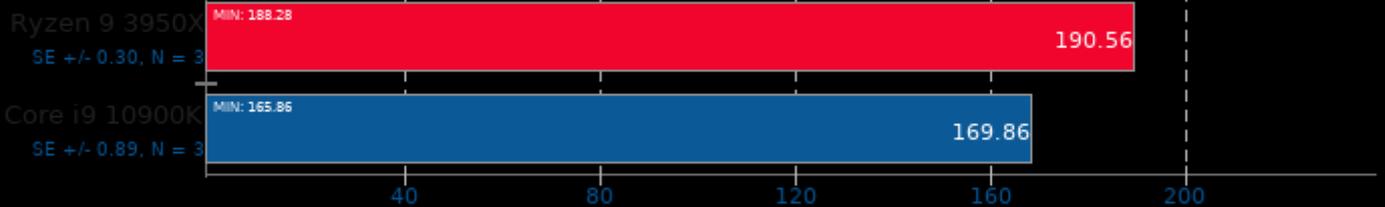


1. (F9X) gfortran options: -O3 -march=native -pthread -mpi_usempif08 -mpi_mpifh -mpi
2. Open MPI 4.0.3

oneDNN MKL-DNN 1.3

Harness: Recurrent Neural Network Training - Data Type: f32

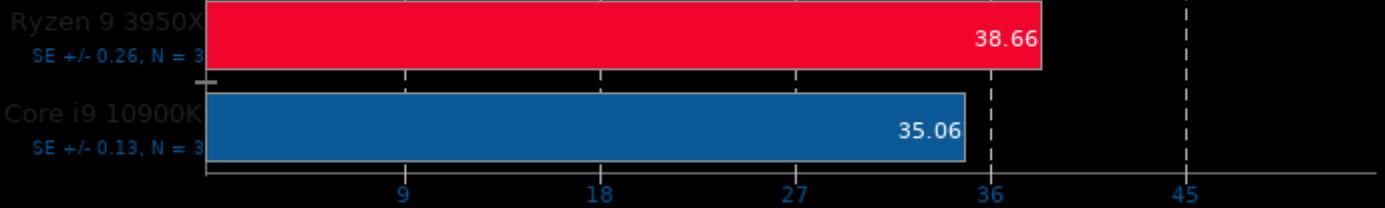
◀ ms, Fewer Is Better



1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fpic -fopenmp -pie -pthread -ldl

Cython benchmark 0.27

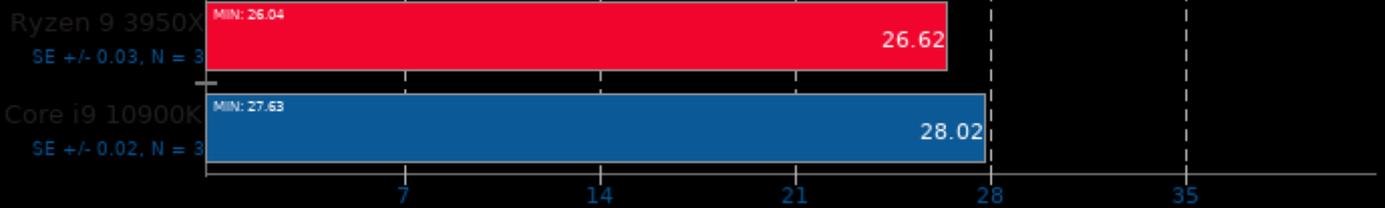
Seconds, Fewer Is Better



oneDNN MKL-DNN 1.3

Harness: Recurrent Neural Network Inference - Data Type: f32

ms, Fewer Is Better



1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fpic -fopenmp -pie -pthread -ldl

Cpuminer-Opt 3.8.8.1

Algorithm: m7m

kH/s - Hash Speed, More Is Better

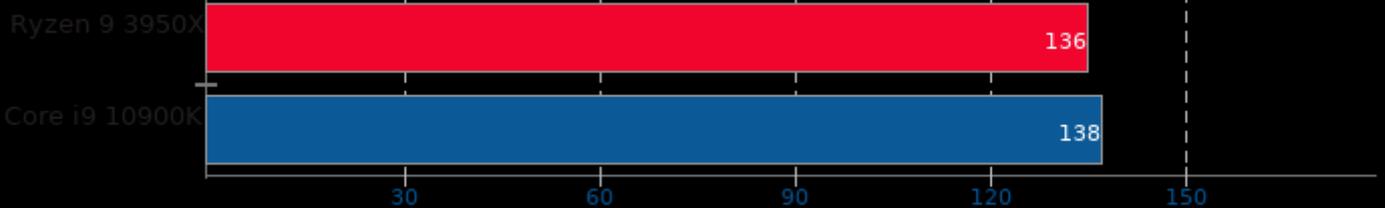


1. (CXX) g++ options: -O2 -lcurl -lz -pthread -lssl -lcrypto -lgmp

Izbench 1.8

Test: XZ 0 - Process: Decompression

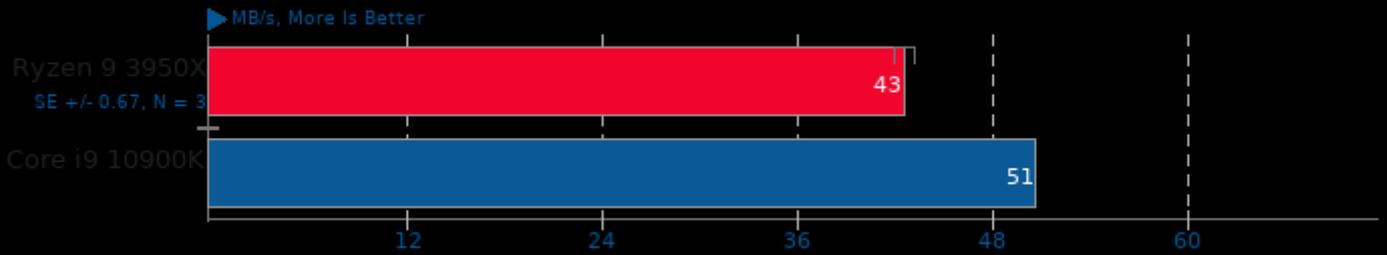
MB/s, More Is Better



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

Izbench 1.8

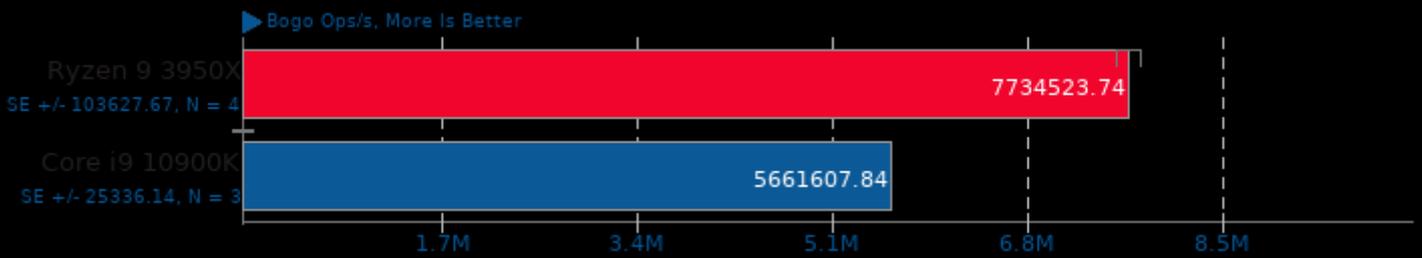
Test: XZ 0 - Process: Compression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

Stress-NG 0.11.07

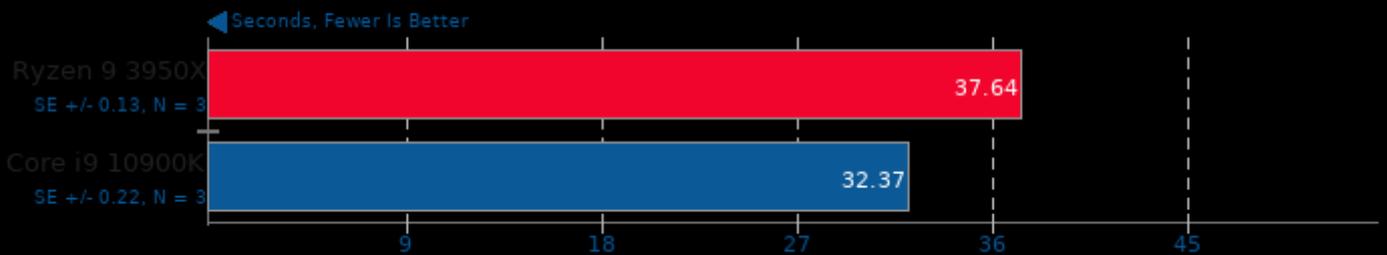
Test: Context Switching



1. (C) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lz -ldl -lpthread -lc

GEGL

Operation: Rotate 90 Degrees



LULESH 2.0.3

z/s, More Is Better

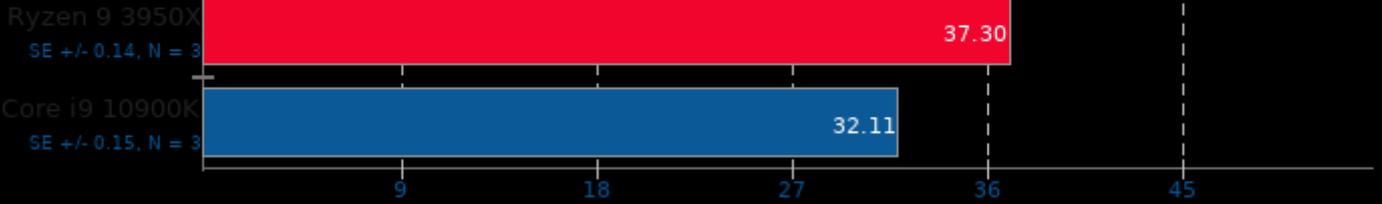


1. (CXX) g++ options: -O3 -fopenmp -lm -pthread -lmpi_cxx -lmpi

GEGL

Operation: Antialias

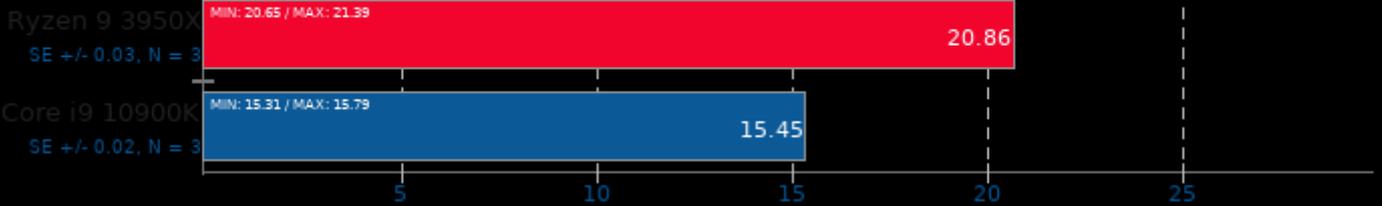
← Seconds, Fewer Is Better



Embree 3.9.0

Binary: Pathtracer - Model: Crown

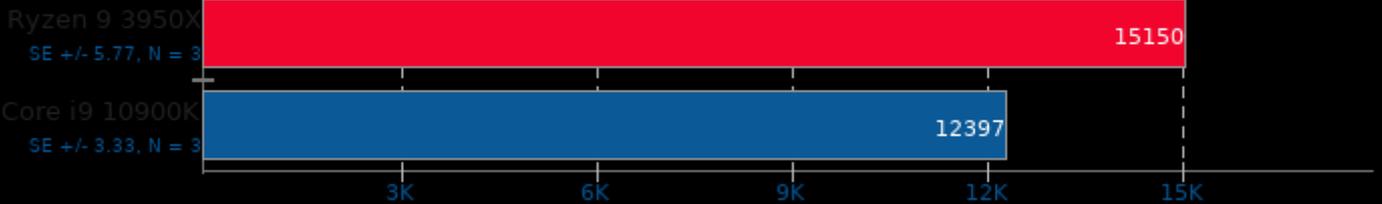
▶ Frames Per Second, More Is Better



Cpuminer-Opt 3.8.8.1

Algorithm: deep

▶ kH/s - Hash Speed, More Is Better

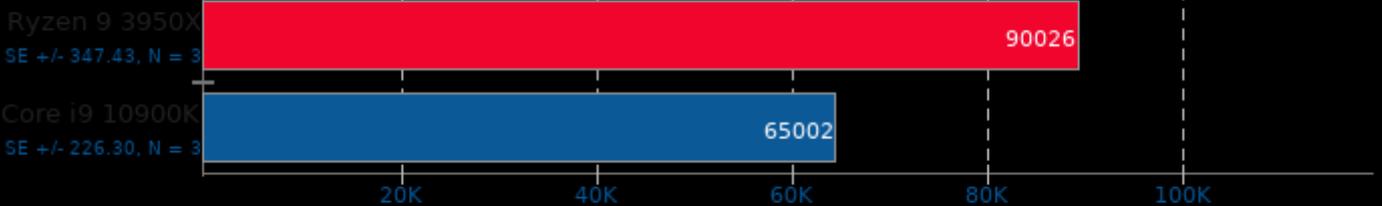


1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

7-Zip Compression 16.02

Compress Speed Test

▶ MIPS, More Is Better

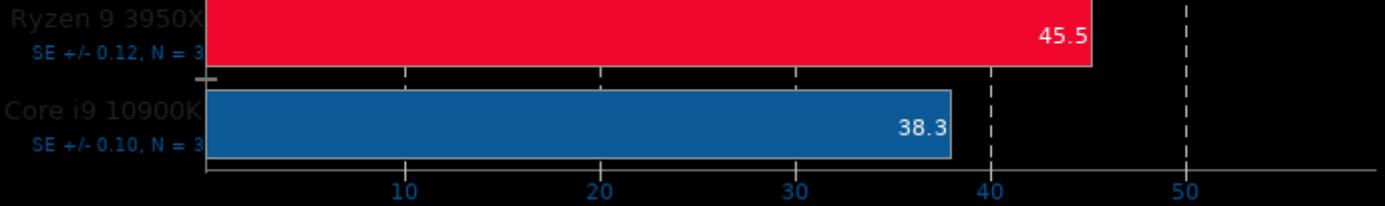


1. (CXX) g++ options: -pipe -lpthread

PyPerformance 1.0.0

Benchmark: django_template

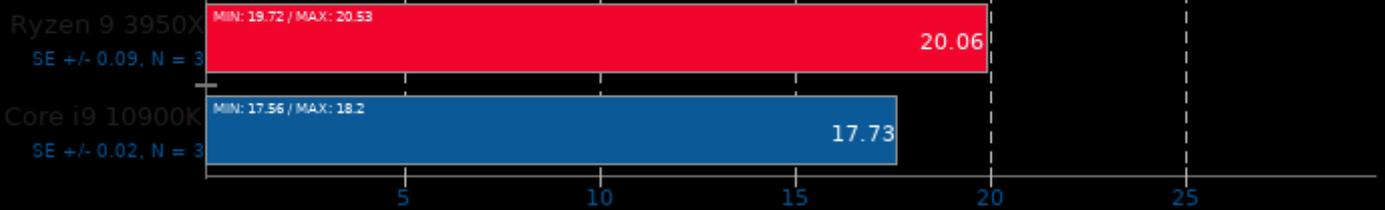
← Milliseconds, Fewer Is Better



Embree 3.9.0

Binary: Pathtracer ISPC - Model: Crown

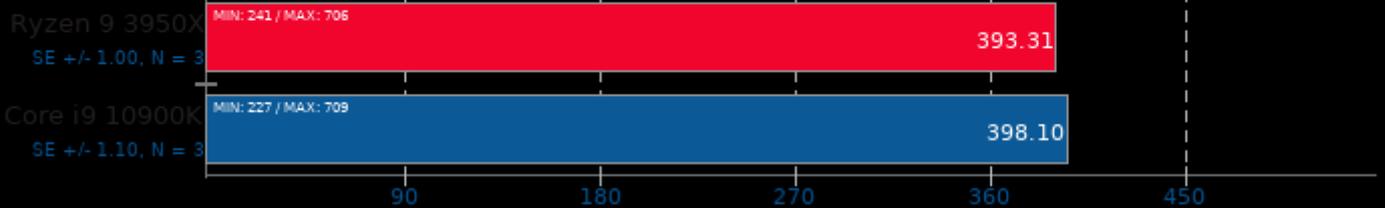
▶ Frames Per Second, More Is Better



Xonotic 0.8.2

Resolution: 3840 x 2160 - Effects Quality: Ultra

▶ Frames Per Second, More Is Better



Polyhedron Fortran Benchmarks

Benchmark: doduc

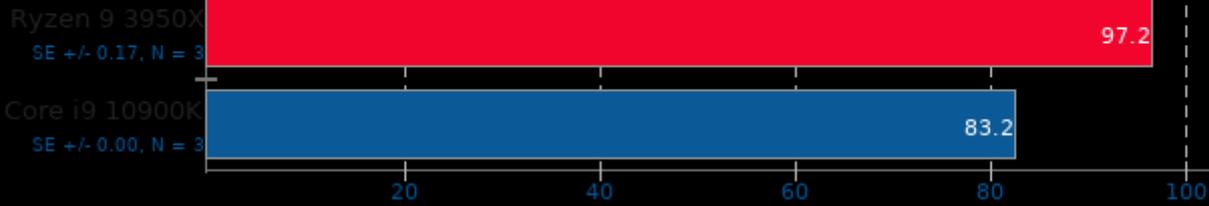
← Seconds, Fewer Is Better



PyPerformance 1.0.0

Benchmark: crypto_pyaes

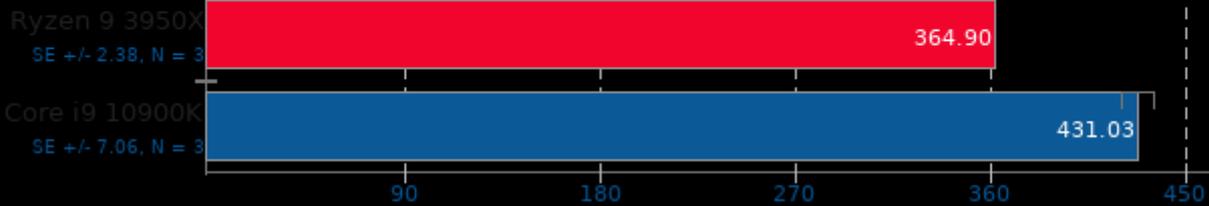
← Milliseconds, Fewer Is Better



Tesseract 2014-05-12

Resolution: 3840 x 2160

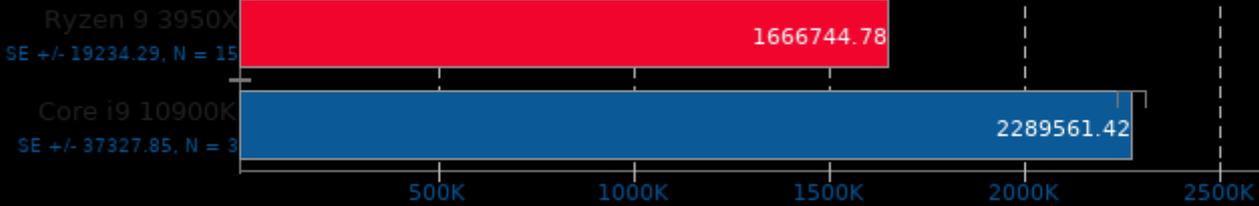
▶ Frames Per Second, More Is Better



Redis 5.0.5

Test: LPUSH

▶ Requests Per Second, More Is Better



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

Embree 3.9.0

Binary: Pathtracer - Model: Asian Dragon

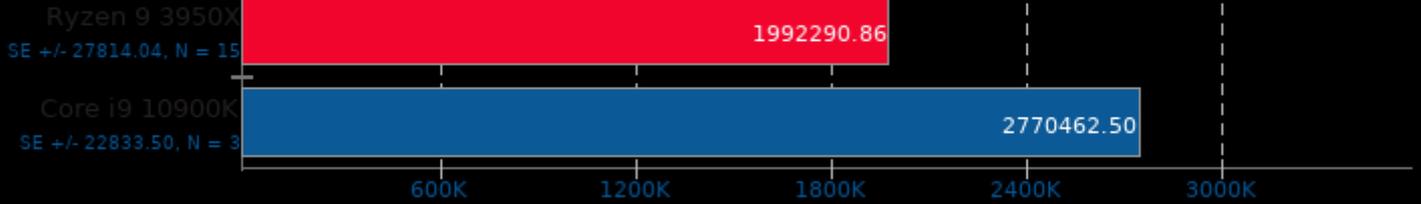
▶ Frames Per Second, More Is Better



Redis 5.0.5

Test: SET

Requests Per Second, More Is Better



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

Numenta Anomaly Benchmark 1.1

Detector: Bayesian Changepoint

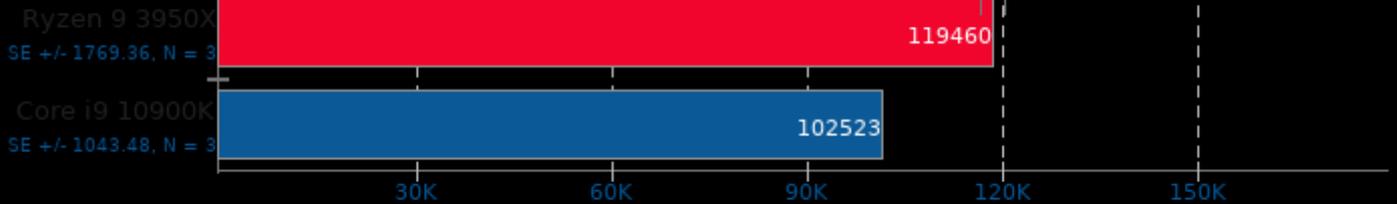
Seconds, Fewer Is Better



Cpuminer-Opt 3.8.8.1

Algorithm: sha256t

kH/s - Hash Speed, More Is Better

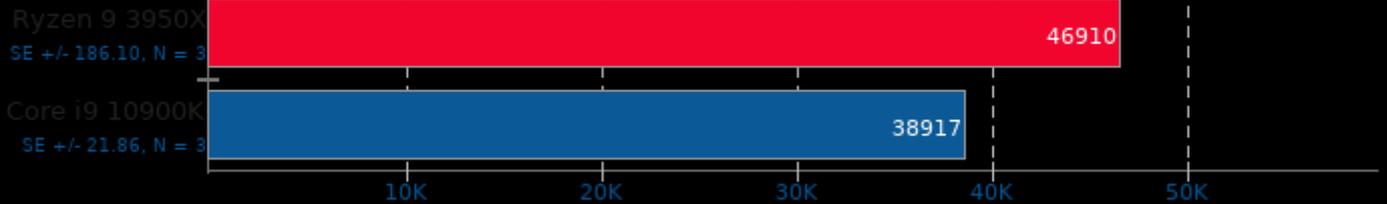


1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

Cpuminer-Opt 3.8.8.1

Algorithm: lbry

kH/s - Hash Speed, More Is Better

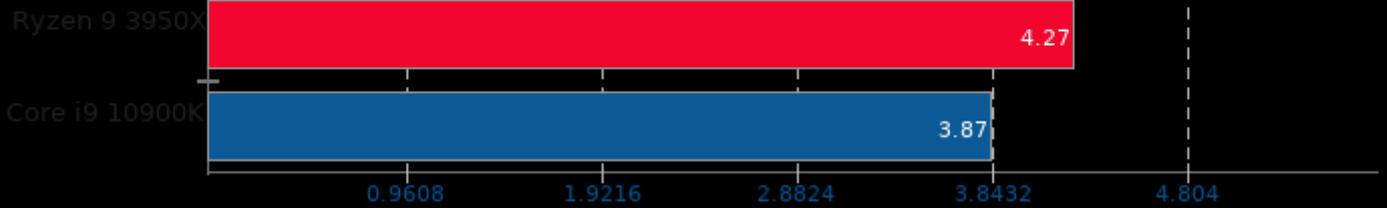


1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

Polyhedron Fortran Benchmarks

Benchmark: mdbx

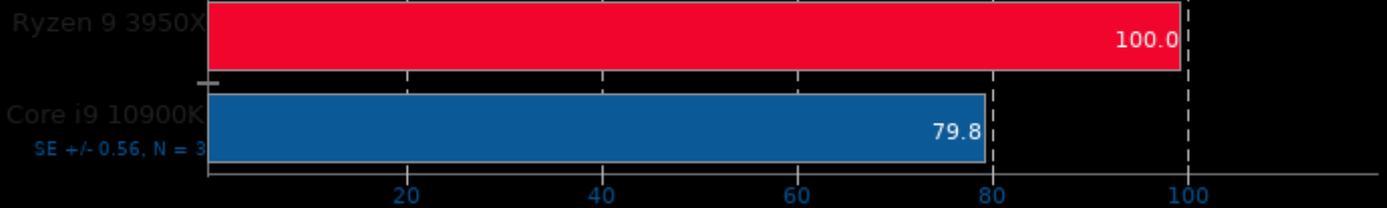
← Seconds, Fewer Is Better



PyPerformance 1.0.0

Benchmark: chaos

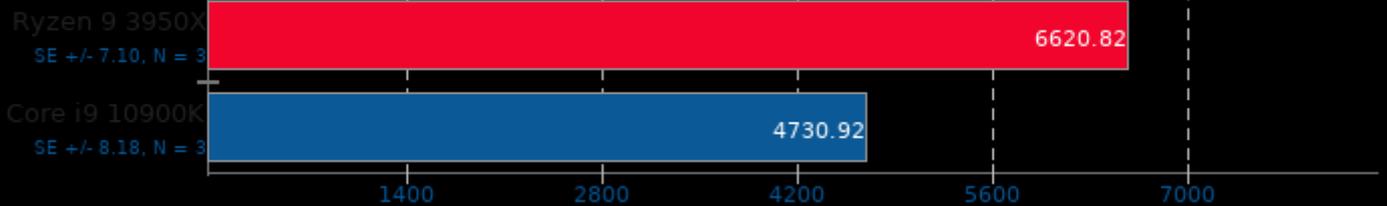
← Milliseconds, Fewer Is Better



Stress-NG 0.11.07

Test: CPU Stress

▶ Bogo Ops/s, More Is Better

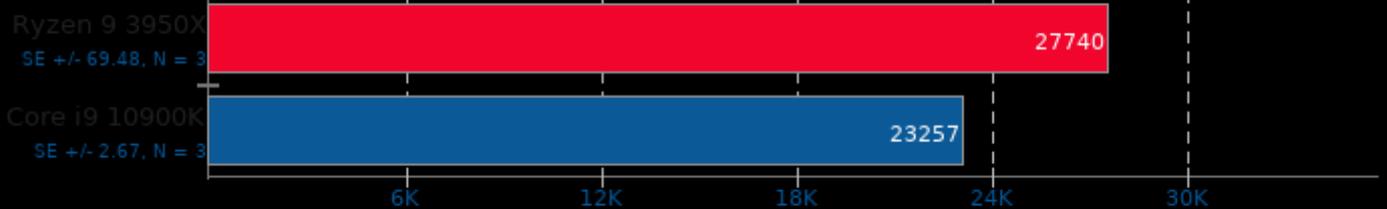


1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lz -ldl -lpthread -lc

John The Ripper 1.9.0-jumbo-1

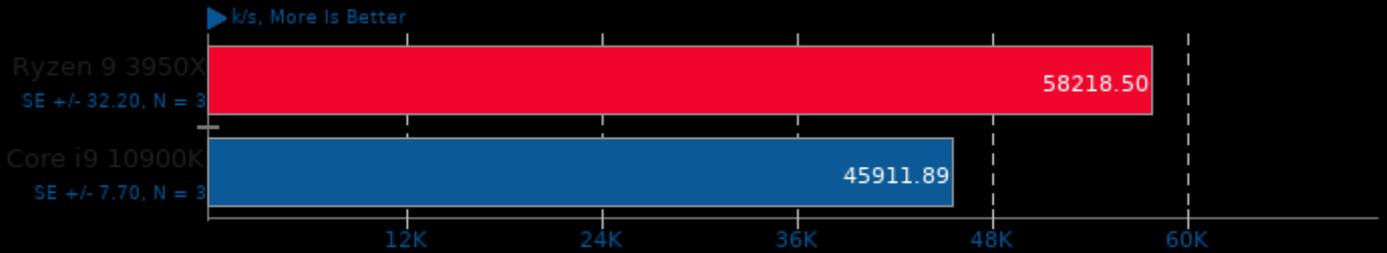
Test: Blowfish

▶ Real C/S, More Is Better



1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt -lbz2

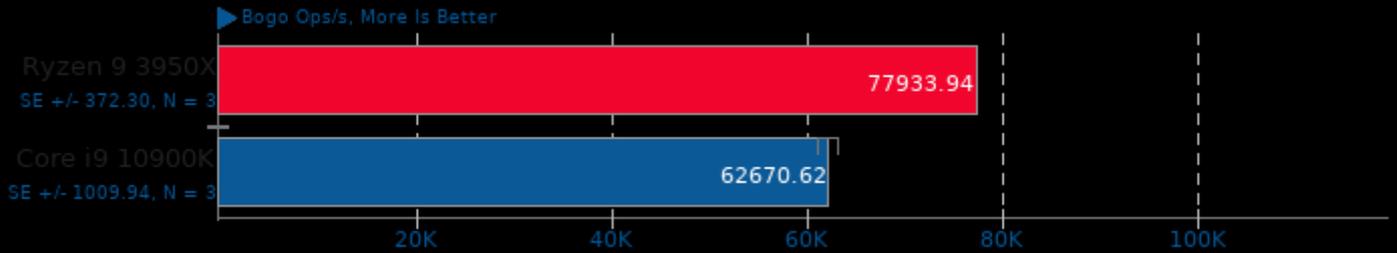
Aircrack-ng 1.5.2



1. (CXX) g++ options: -O3 -fvisibility=hidden -masm=intel -fcommon -rdynamic -lpthread -lz -lcrypto -lhwloc -ldl -lm -pthread

Stress-NG 0.11.07

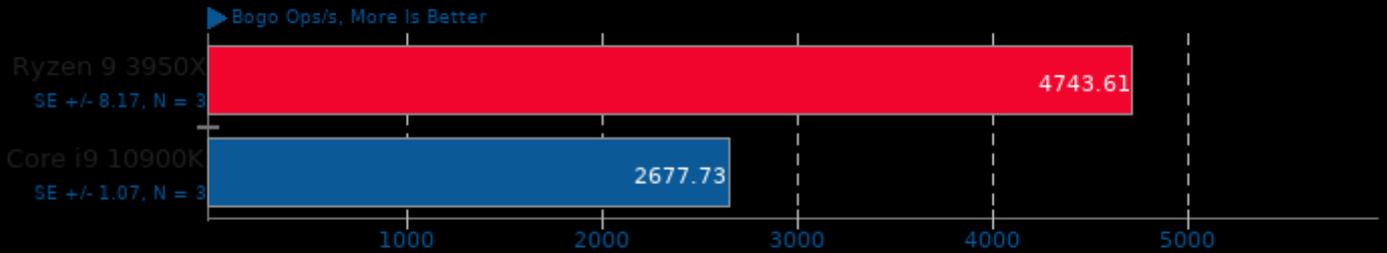
Test: Matrix Math



1. (C) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lz -ldl -lpthread -lc

Stress-NG 0.11.07

Test: Crypto



1. (C) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lz -ldl -lpthread -lc

Stress-NG 0.11.07

Test: Socket Activity

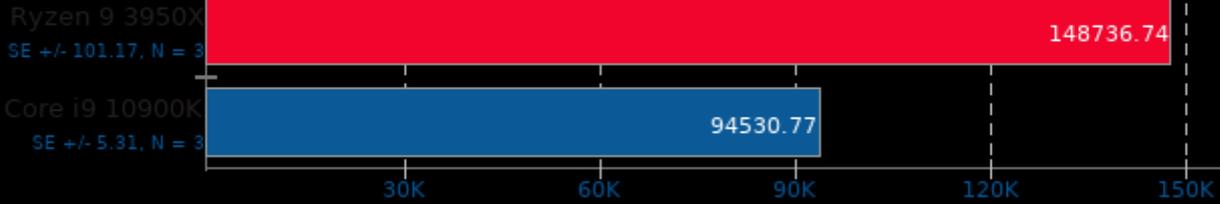


1. (C) gcc options: -O2 -std=gnu99 -lm -laio -lcrypt -lrt -lz -ldl -lpthread -lc

Stress-NG 0.11.07

Test: Vector Math

► Bogo Ops/s, More Is Better

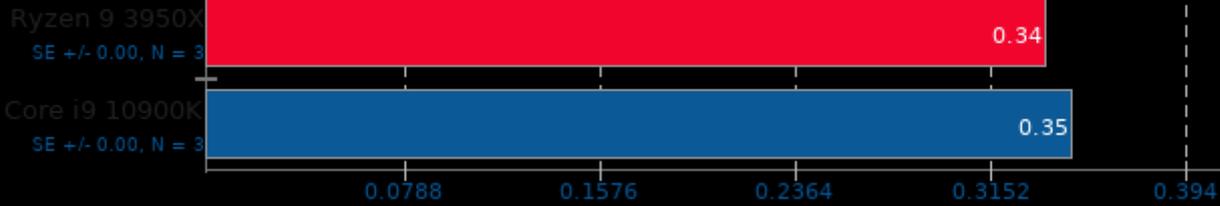


1. (ICC) gcc options: -O2 -std=gnu99 -lm -lalo -lcrypt -lrt -lz -ldl -lpthread -lc

AOM AV1 2.0

Encoder Mode: Speed 0 Two-Pass

► Frames Per Second, More Is Better

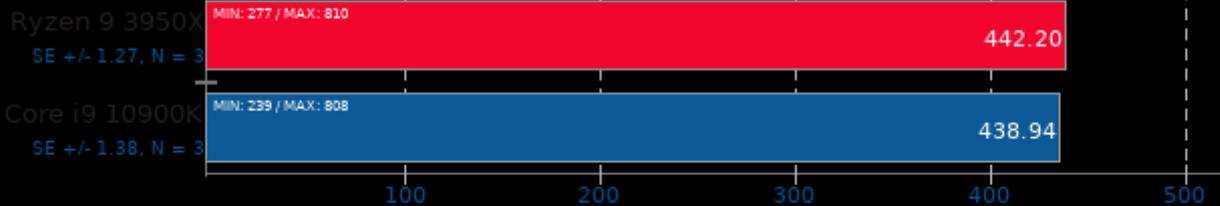


1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

Xonotic 0.8.2

Resolution: 3840 x 2160 - Effects Quality: High

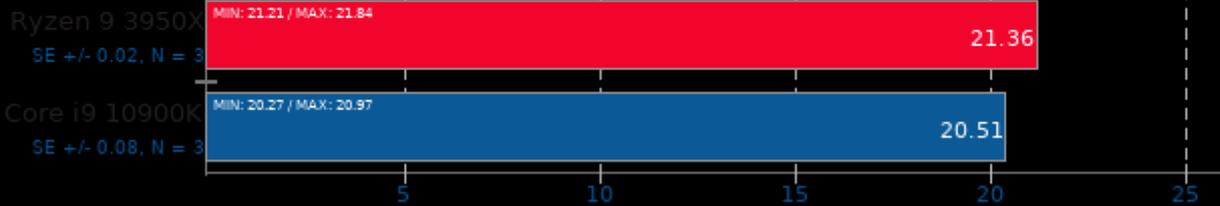
► Frames Per Second, More Is Better



Embree 3.9.0

Binary: Pathtracer ISPC - Model: Asian Dragon

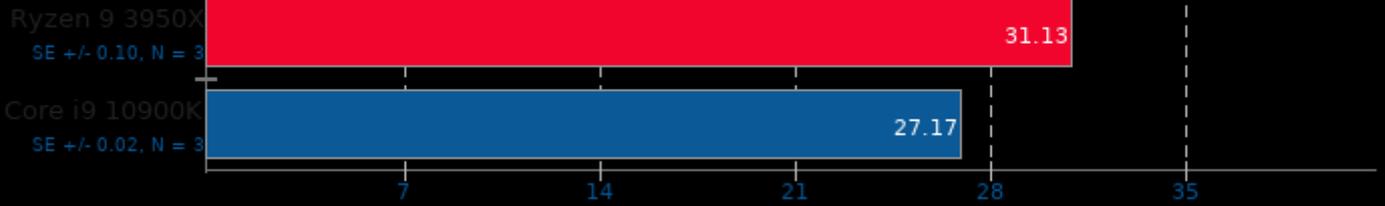
► Frames Per Second, More Is Better



AOBench

Size: 2048 x 2048 - Total Time

← Seconds, Fewer Is Better

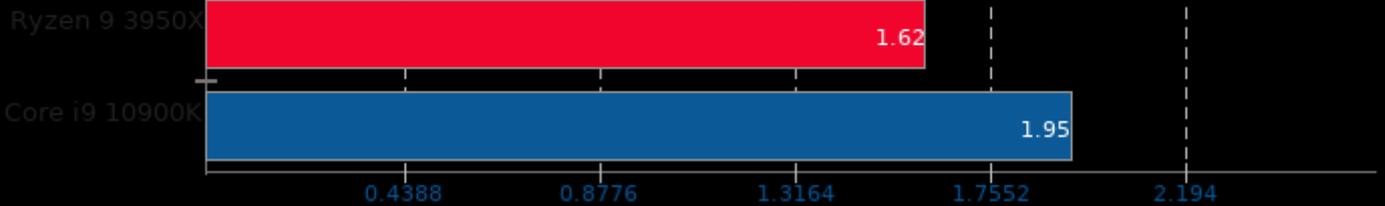


1. (CC) gcc options: -lm -O3

Polyhedron Fortran Benchmarks

Benchmark: air

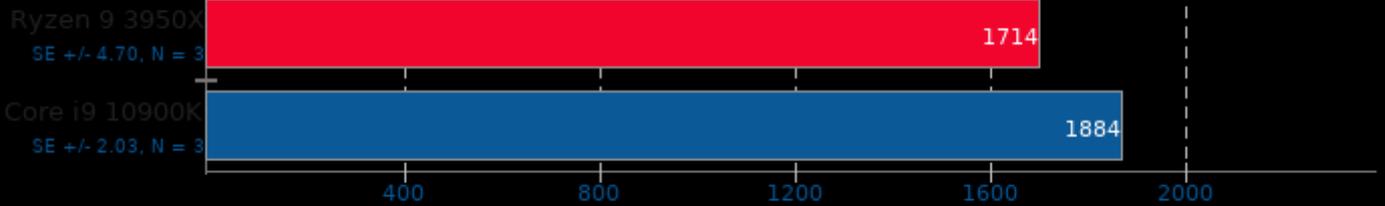
← Seconds, Fewer Is Better



Izbench 1.8

Test: Zstd 8 - Process: Decompression

▶ MB/s, More Is Better

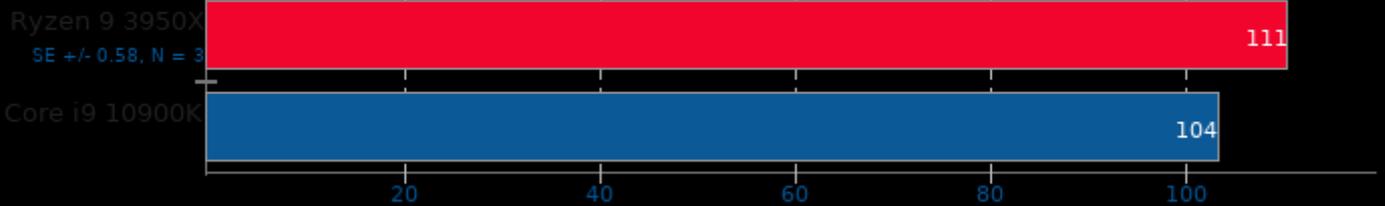


1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

Izbench 1.8

Test: Zstd 8 - Process: Compression

▶ MB/s, More Is Better

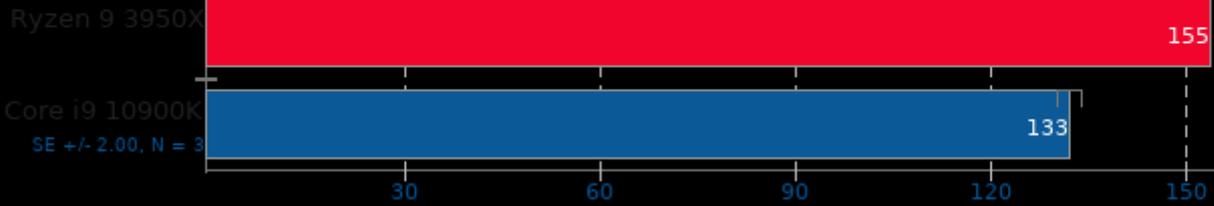


1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

PyPerformance 1.0.0

Benchmark: regex_compile

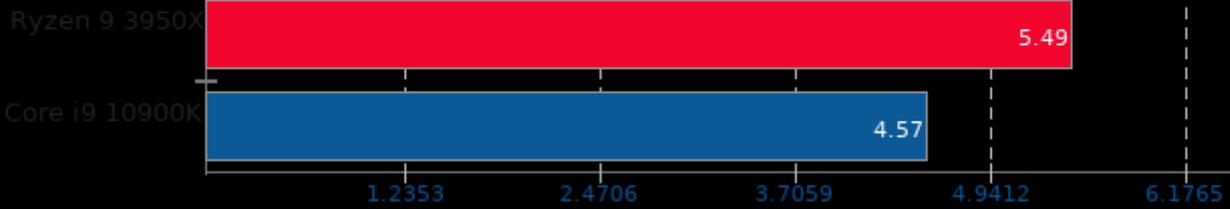
← Milliseconds, Fewer Is Better



Polyhedron Fortran Benchmarks

Benchmark: aermod

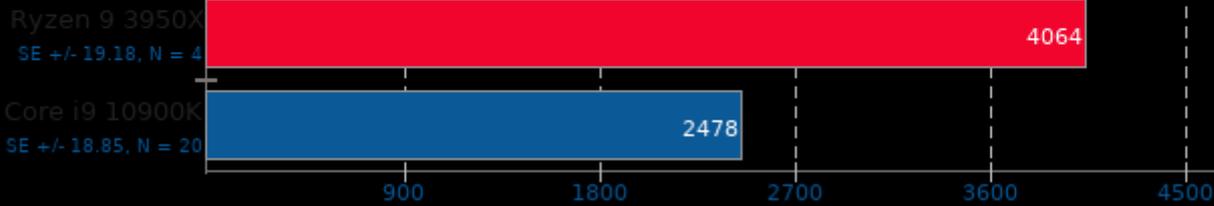
← Seconds, Fewer Is Better



DaCapo Benchmark 9.12-MR1

Java Test: Tradebeans

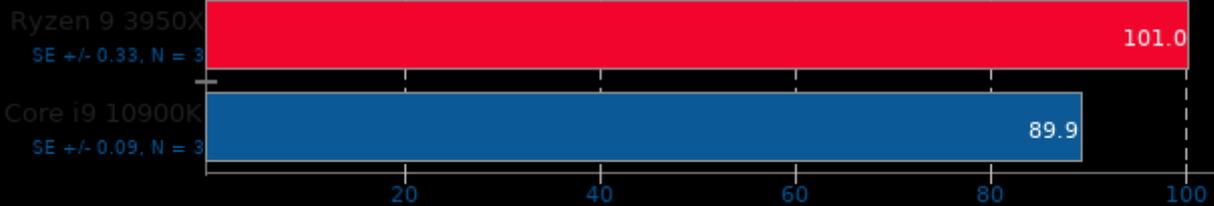
← msec, Fewer Is Better



PyPerformance 1.0.0

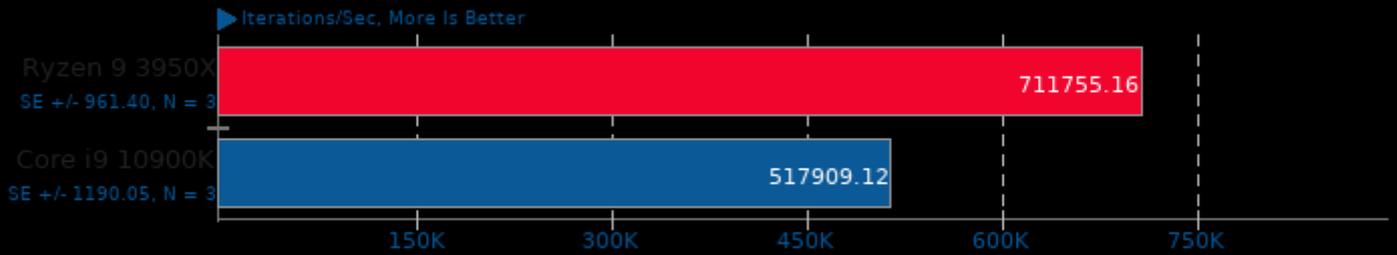
Benchmark: nbody

← Milliseconds, Fewer Is Better



Coremark 1.0

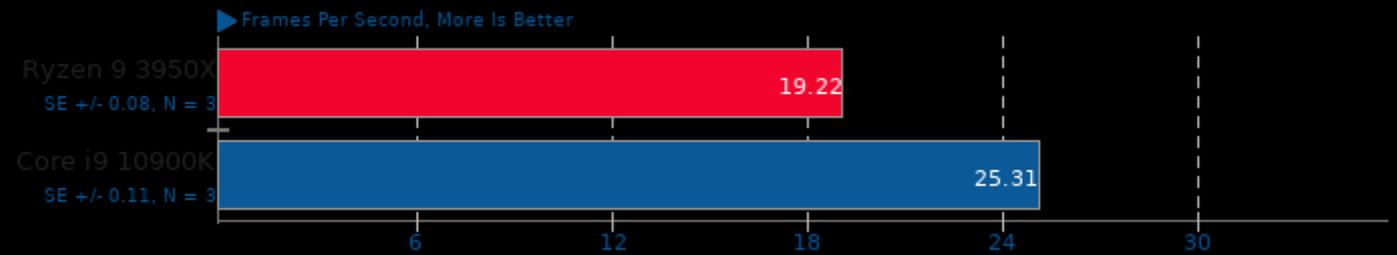
CoreMark Size 666 - Iterations Per Second



1. (CC) gcc options: -O2 -lrt -lrt

AOM AV1 2.0

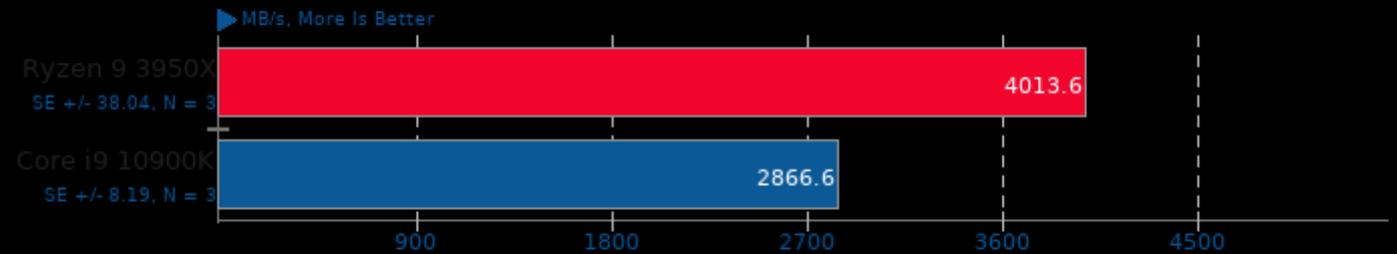
Encoder Mode: Speed 6 Realtime



1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -pthread

Zstd Compression 1.4.5

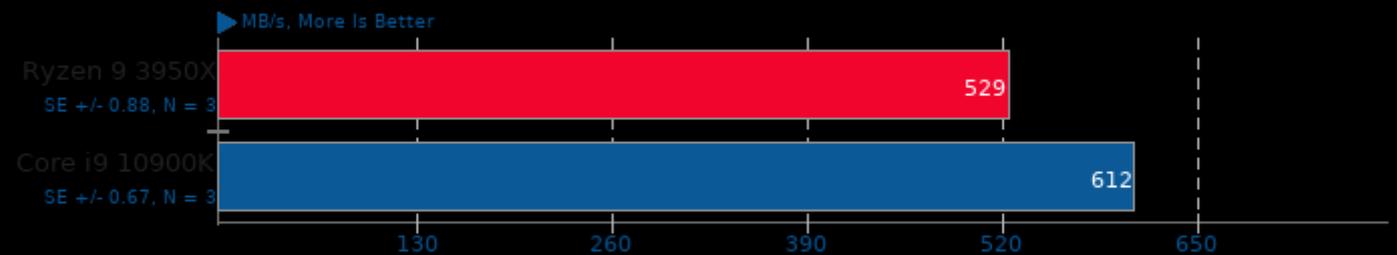
Compression Level: 3



1. (CC) gcc options: -O3 -pthread -lz -lzma

Izbench 1.8

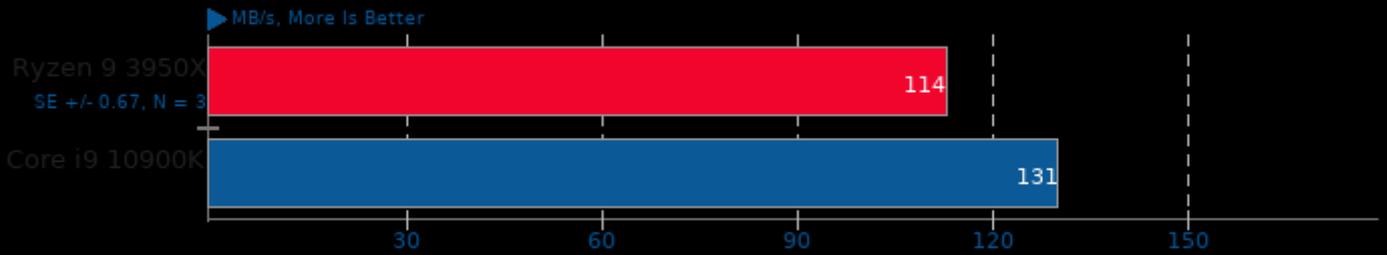
Test: Crush 0 - Process: Decompression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

Izbench 1.8

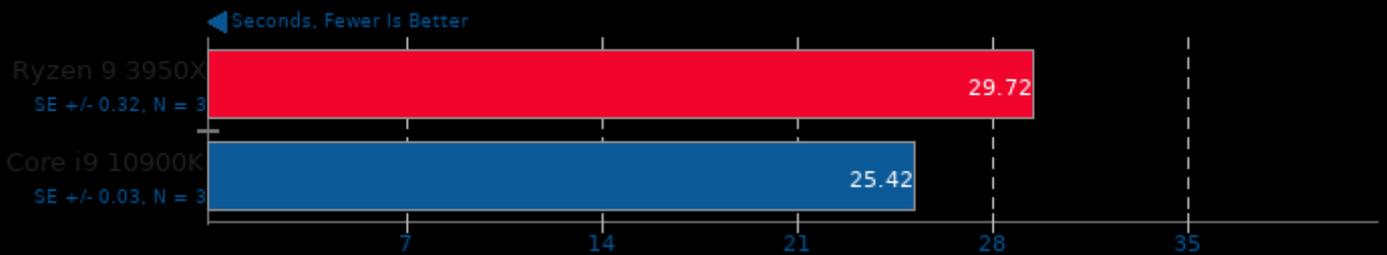
Test: Crush 0 - Process: Compression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

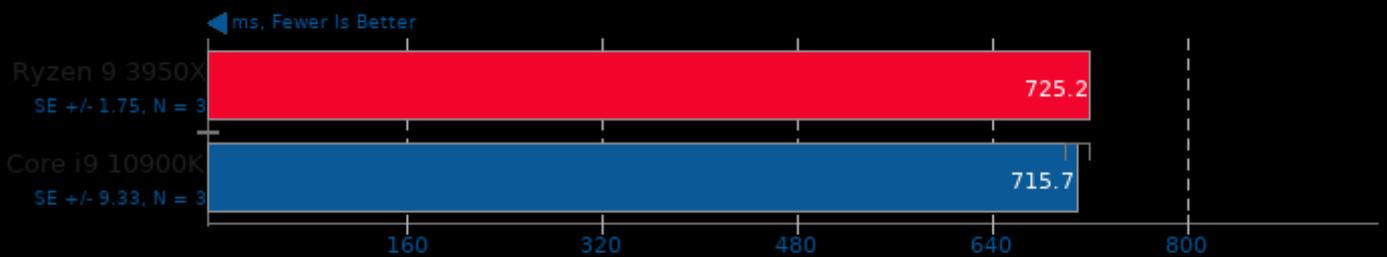
GEGL

Operation: Reflect



Selenium

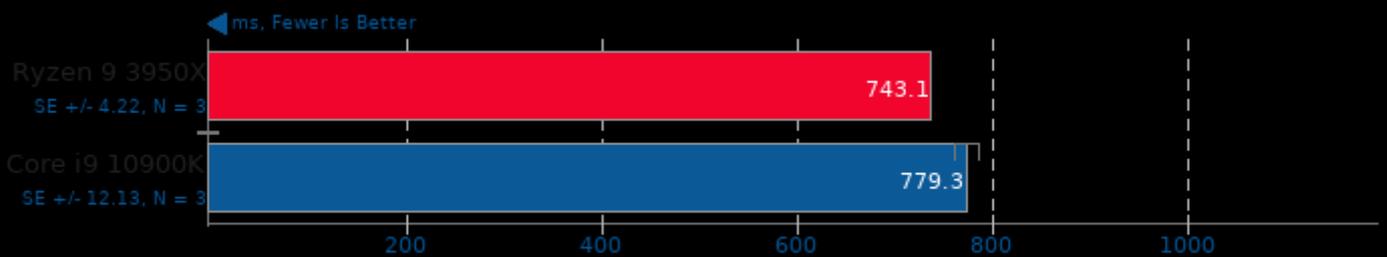
Benchmark: Kraken - Browser: Firefox



1. firefox 76.0.1

Selenium

Benchmark: Kraken - Browser: Google Chrome

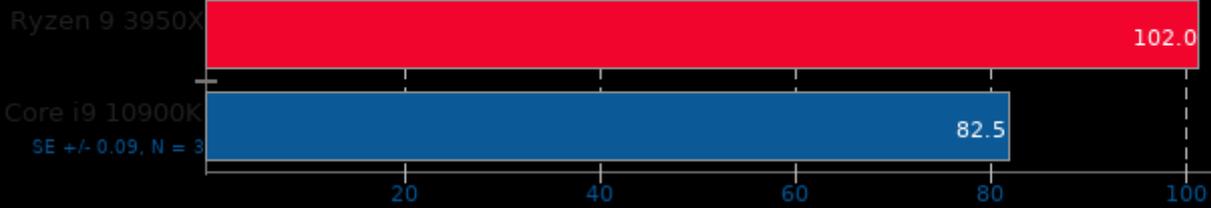


1. chrome 83.0.4103.61

PyPerformance 1.0.0

Benchmark: float

← Milliseconds, Fewer Is Better



PyPerformance 1.0.0

Benchmark: json_loads

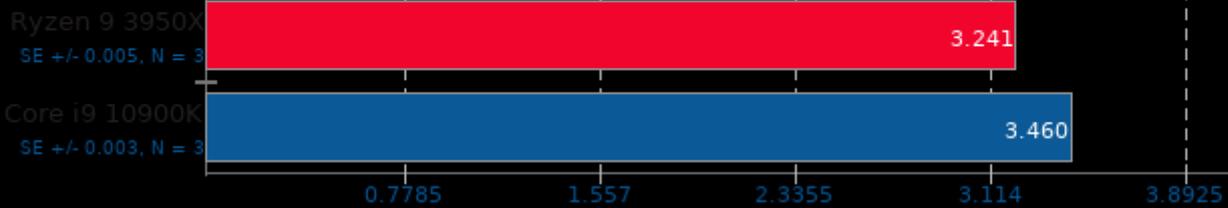
← Milliseconds, Fewer Is Better



rav1e 0.3.0

Speed: 10

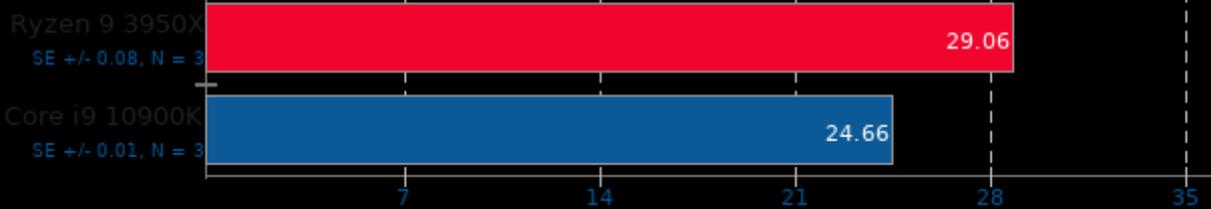
▶ Frames Per Second, More Is Better



GEGL

Operation: Tile Glass

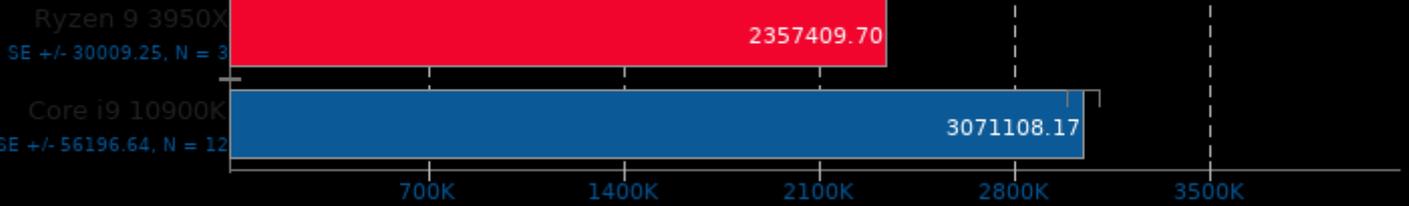
← Seconds, Fewer Is Better



Redis 5.0.5

Test: SADD

Requests Per Second, More Is Better



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

SMHasher 2020-02-29

Hash: t1ha0_aes_avx2

Cycles/Hash, Fewer Is Better



1. (CXX) g++ options: -march=native -O3 -lpthread

SMHasher 2020-02-29

Hash: t1ha0_aes_avx2

MiB/sec, More Is Better

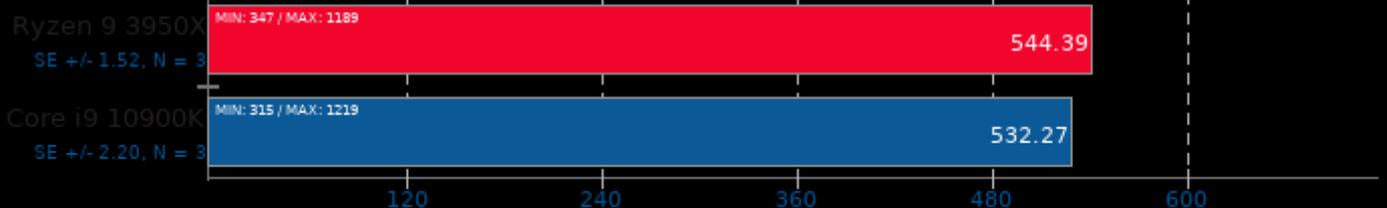


1. (CXX) g++ options: -march=native -O3 -lpthread

Xonotic 0.8.2

Resolution: 3840 x 2160 - Effects Quality: Low

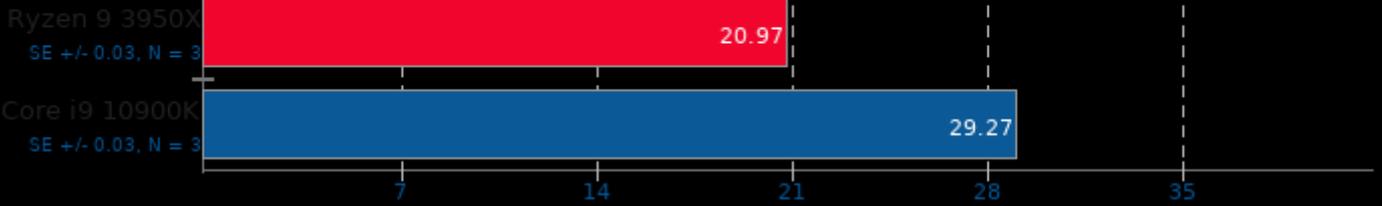
Frames Per Second, More Is Better



Timed MPlayer Compilation 1.4

Time To Compile

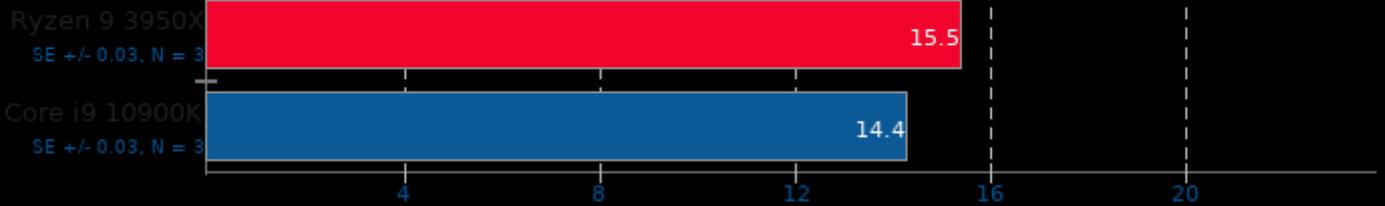
← Seconds, Fewer Is Better



PyPerformance 1.0.0

Benchmark: pathlib

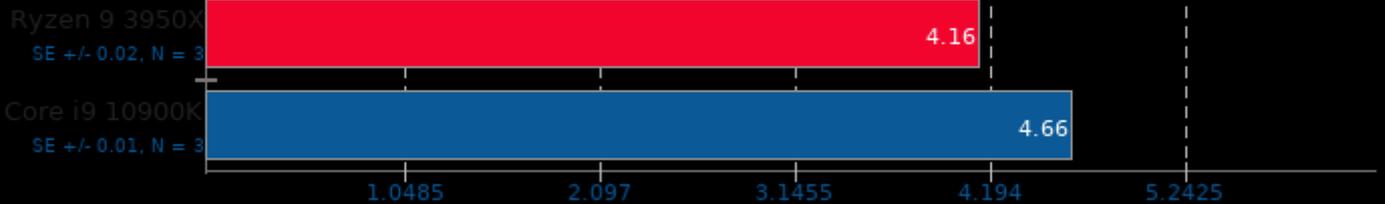
← Milliseconds, Fewer Is Better



AOM AV1 2.0

Encoder Mode: Speed 6 Two-Pass

▶ Frames Per Second, More Is Better

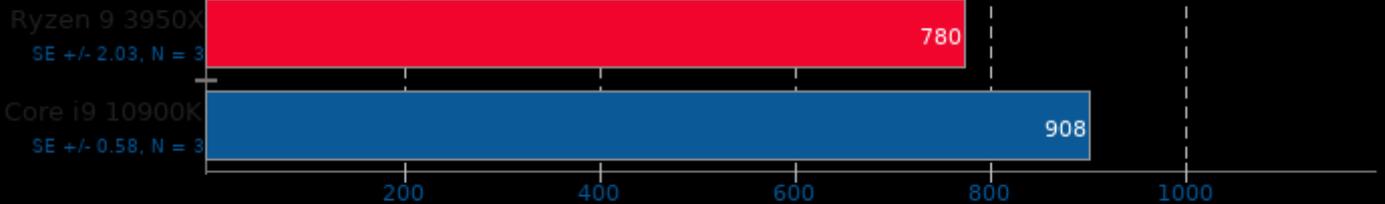


1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -pthread

Izbench 1.8

Test: Brotli 2 - Process: Decompression

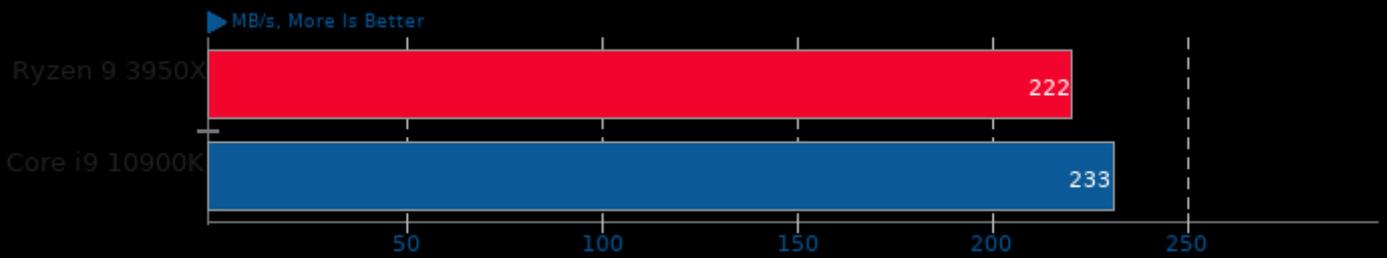
▶ MB/s, More Is Better



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

Izbench 1.8

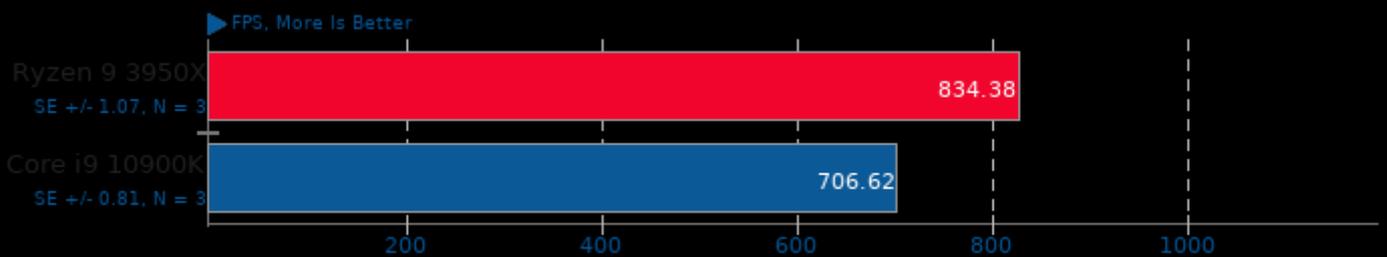
Test: Brotli 2 - Process: Compression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

TTSIOD 3D Renderer 2.3b

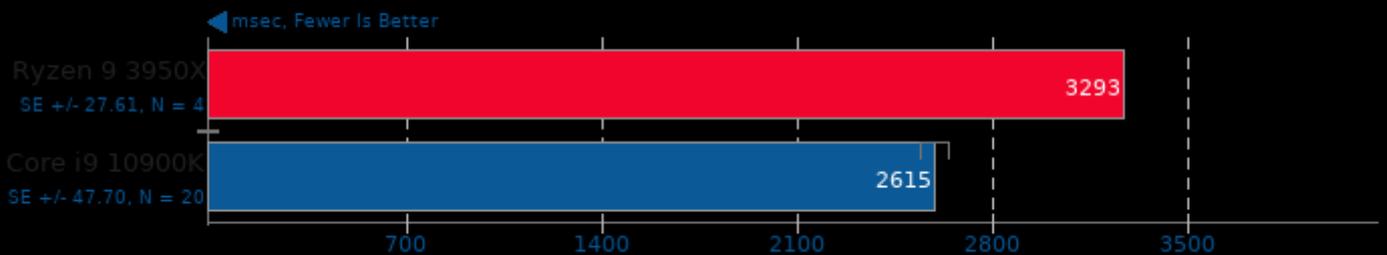
Phong Rendering With Soft-Shadow Mapping



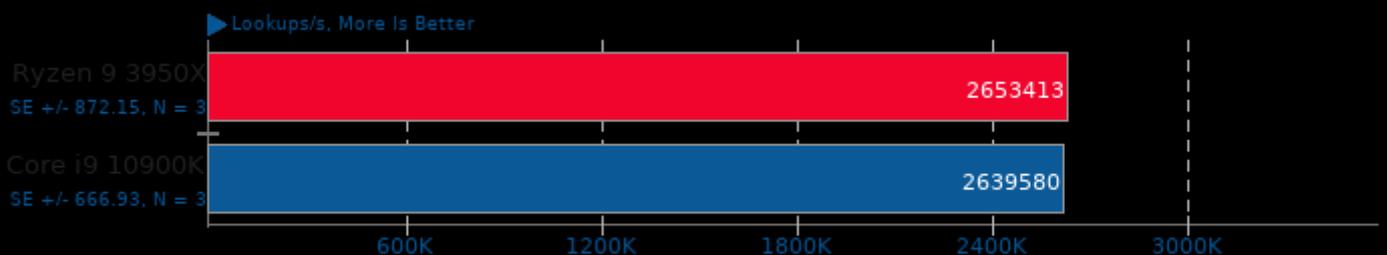
1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -fno-mipsse -mrecip -mfpmath=sse -msse2 -mssse3 -fSDI -fopenmp -fwhole-pr

DaCapo Benchmark 9.12-MR1

Java Test: H2

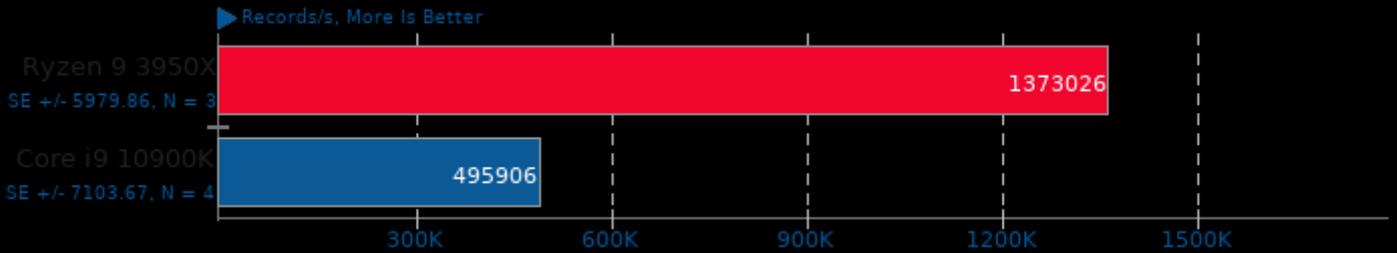


Xsbench 2017-07-06



1. (C) gcc options: -std=gnu99 -fopenmp -O3 -lm

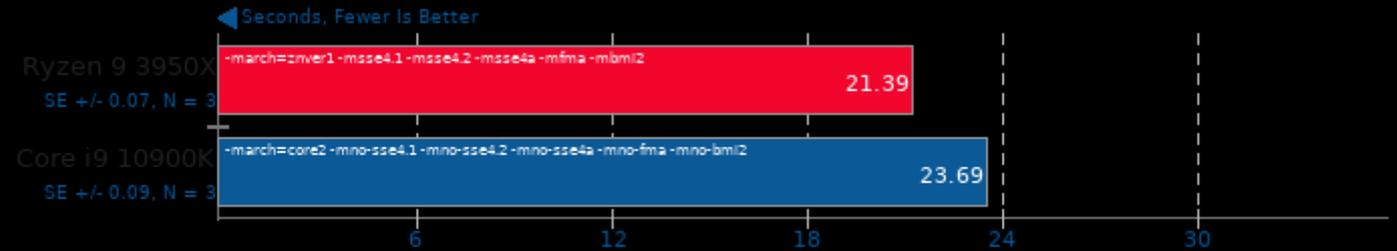
ebizzy 0.3



1. (CC) gcc options: -pthread -lthread -O3 -march=native

Tungsten Renderer 0.2.2

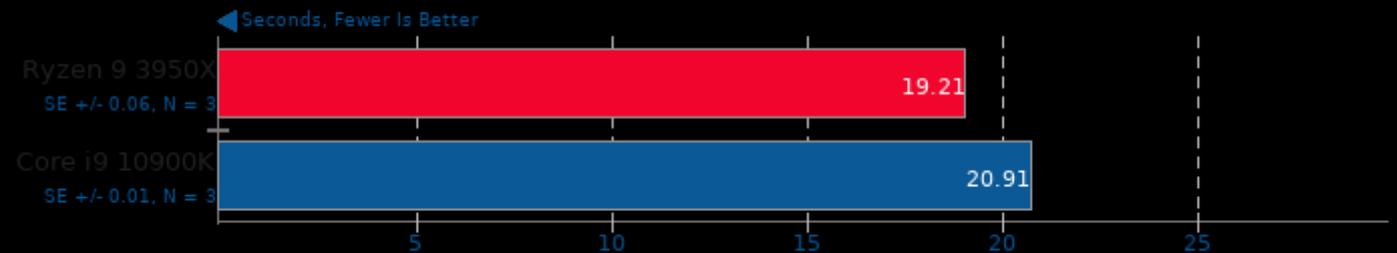
Scene: Water Caustic



1. (CXX) g++ options: -std=c++0x -msse2 -msse3 -msse3 -mno-avx -mno-avx2 -mno-xop -mno-fma4 -mno-avx512f -mno-avx512vl -mno-avx512pf -mno-

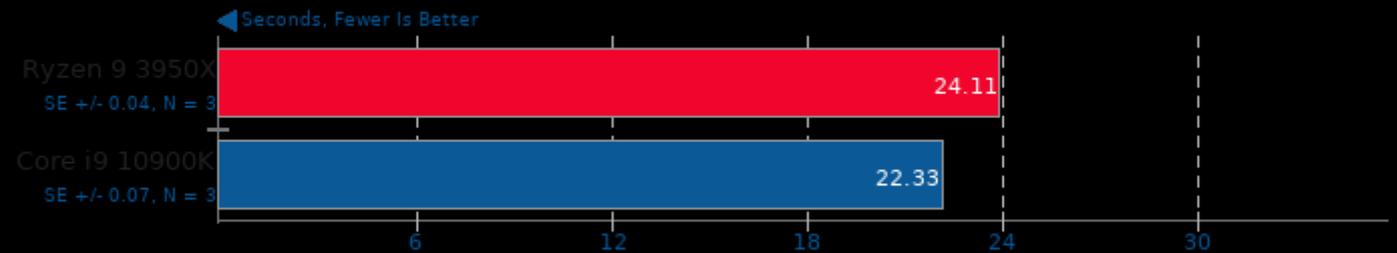
Mlpack Benchmark

Benchmark: scikit_svm



XZ Compression 5.2.4

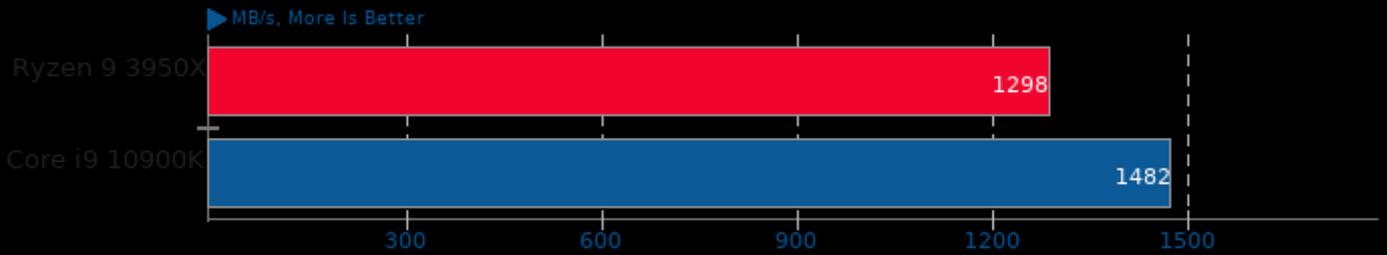
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 9



1. (CC) gcc options: -pthread -fvisibility=hidden -O2

Izbench 1.8

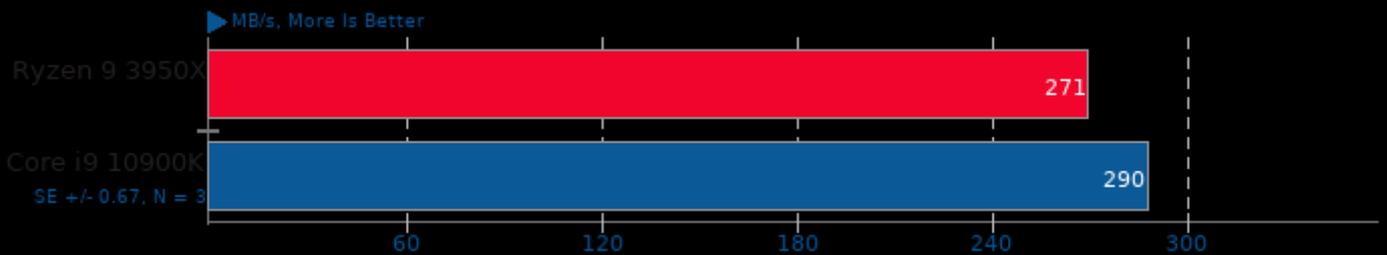
Test: Libdeflate 1 - Process: Decompression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

Izbench 1.8

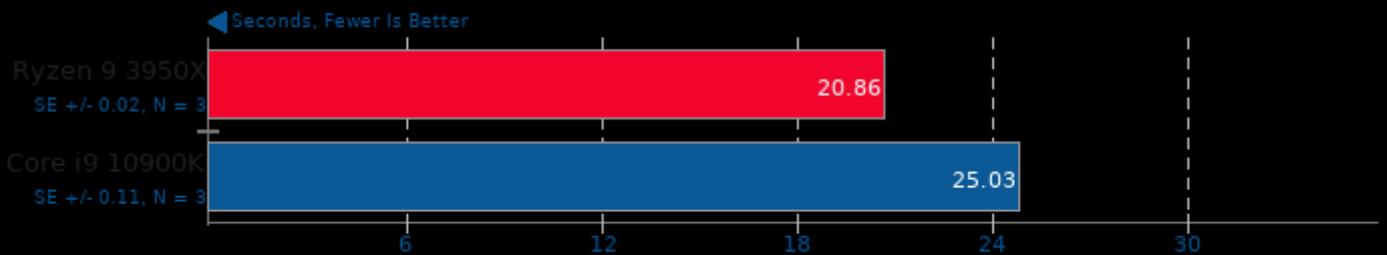
Test: Libdeflate 1 - Process: Compression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

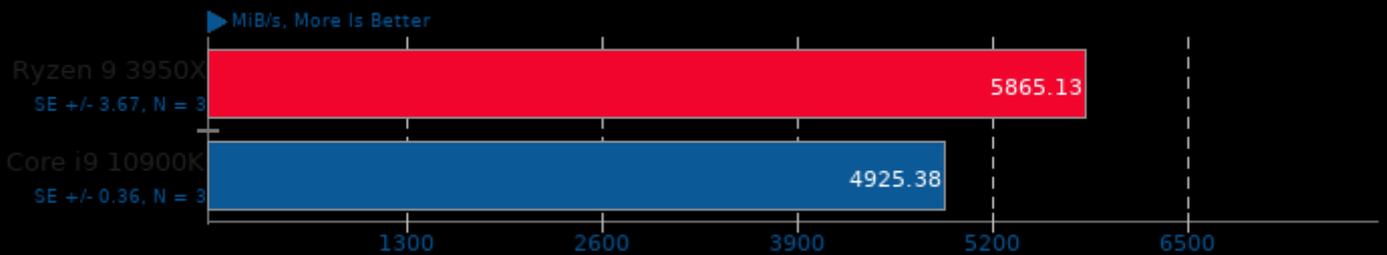
Timed ImageMagick Compilation 6.9.0

Time To Compile



Botan 2.13.0

Test: AES-256

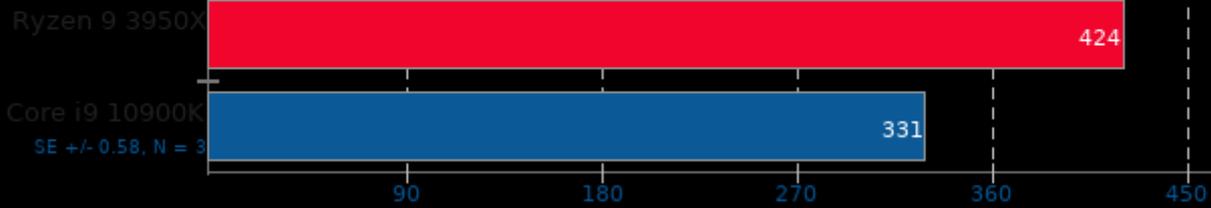


1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

PyPerformance 1.0.0

Benchmark: pickle_pure_python

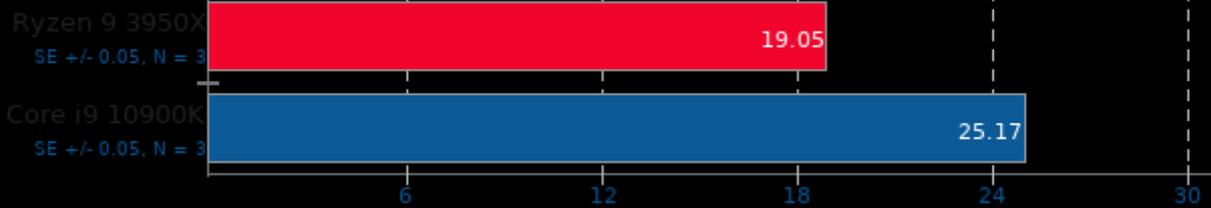
← Milliseconds, Fewer Is Better



Basis Universal 1.12

Settings: UASTC Level 2

← Seconds, Fewer Is Better

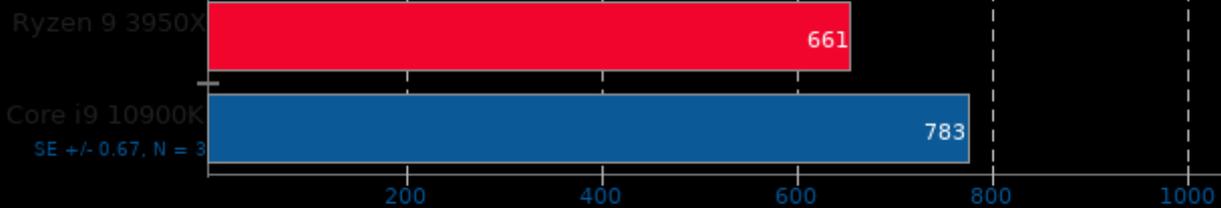


1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -pthread

Izbench 1.8

Test: Brotli 0 - Process: Decompression

▶ MB/s, More Is Better

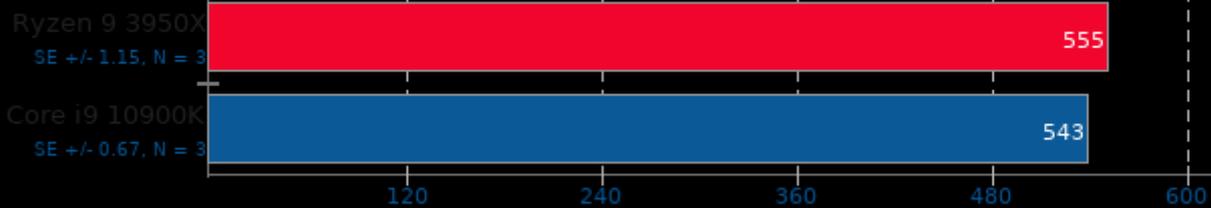


1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

Izbench 1.8

Test: Brotli 0 - Process: Compression

▶ MB/s, More Is Better

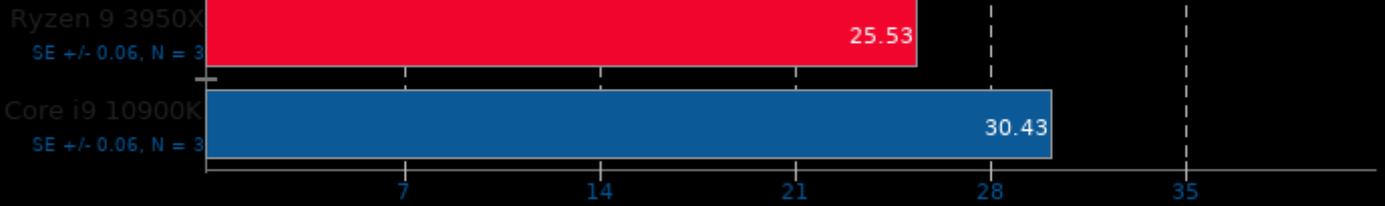


1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

VP9 libvpx Encoding 1.8.2

Speed: Speed 5

▶ Frames Per Second, More Is Better

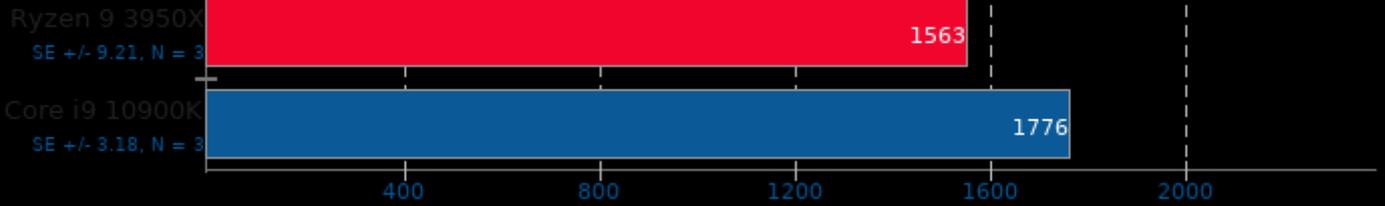


1. (CXX) g++ options: -m64 -lm -pthread -O3 -fPIC -U_FORTIFY_SOURCE -std=c++11

Izbench 1.8

Test: Zstd 1 - Process: Decompression

▶ MB/s, More Is Better

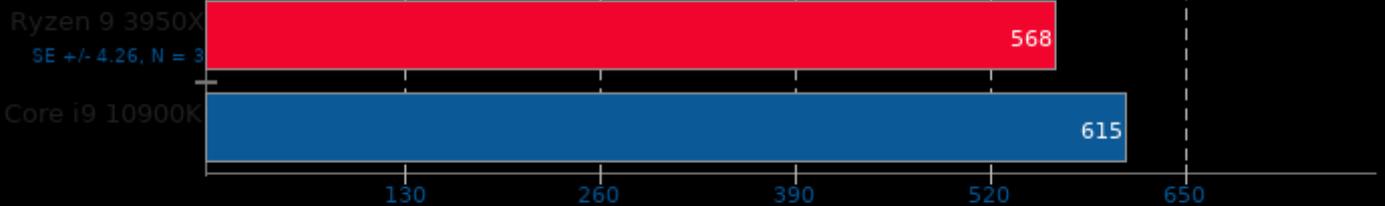


1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

Izbench 1.8

Test: Zstd 1 - Process: Compression

▶ MB/s, More Is Better

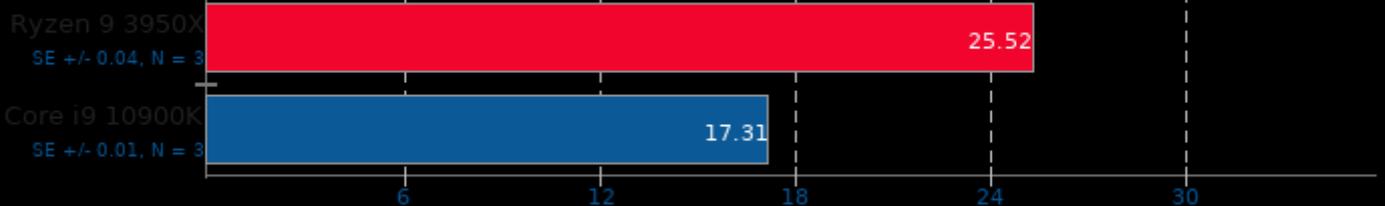


1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

Rodinia 2.4

Test: OpenMP Streamcluster

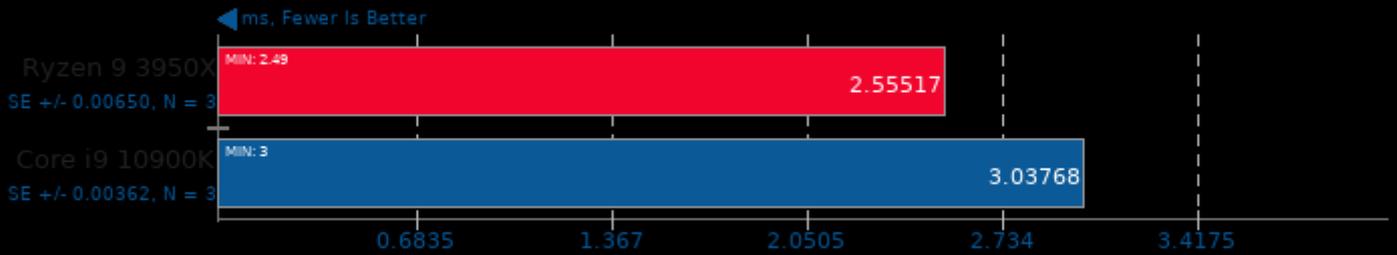
◀ Seconds, Fewer Is Better



1. (CXX) g++ options: -O2 -OpenCL

oneDNN MKL-DNN 1.3

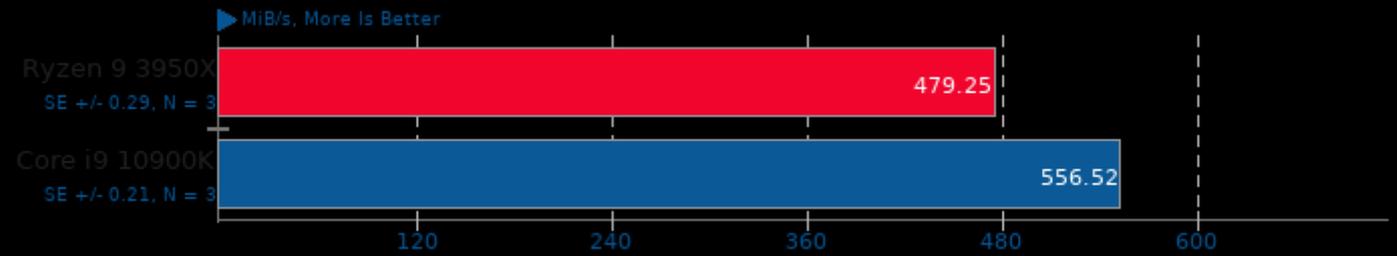
Harness: Deconvolution Batch deconv_1d - Data Type: f32



1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fpic -fopenmp -pie -pthread -ldl

Botan 2.13.0

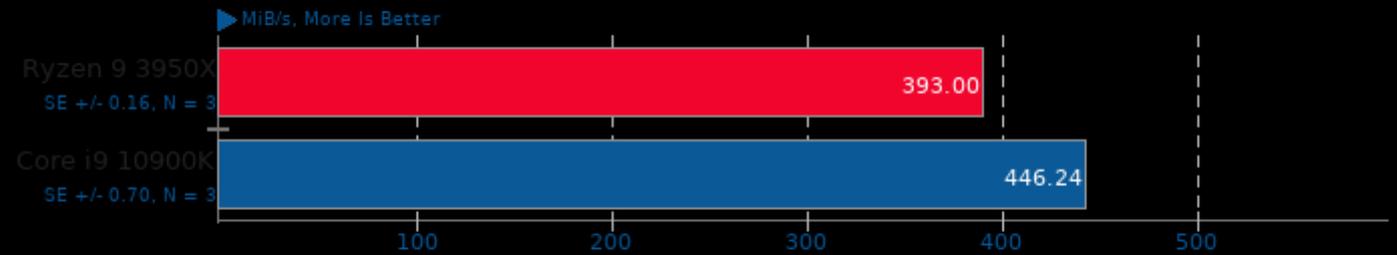
Test: Blowfish



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Botan 2.13.0

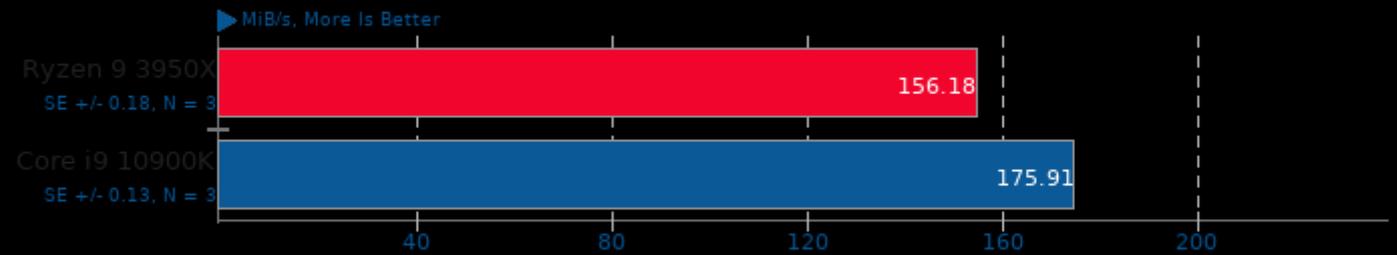
Test: Twofish



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Botan 2.13.0

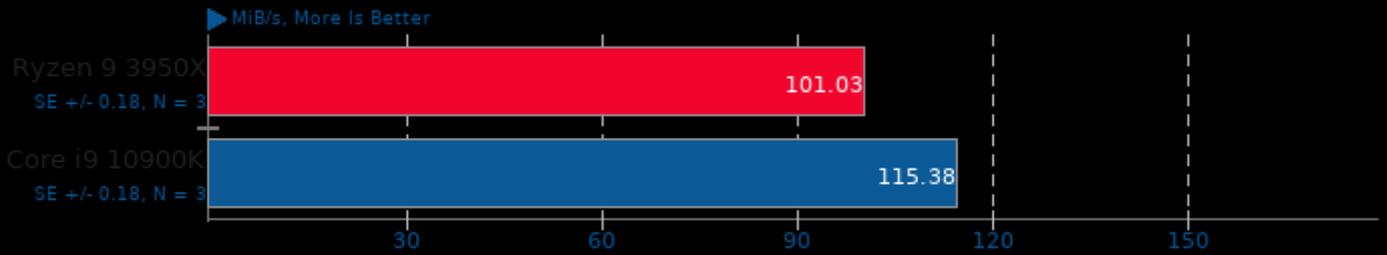
Test: CAST-256



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Botan 2.13.0

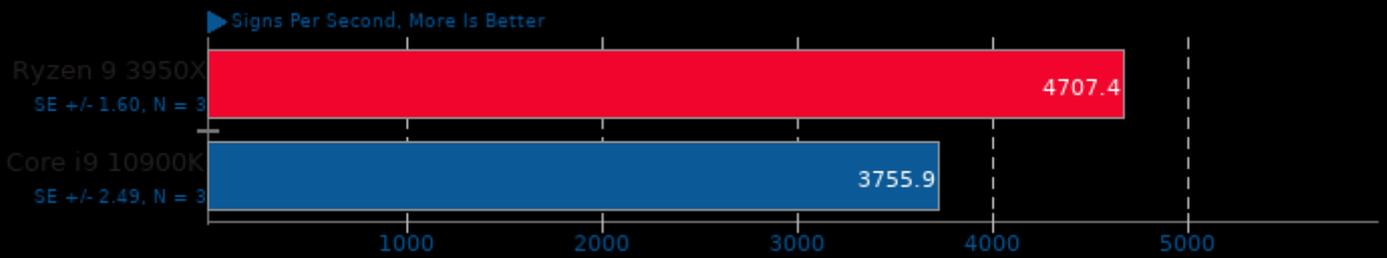
Test: KASUMI



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

OpenSSL 1.1.1

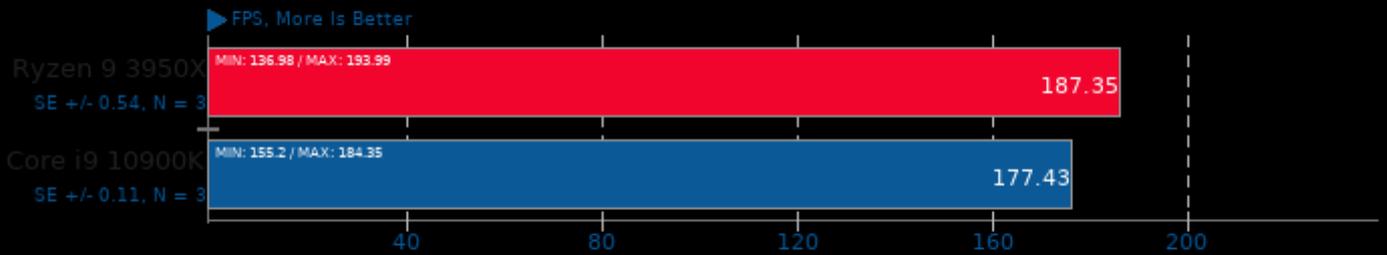
RSA 4096-bit Performance



1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

dav1d 0.6.0

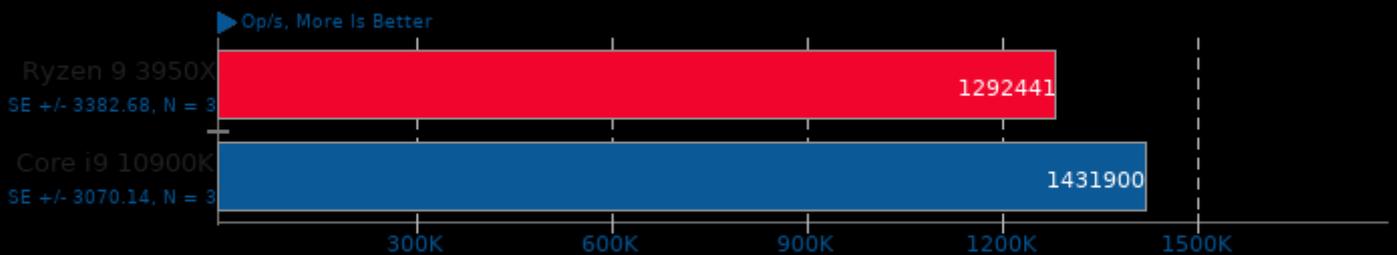
Video Input: Summer Nature 4K



1. (CC) gcc options: -pthread

Facebook RocksDB 6.3.6

Test: Sequential Fill

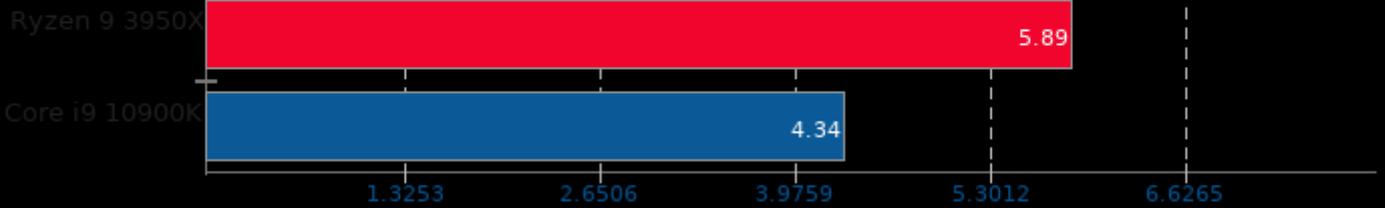


1. (CXX) g++ options: -O3 -march=native -std=c++11 -fno-builtin-memcmp -fno-rtti -rdynamic -pthread

Polyhedron Fortran Benchmarks

Benchmark: ac

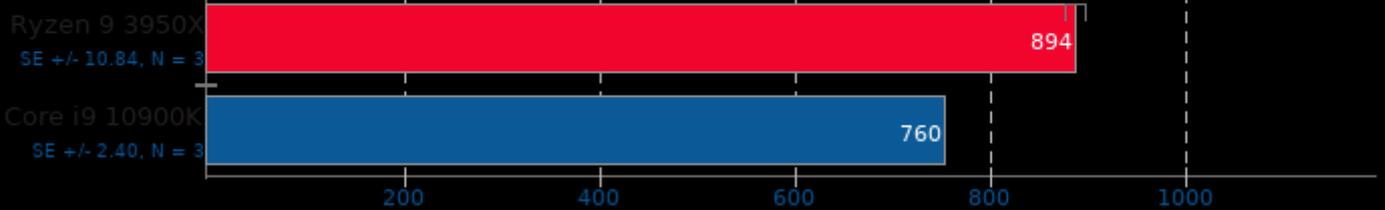
Seconds, Fewer Is Better



PyBench 2018-02-16

Total For Average Test Times

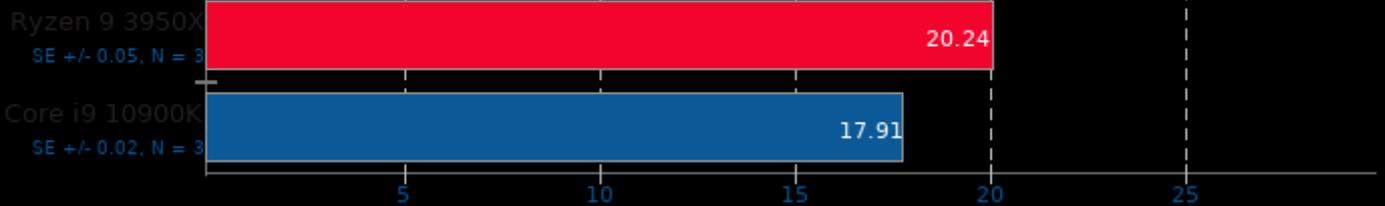
Milliseconds, Fewer Is Better



Timed Apache Compilation 2.4.41

Time To Compile

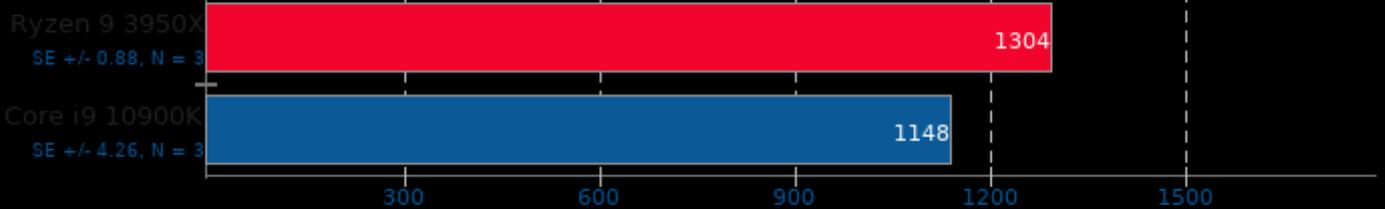
Seconds, Fewer Is Better



Selenium

Benchmark: PSPDFKit WASM - Browser: Firefox

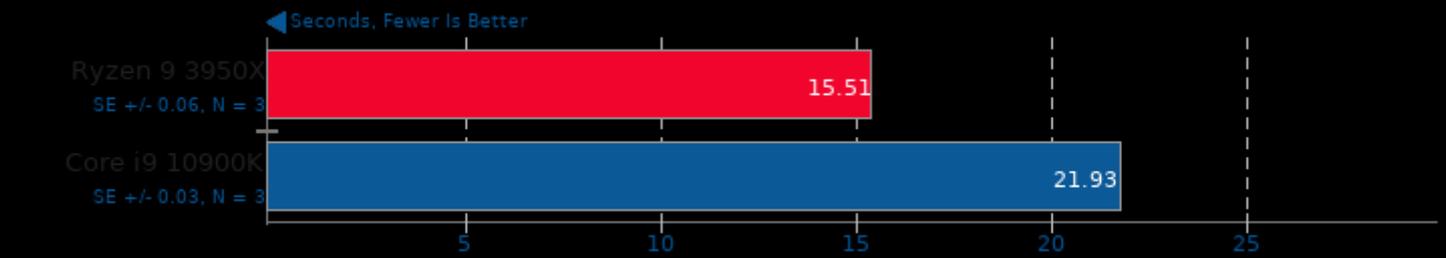
Score, Fewer Is Better



1. firefox 76.0.1

Zstd Compression 1.3.4

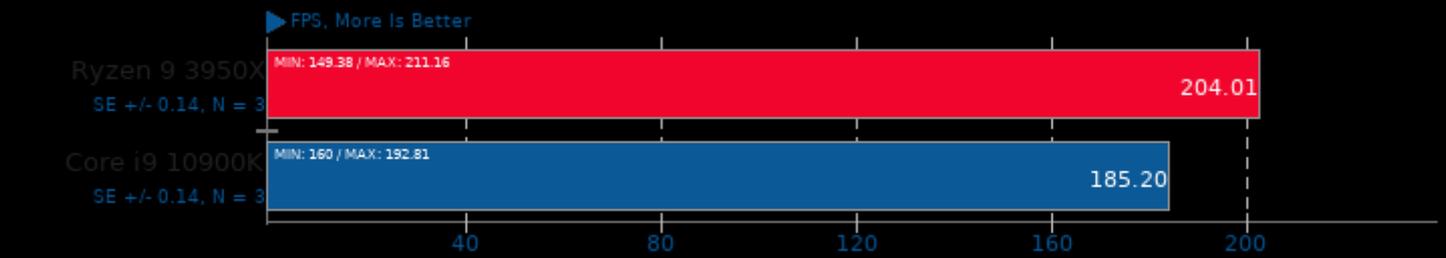
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 19



1. (CC) gcc options: -O3 -pthread -lz -llzma

dav1d 0.7.0

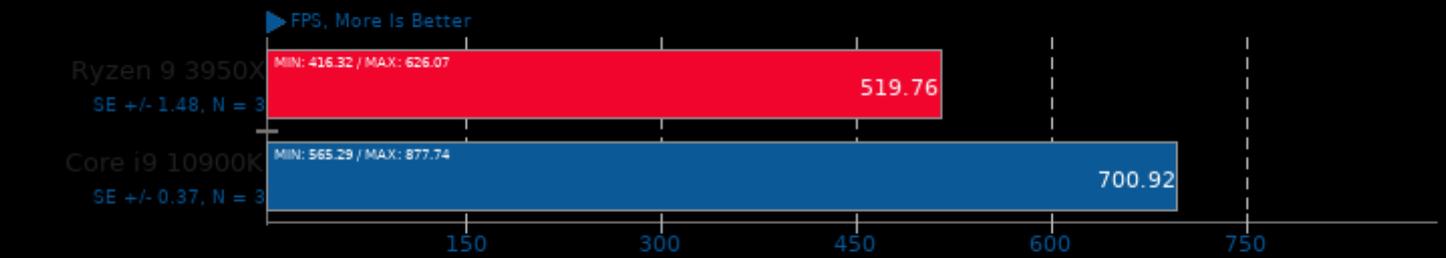
Video Input: Summer Nature 4K



1. (CC) gcc options: -pthread

dav1d 0.6.0

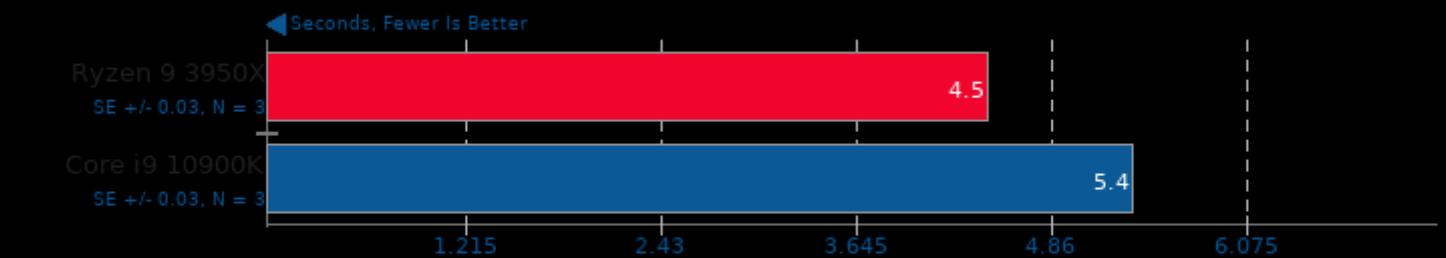
Video Input: Chimera 1080p



1. (CC) gcc options: -pthread

Selenium

Benchmark: Maze Solver - Browser: Firefox

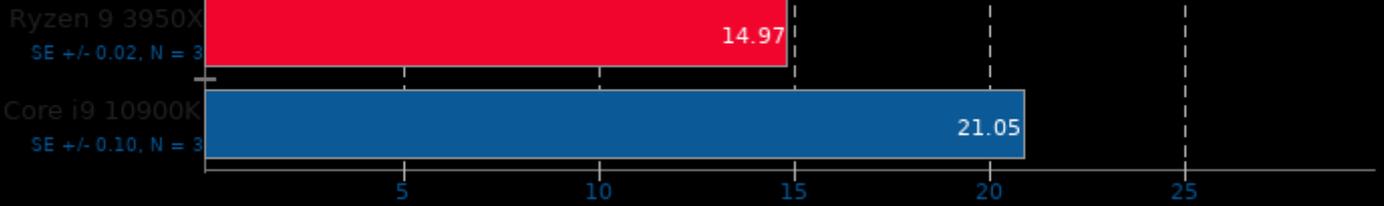


1. firefox 76.0.1

Rodinia 2.4

Test: OpenMP LavaMD

← Seconds, Fewer Is Better

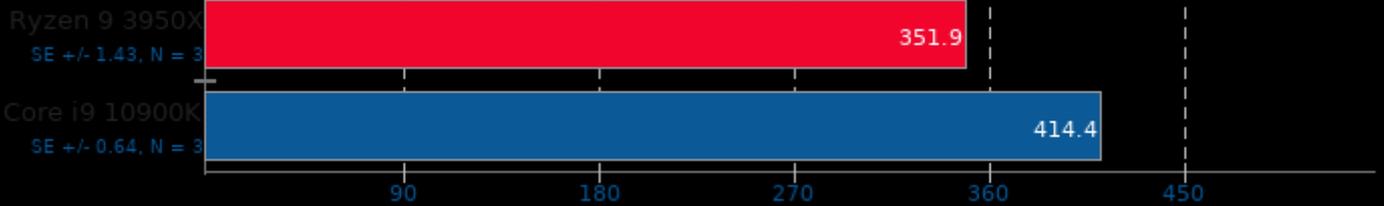


1. (CXX) g++ options: -O2 -fOpenCL

Selenium

Benchmark: WASM collisionDetection - Browser: Firefox

← ms, Fewer Is Better

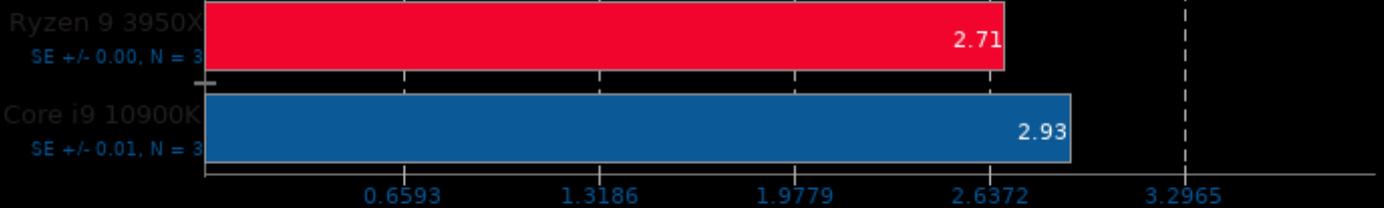


1. firefox 76.0.1

AOM AV1 2.0

Encoder Mode: Speed 4 Two-Pass

▶ Frames Per Second, More Is Better

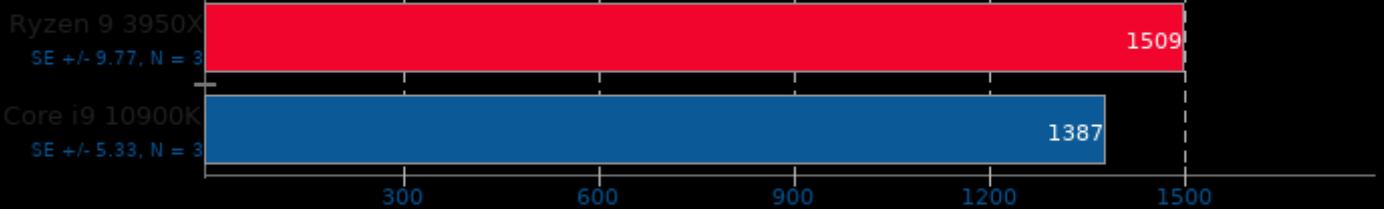


1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -pthread

Selenium

Benchmark: PSPDFKit WASM - Browser: Google Chrome

← Score, Fewer Is Better

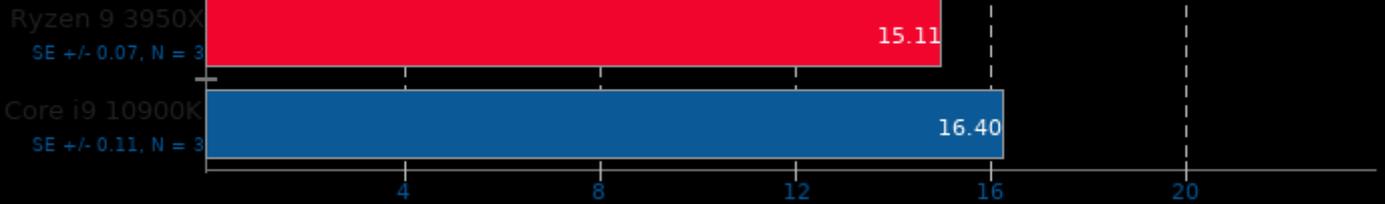


1. chrome 83.0.4103.61

Parboil 2.5

Test: OpenMP Stencil

← Seconds, Fewer Is Better

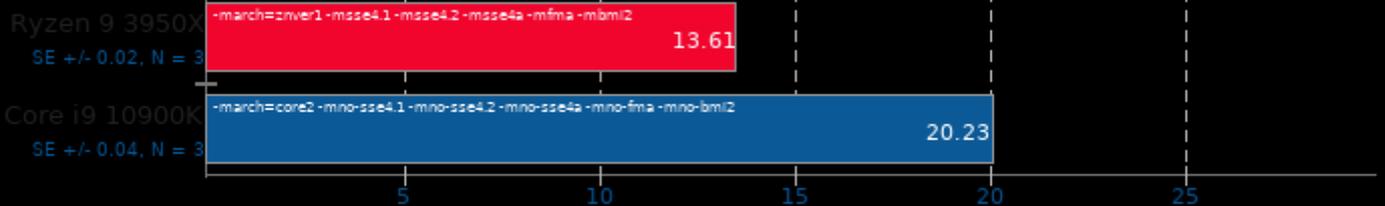


1. (CXX) g++ options: -lm -lthread -lgomp -O3 -ffast-math -fopenmp

Tungsten Renderer 0.2.2

Scene: Hair

← Seconds, Fewer Is Better

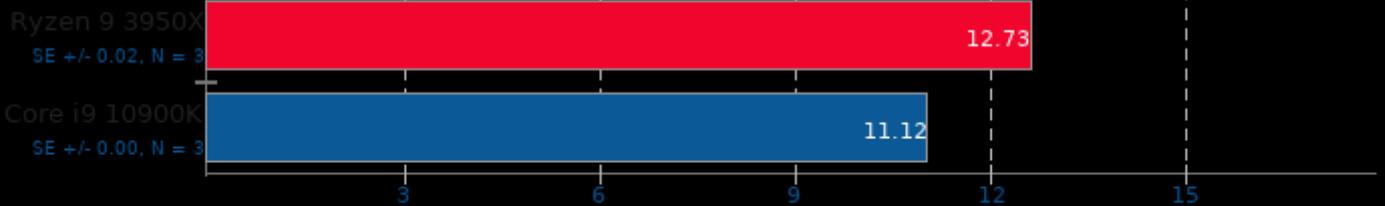


1. (CXX) g++ options: -std=c++0x -msse2 -msse3 -mssse3 -mno-avx -mno-avx2 -mno-xop -mno-fma4 -mno-avx512f -mno-avx512vl -mno-avx512pf -mno-

Intel Open Image Denoise 1.2.0

Scene: Memorial

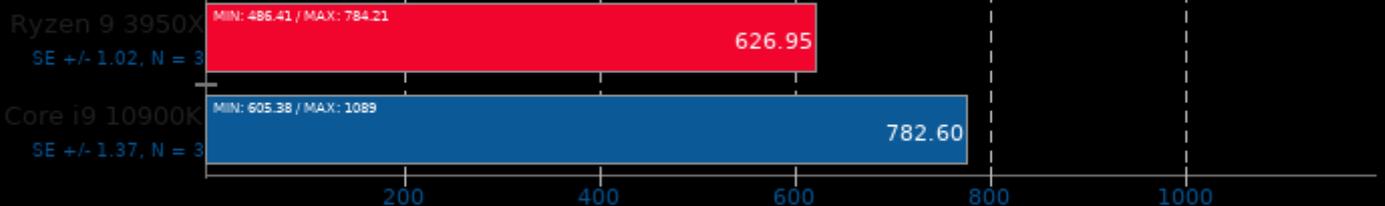
► Images / Sec, More Is Better



dav1d 0.7.0

Video Input: Chimera 1080p

► FPS, More Is Better

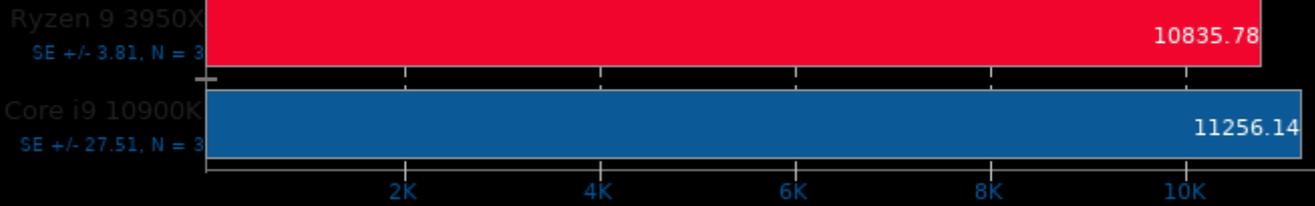


1. (CC) gcc options: -pthread

NAS Parallel Benchmarks 3.4

Test / Class: MG.C

▶ Total Mop/s, More Is Better

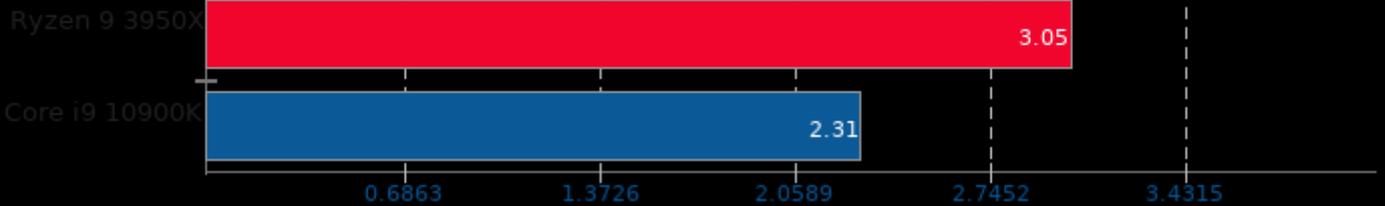


1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3

Polyhedron Fortran Benchmarks

Benchmark: linpk

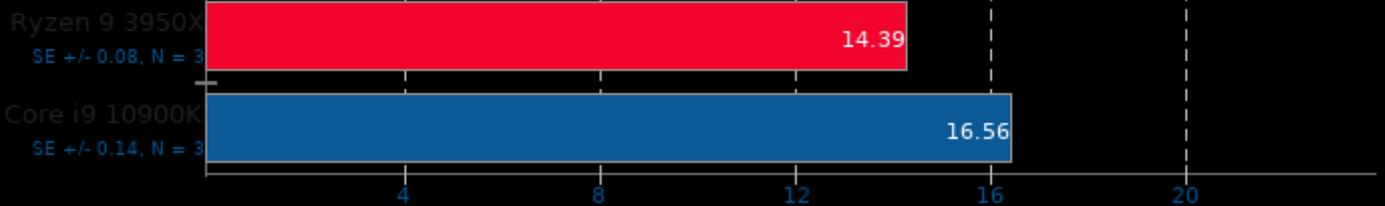
◀ Seconds, Fewer Is Better



Numenta Anomaly Benchmark 1.1

Detector: Relative Entropy

◀ Seconds, Fewer Is Better



oneDNN MKL-DNN 1.3

Harness: IP Batch 1D - Data Type: f32

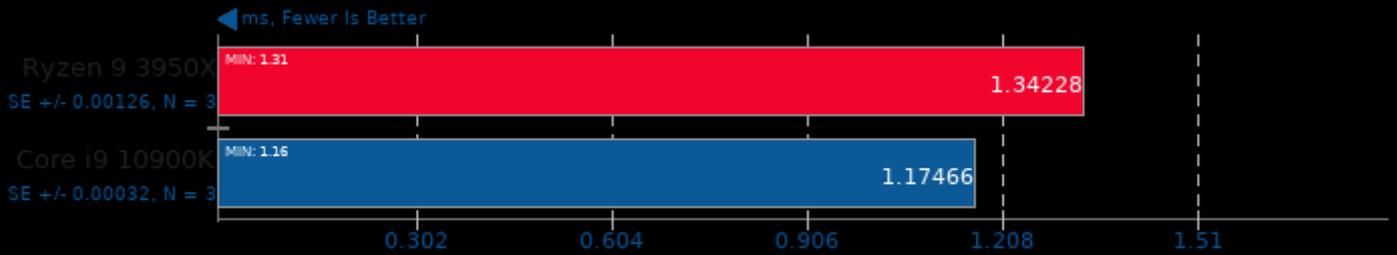
◀ ms, Fewer Is Better



1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fpic -fopenmp -pie -pthread -ldl

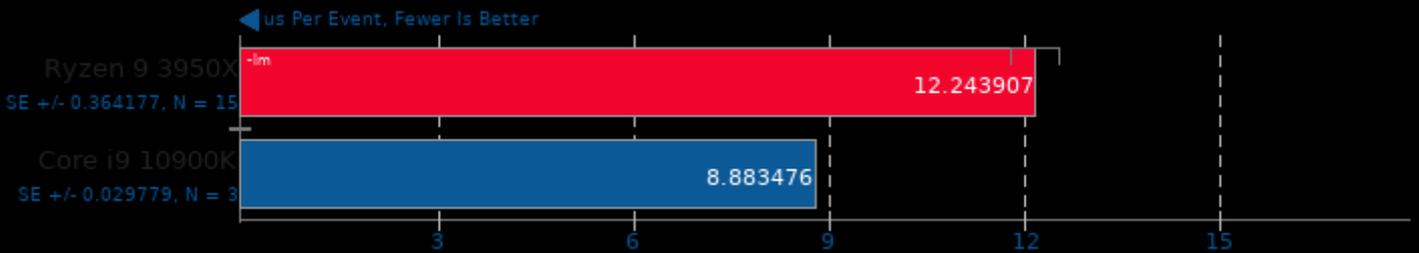
oneDNN MKL-DNN 1.3

Harness: IP Batch 1D - Data Type: u8s8f32



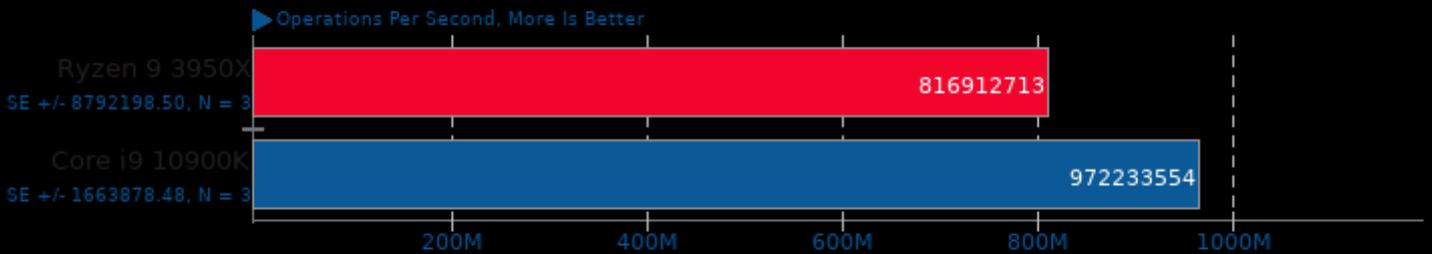
OSBench

Test: Create Threads



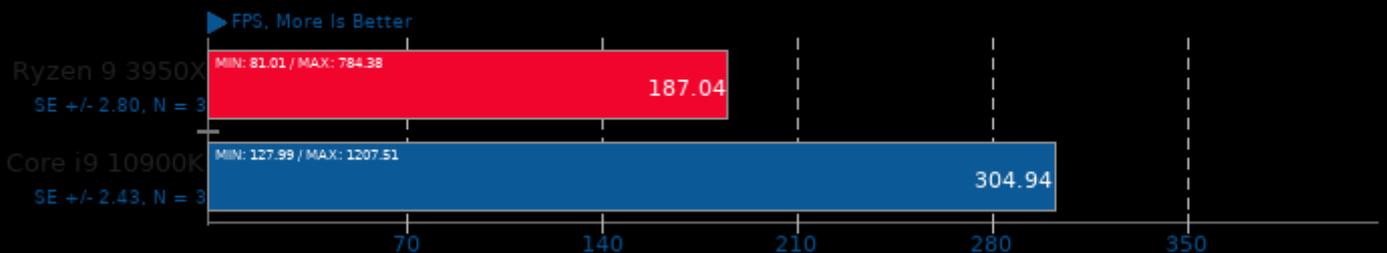
Swet 1.5.16

Average



Basemark GPU 1.2

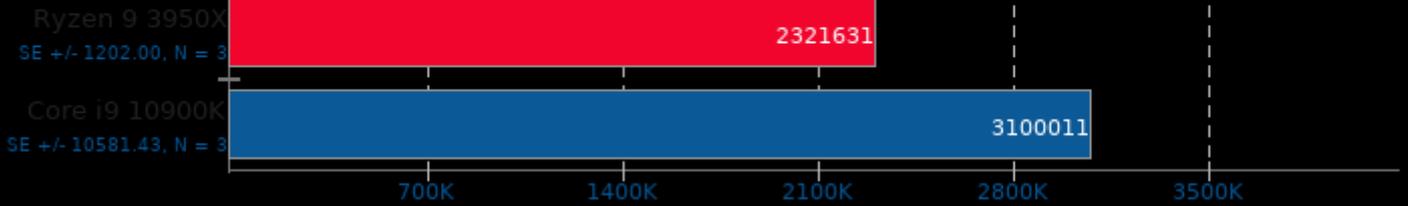
Renderer: OpenGL - Resolution: 3840 x 2160 - Graphics Preset: Medium



Go Benchmarks

Test: json

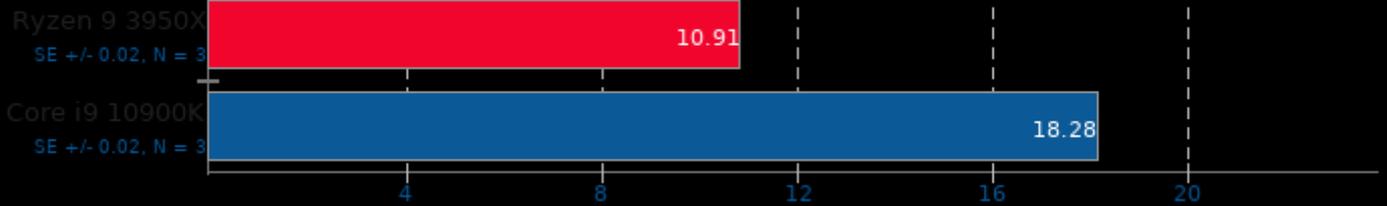
◀ Nanoseconds/Operation, Fewer Is Better



Rodinia 2.4

Test: OpenMP CFD Solver

◀ Seconds, Fewer Is Better

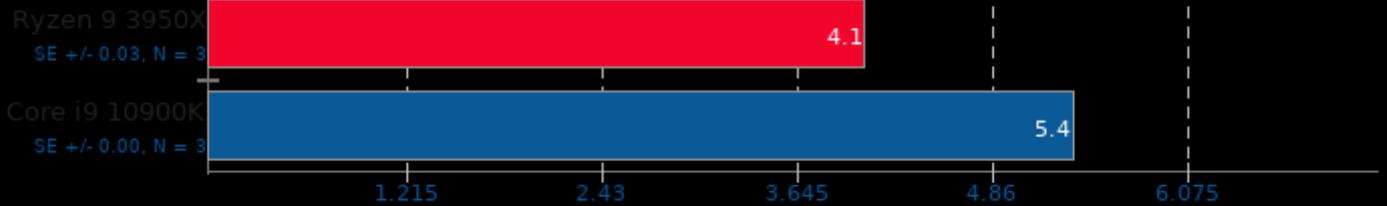


1. (CXX) g++ options: -O2 -fOpenCL

Selenium

Benchmark: Maze Solver - Browser: Google Chrome

◀ Seconds, Fewer Is Better

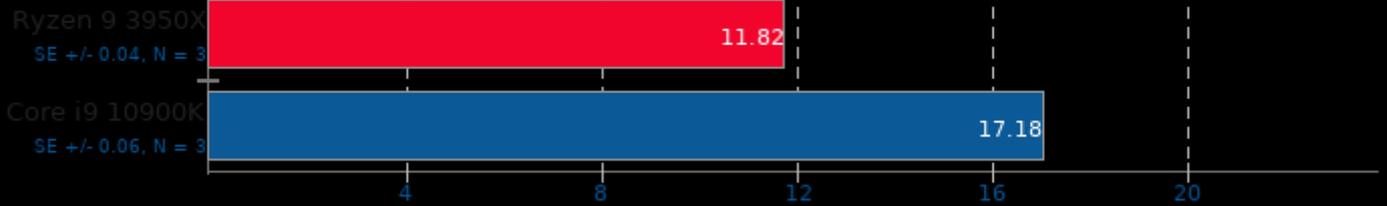


1. chrome 83.0.4103.61

Primesieve 7.4

1e12 Prime Number Generation

◀ Seconds, Fewer Is Better

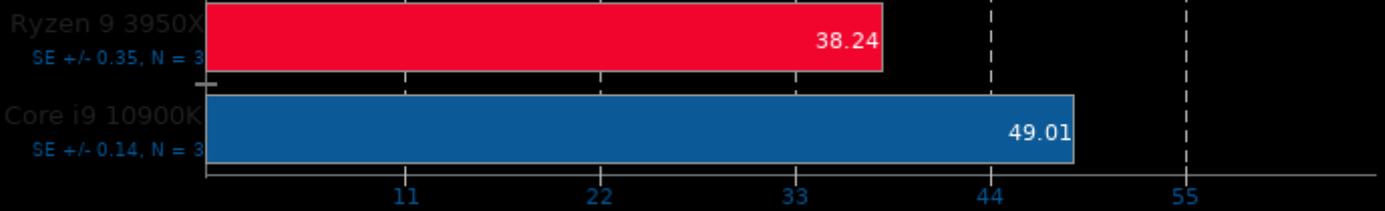


1. (CXX) g++ options: -O3 -lpthread

AOM AV1 2.0

Encoder Mode: Speed 8 Realtime

▶ Frames Per Second, More Is Better

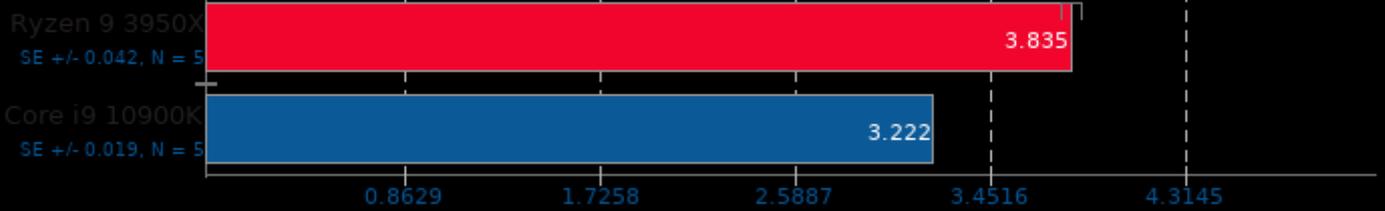


1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -pthread

Socketperf 3.4

Test: Latency Ping Pong

◀ usec, Fewer Is Better

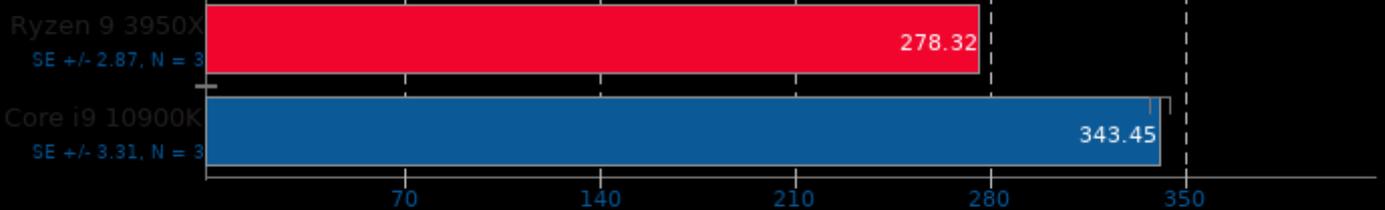


1. (CXX) g++ options: -param -O3 -rdynamic -ldl -pthread

Selenium

Benchmark: WASM collisionDetection - Browser: Google Chrome

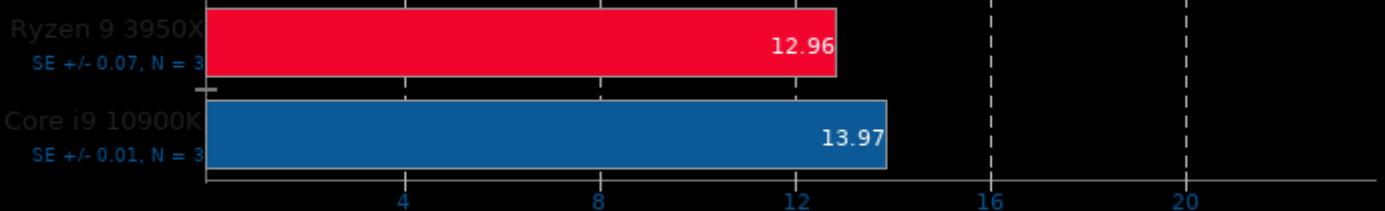
◀ ms, Fewer Is Better



1. chrome 83.0.4103.61

Nebular Empirical Analysis Tool 2020-02-29

◀ Seconds, Fewer Is Better

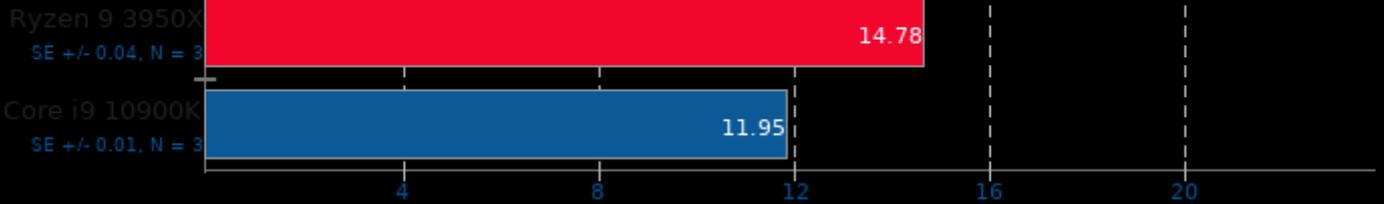


1. (F9X) gfortran options: -cpp -ffree-line-length-0 -jsource/ -fopenmp -O3 -fno-backtrace

GIMP 2.10.18

Test: unsharp-mask

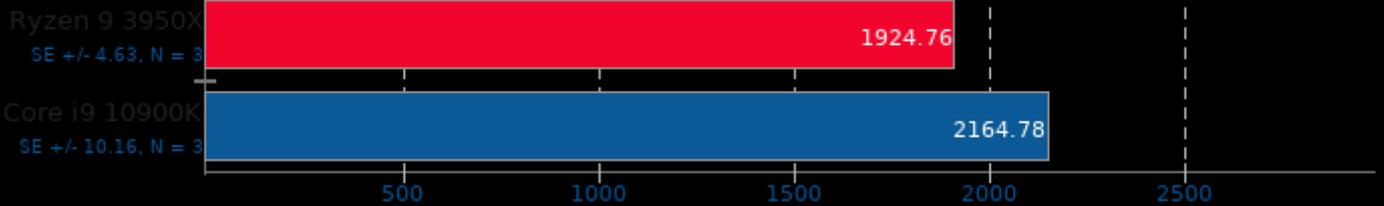
← Seconds, Fewer Is Better



ASKAP 2018-11-10

Test: tConvolve OpenMP - Degriding

▶ Million Grid Points Per Second, More Is Better

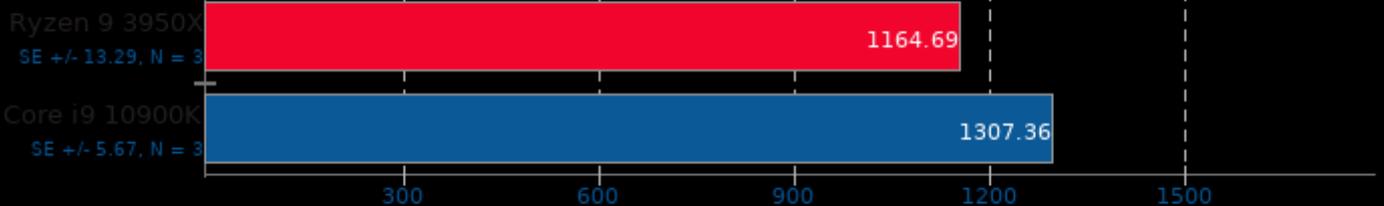


1. (CXX) g++ options: -lpthread

ASKAP 2018-11-10

Test: tConvolve OpenMP - Gridding

▶ Million Grid Points Per Second, More Is Better



1. (CXX) g++ options: -lpthread

SMHasher 2020-02-29

Hash: MeowHash

← cycles/hash, Fewer Is Better



1. (CXX) g++ options: -march=native -O3 -lpthread

SMHasher 2020-02-29

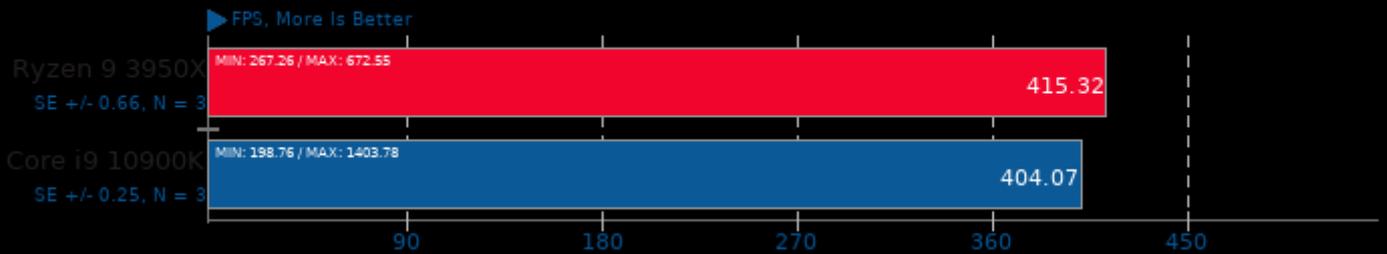
Hash: MeowHash



1. (CXX) g++ options: -march=native -O3 -lpthread

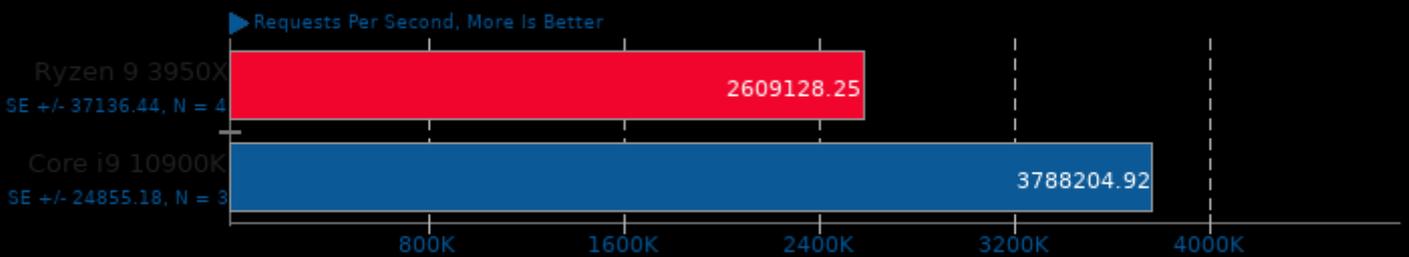
Basemark GPU 1.2

Renderer: Vulkan - Resolution: 3840 x 2160 - Graphics Preset: Medium



Redis 5.0.5

Test: GET



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

SMHasher 2020-02-29

Hash: Spooky32



1. (CXX) g++ options: -march=native -O3 -lpthread

SMHasher 2020-02-29

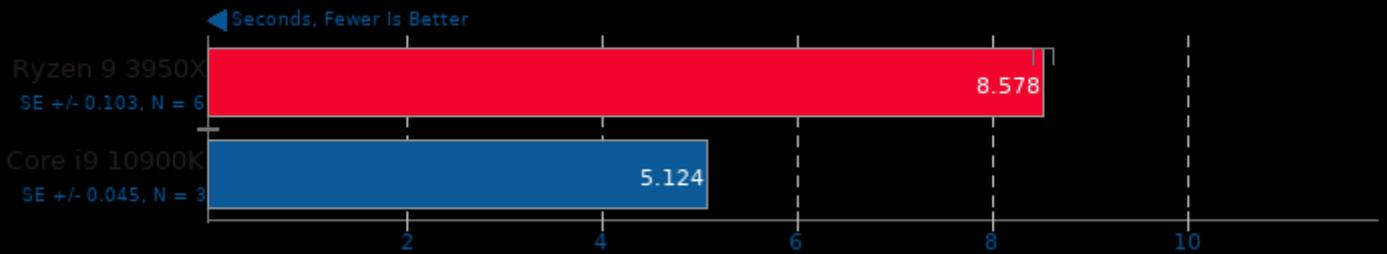
Hash: Spooky32



1. (CXX) g++ options: -march=native -O3 -lpthread

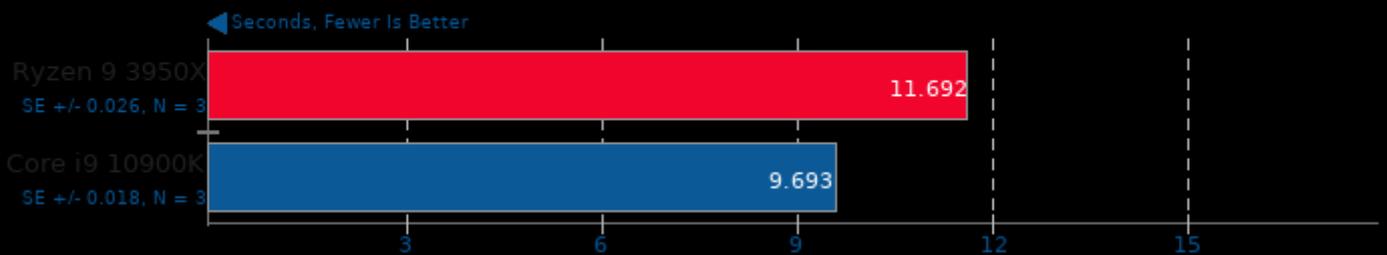
Bork File Encrypter 1.4

File Encryption Time



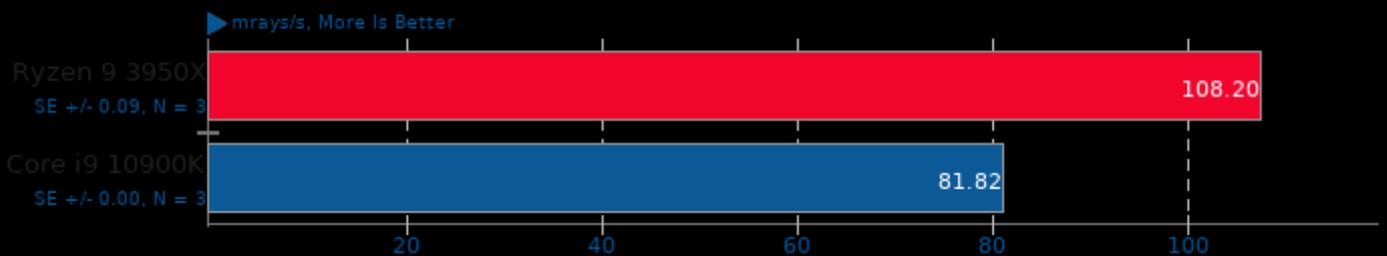
GIMP 2.10.18

Test: auto-levels



rays1bench 2020-01-09

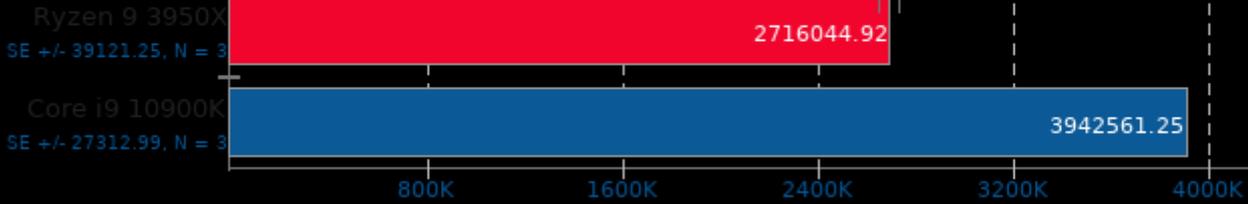
Large Scene



Redis 5.0.5

Test: LPOP

Requests Per Second, More Is Better

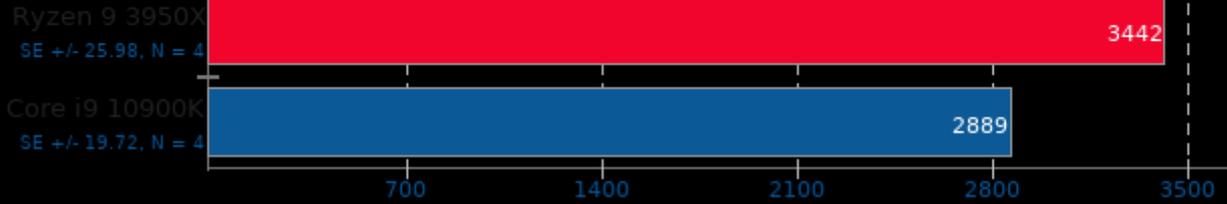


1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

DaCapo Benchmark 9.12-MR1

Java Test: Tradesoap

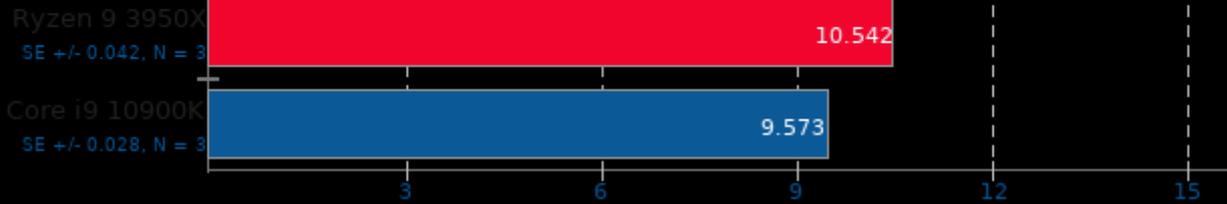
msec, Fewer Is Better



GIMP 2.10.18

Test: rotate

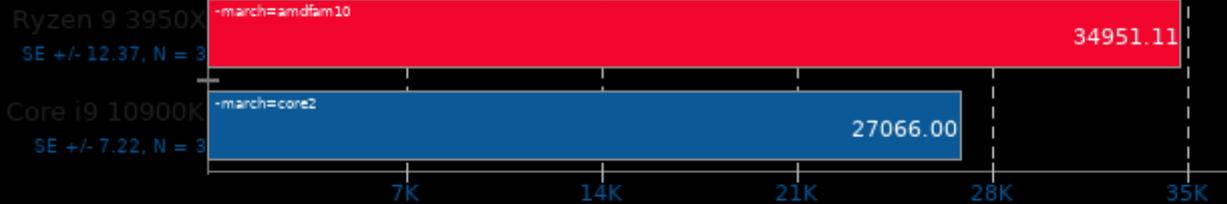
Seconds, Fewer Is Better



Sysbench 2018-07-28

Test: CPU

Events Per Second, More Is Better



1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -rdynamic -ldl -laio -lm

SMHasher 2020-02-29

Hash: fasthash32



1. (CXX) g++ options: -march=native -O3 -lpthread

SMHasher 2020-02-29

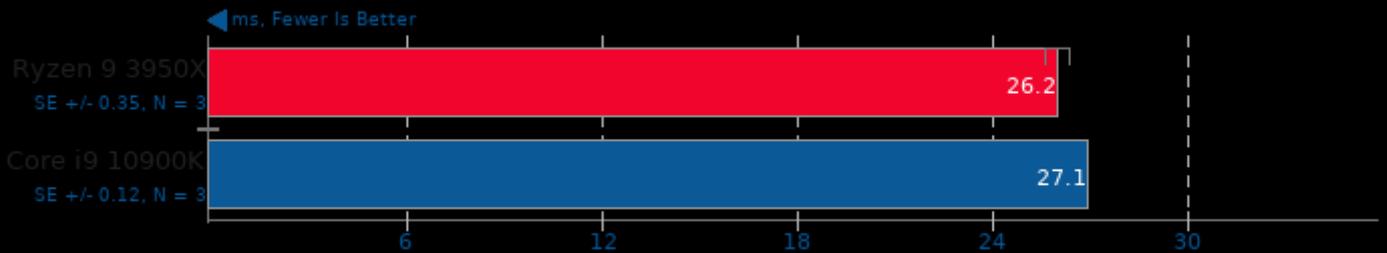
Hash: fasthash32



1. (CXX) g++ options: -march=native -O3 -lpthread

Selenium

Benchmark: WASM imageConvolute - Browser: Firefox



1. firefox 76.0.1

SMHasher 2020-02-29

Hash: t1ha2_atonce



1. (CXX) g++ options: -march=native -O3 -lpthread

SMHasher 2020-02-29

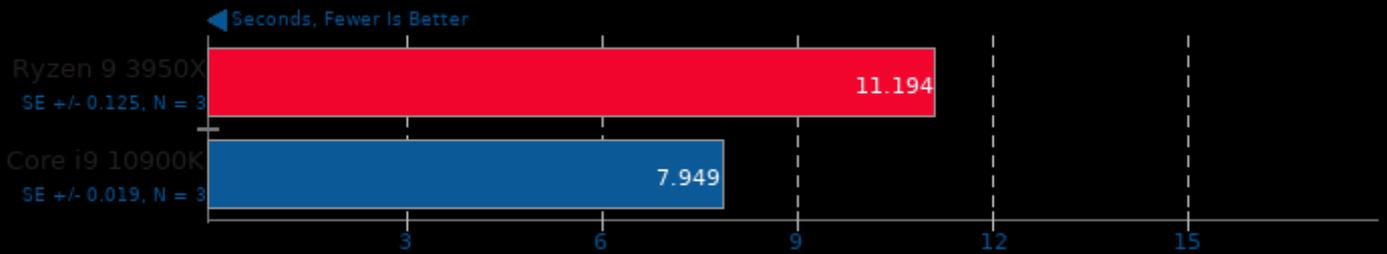
Hash: t1ha2_atonce



1. (CXX) g++ options: -march=native -O3 -lpthread

GnuPG 1.4.22

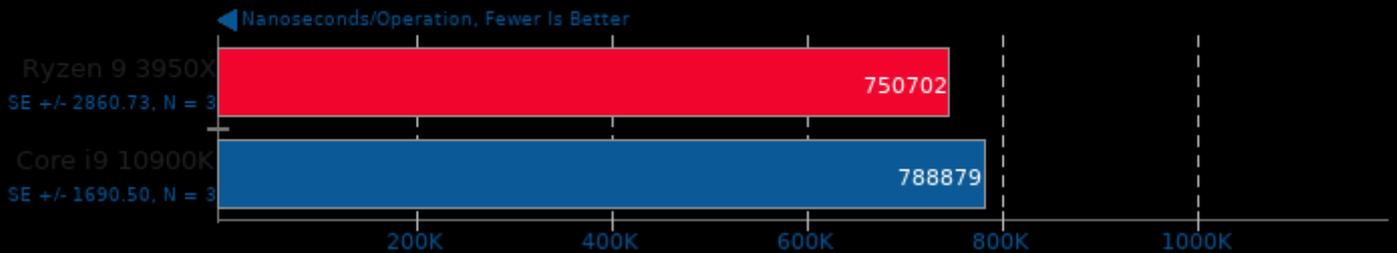
2GB File Encryption



1. (CC) gcc options: -O2 -MT -MD -MP -MF

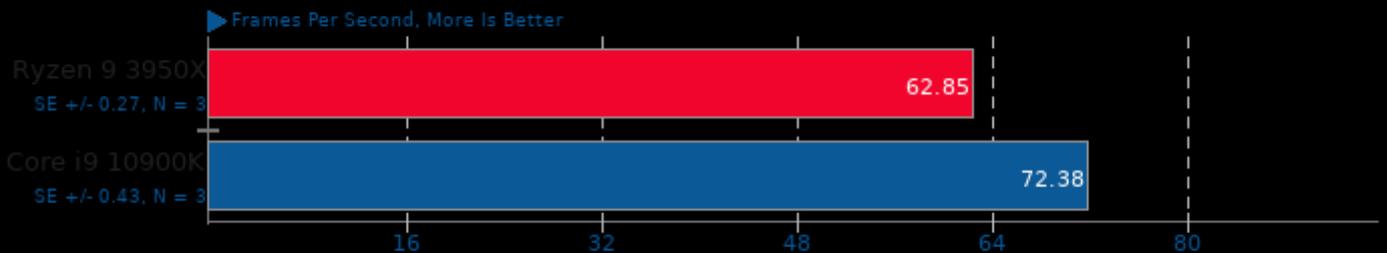
Go Benchmarks

Test: garbage



x265 3.1.2

H.265 1080p Video Encoding

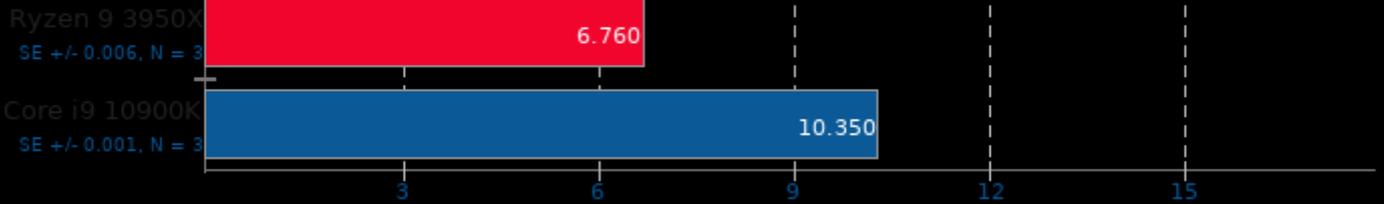


1. (CXX) g++ options: -O3 -rdynamic -lpthread -lrt -ldl -lnuma

N-Queens 1.0

Elapsed Time

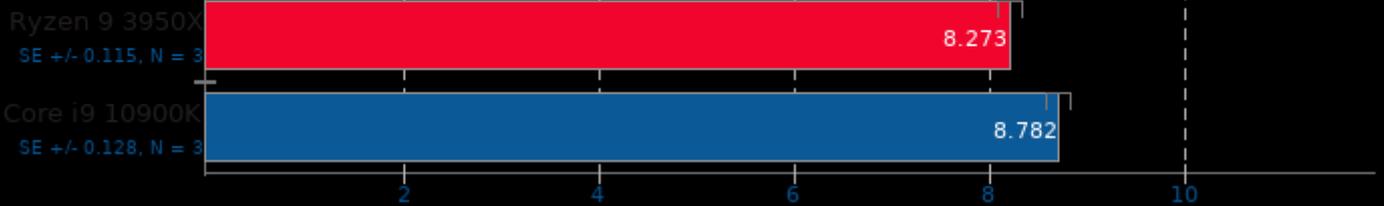
← Seconds, Fewer Is Better



1. (CC) gcc options: -static -fopenmp -O3 -march=native

Scikit-Learn 0.22.1

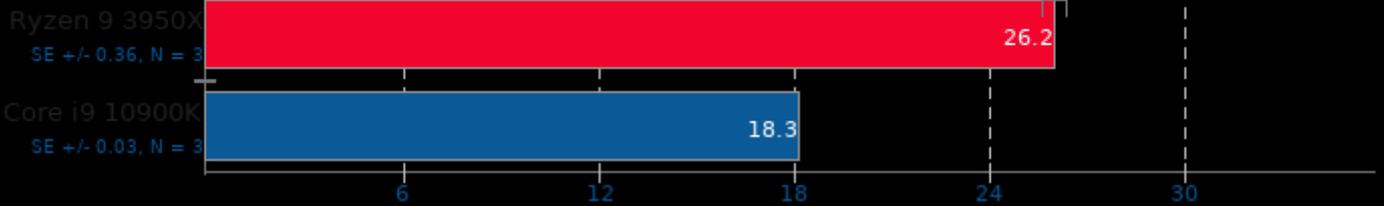
← Seconds, Fewer Is Better



NeatBench 5

Acceleration: CPU

▶ FPS, More Is Better



SMHasher 2020-02-29

Hash: wyhash

← cycles/hash, Fewer Is Better



1. (CXX) g++ options: -march=native -O3 -lthread

SMHasher 2020-02-29

Hash: wyhash

► MiB/sec, More Is Better

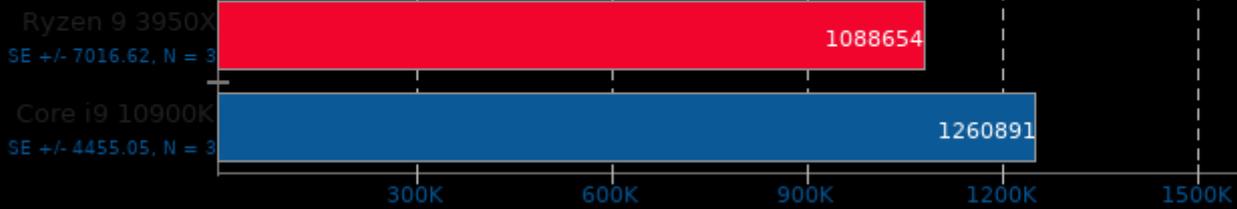


1. (CXX) g++ options: -march=native -O3 -lpthread

IPC_benchmark

Type: Unnamed Unix Domain Socket - Message Bytes: 4096

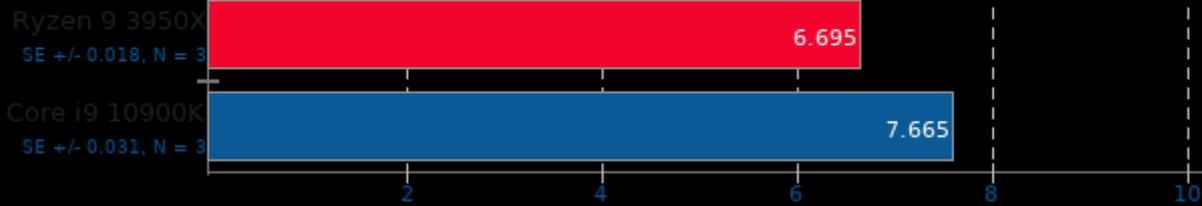
► Messages Per Second, More Is Better



Numenta Anomaly Benchmark 1.1

Detector: Windowed Gaussian

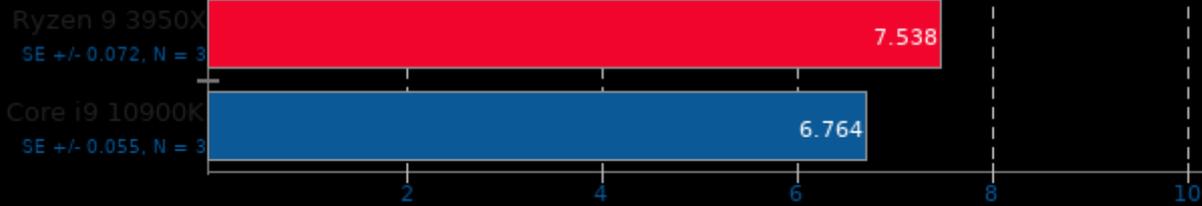
◄ Seconds, Fewer Is Better



G EGL

Operation: Crop

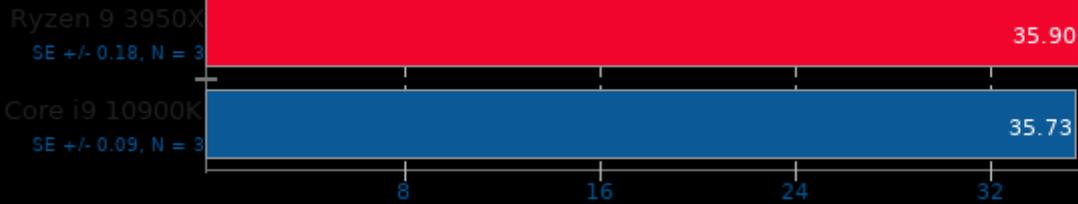
◄ Seconds, Fewer Is Better



Selenium

Benchmark: WASM imageConvolute - Browser: Google Chrome

ms, Fewer Is Better

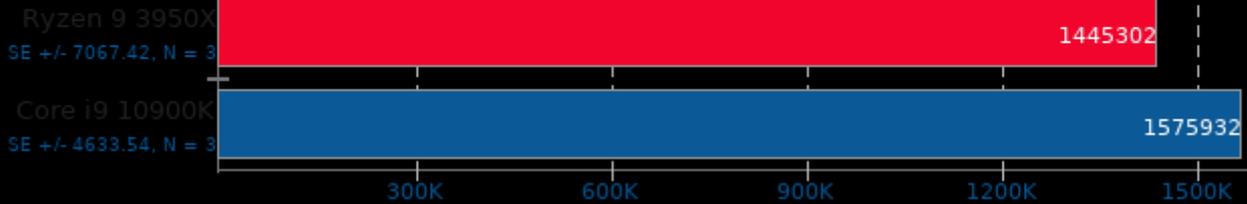


1. chrome 83.0.4103.61

IPC_benchmark

Type: TCP Socket - Message Bytes: 4096

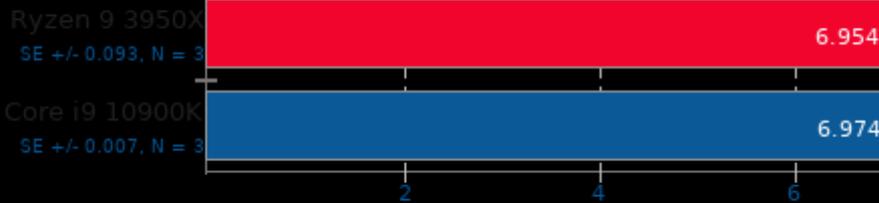
Messages Per Second, More Is Better



LAME MP3 Encoding 3.100

WAV To MP3

Seconds, Fewer Is Better

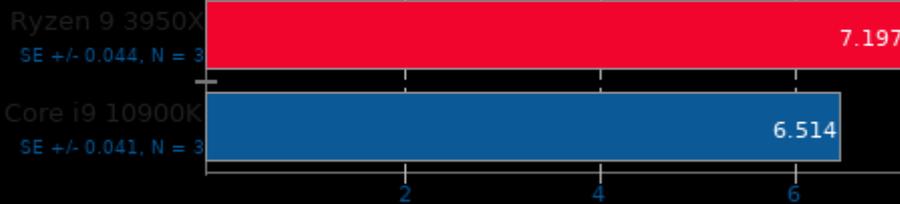


1. (CC) gcc options: -O3 -ffast-math -funroll-loops -fschedule-insns2 -fbranch-count-reg -fforce-addr -pipe -Incurses -lm

Basis Universal 1.12

Settings: UASTC Level 0

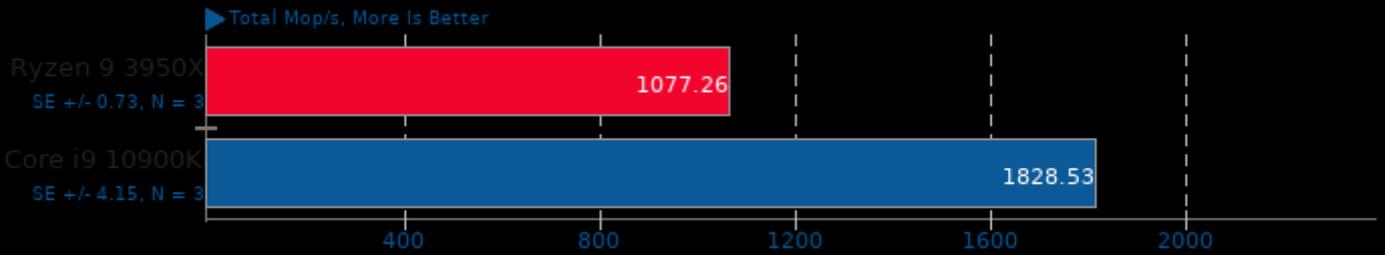
Seconds, Fewer Is Better



1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

NAS Parallel Benchmarks 3.4

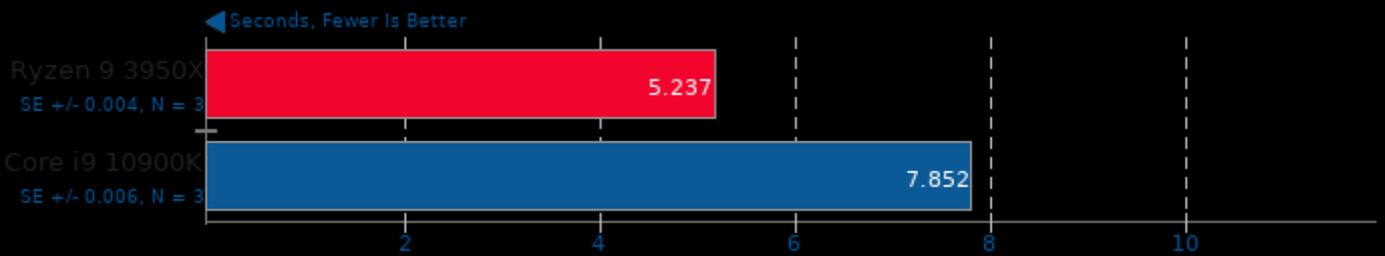
Test / Class: EP.C



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 4.0.3

Smallpt 1.0

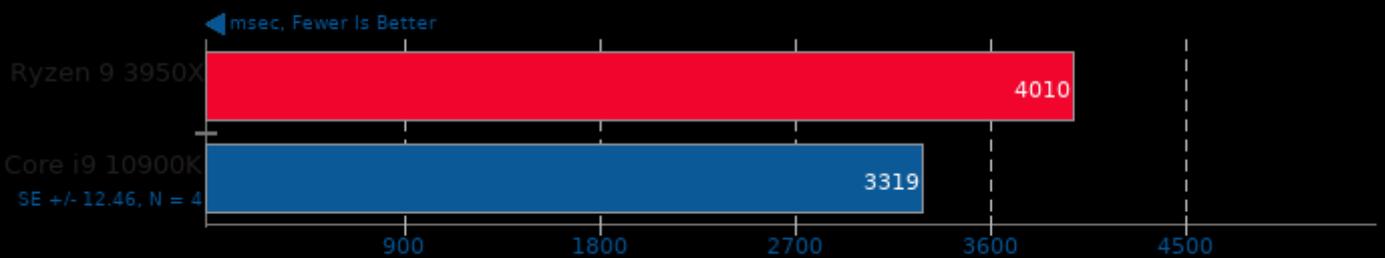
Global Illumination Renderer; 128 Samples



1. (CXX) g++ options: -fopenmp -O3

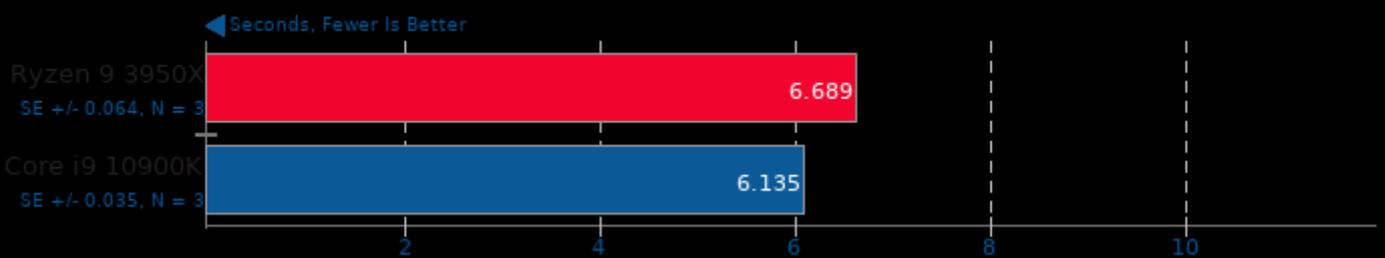
DaCapo Benchmark 9.12-MR1

Java Test: Jython



GIMP 2.10.18

Test: resize



Tungsten Renderer 0.2.2

Scene: Volumetric Caustic

← Seconds, Fewer Is Better

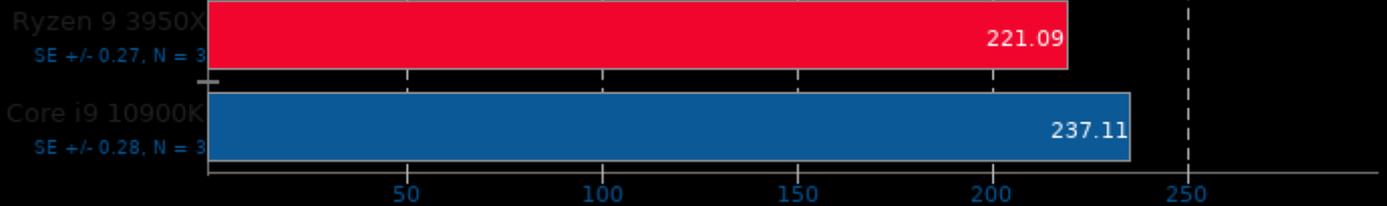


1. (CXX) g++ options: -std=c++0x -msse2 -msse3 -mssse3 -mno-avx -mno-avx2 -mno-xop -mno-fma4 -mno-avx512f -mno-avx512vl -mno-avx512pf -mno-

libjpeg-turbo tjbench 2.0.2

Test: Decompression Throughput

▶ Megapixels/sec, More Is Better

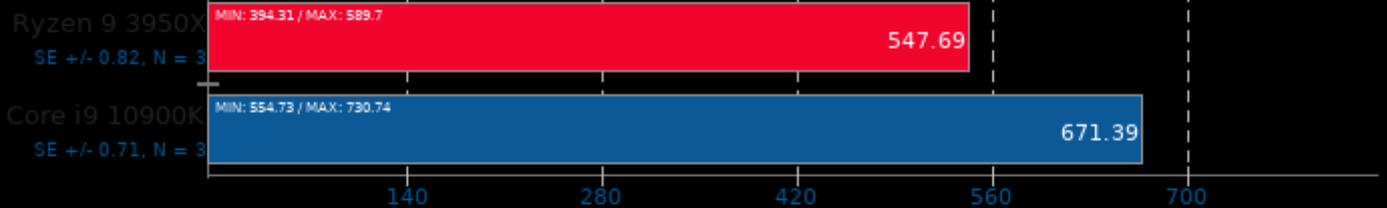


1. (C) gcc options: -O3 -rdynamic

dav1d 0.6.0

Video Input: Summer Nature 1080p

▶ FPS, More Is Better

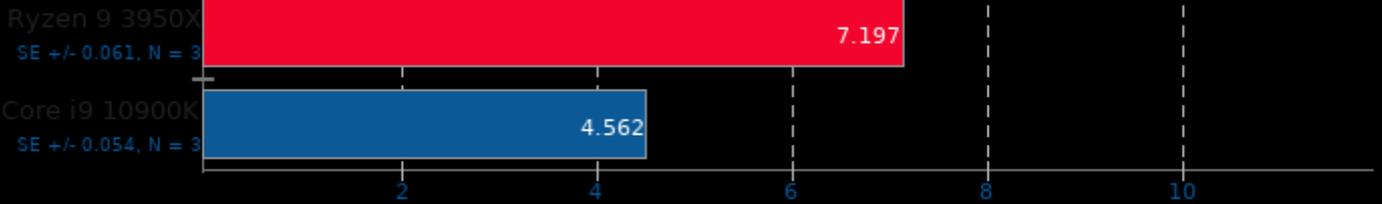


1. (C) gcc options: -pthread

FFmpeg 4.0.2

H.264 HD To NTSC DV

← Seconds, Fewer Is Better

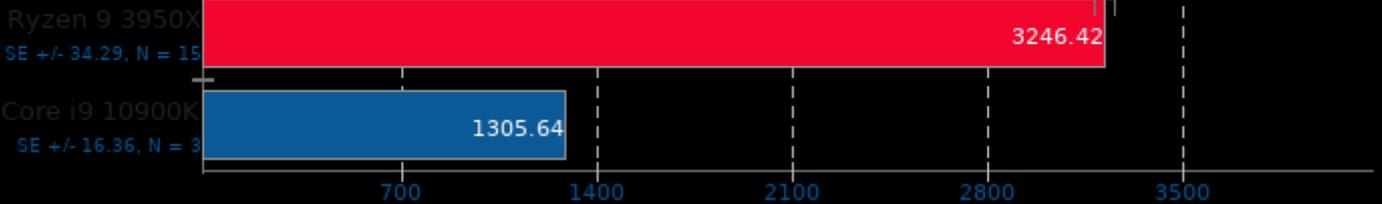


1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -lXv -lX11 -lXext -lm -lxcb -lxcb-shm -lasound -lSDL2 -lndio -l

ParaView 5.4.1

Test: Wavelet Volume - Resolution: 3840 x 2160

▶ MiVoxels / Sec, More Is Better



ParaView 5.4.1

Test: Wavelet Volume - Resolution: 3840 x 2160

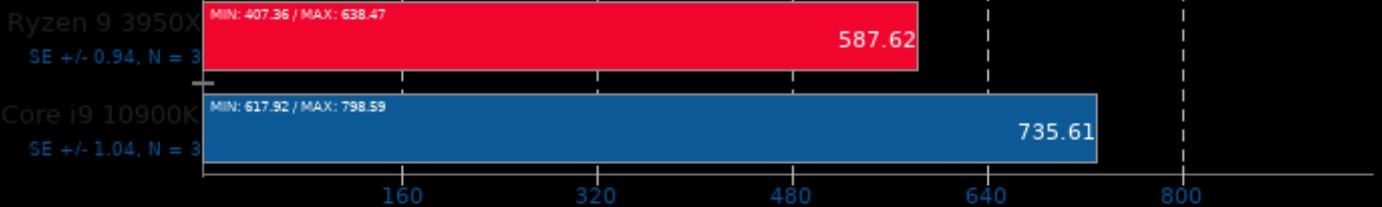
▶ Frames / Sec, More Is Better



dav1d 0.7.0

Video Input: Summer Nature 1080p

▶ FPS, More Is Better

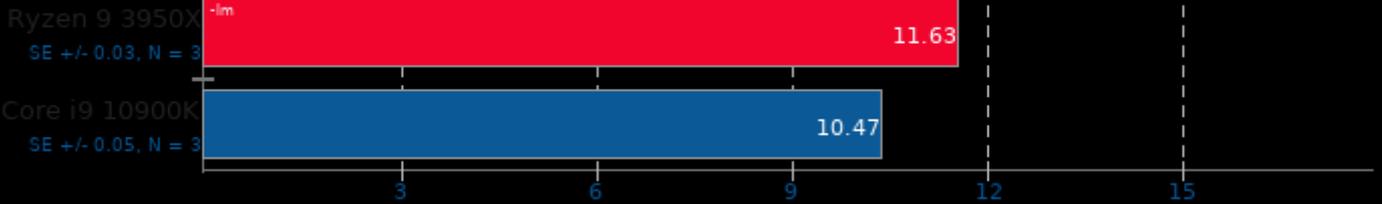


1. (CC) gcc options: -pthread

OSBench

Test: Create Files

µs Per Event, Fewer Is Better

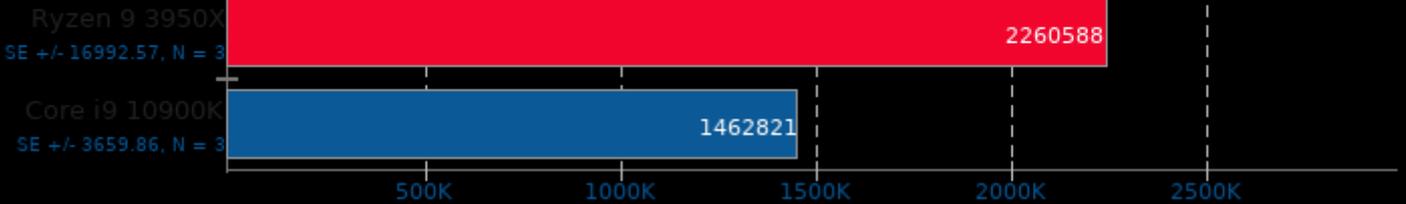


1. (CC) gcc options:

IPC_benchmark

Type: FIFO Named Pipe - Message Bytes: 4096

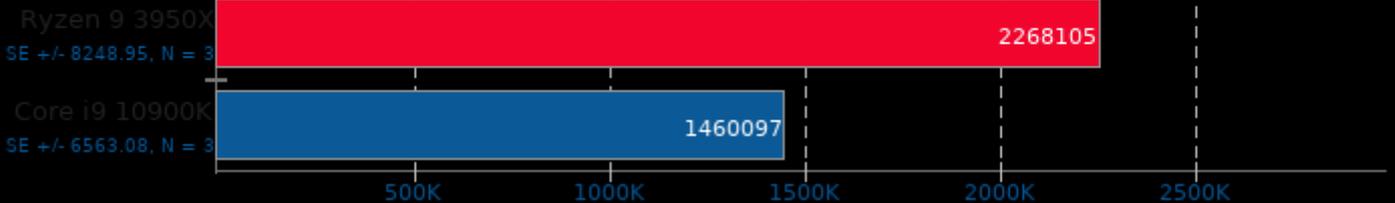
Messages Per Second, More Is Better



IPC_benchmark

Type: Unnamed Pipe - Message Bytes: 4096

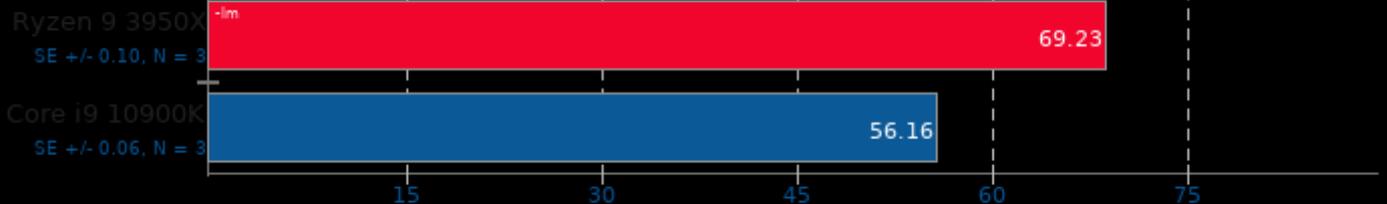
Messages Per Second, More Is Better



OSBench

Test: Memory Allocations

µs Per Event, Fewer Is Better



1. (CC) gcc options:

OSBench

Test: Create Processes

← us Per Event, Fewer Is Better

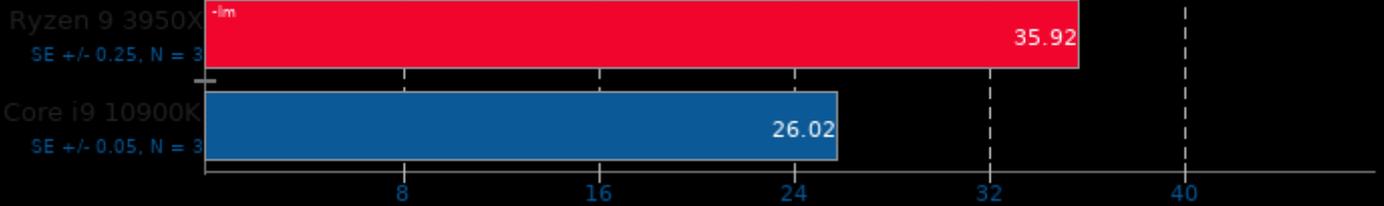


1. (CC) gcc options:

OSBench

Test: Launch Programs

← us Per Event, Fewer Is Better

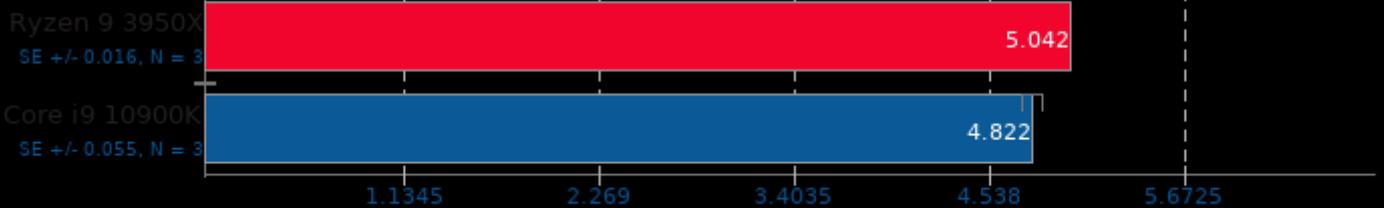


1. (CC) gcc options:

GEGl

Operation: Scale

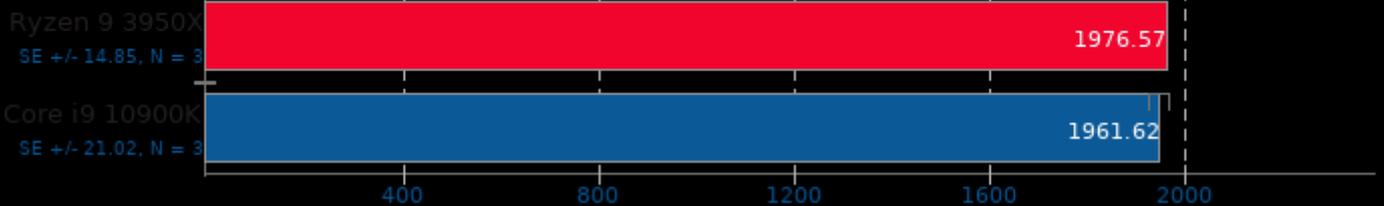
← Seconds, Fewer Is Better



ParaView 5.4.1

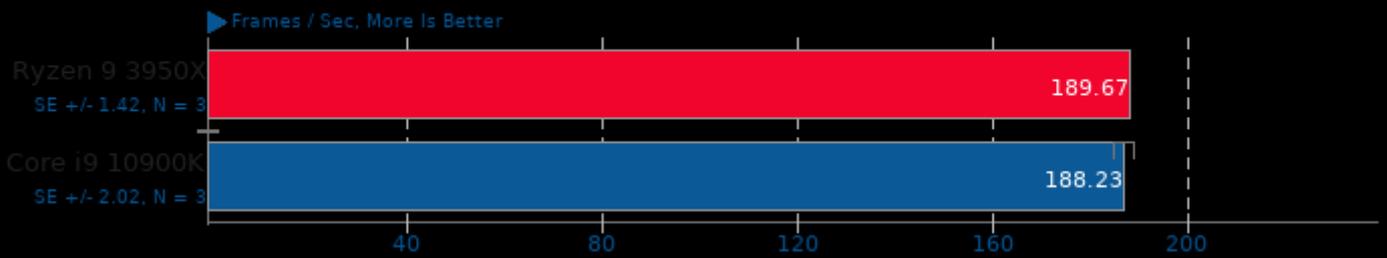
Test: Wavelet Contour - Resolution: 3840 x 2160

▶ MiPolys / Sec, More Is Better



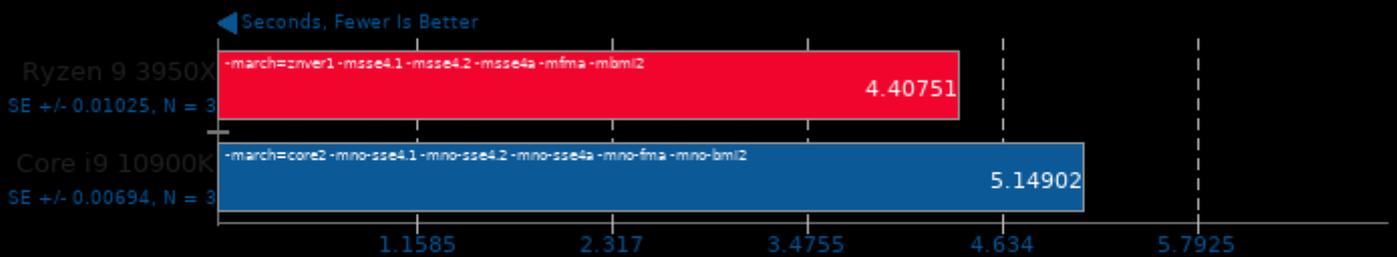
ParaView 5.4.1

Test: Wavelet Contour - Resolution: 3840 x 2160



Tungsten Renderer 0.2.2

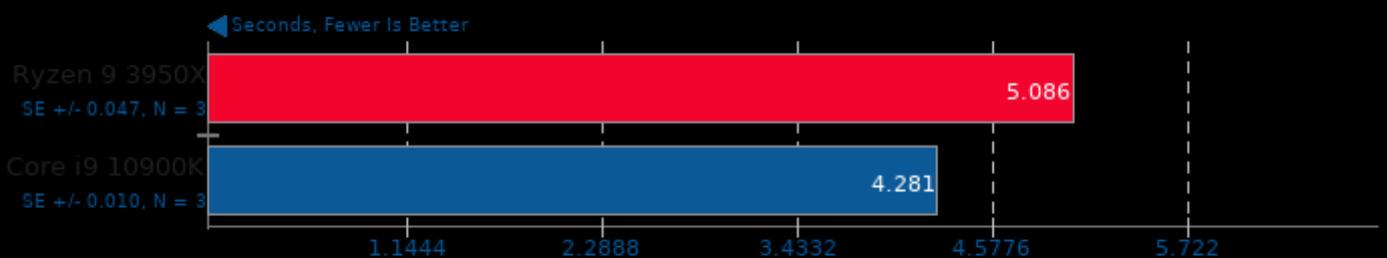
Scene: Non-Exponential



1. (CXX) g++ options: -std=c++0x -msse2 -msse3 -msse3 -mno-avx -mno-avx2 -mno-xop -mno-fma4 -mno-avx512f -mno-avx512vl -mno-avx512pf -mno-

Timed HMMer Search 2.3.2

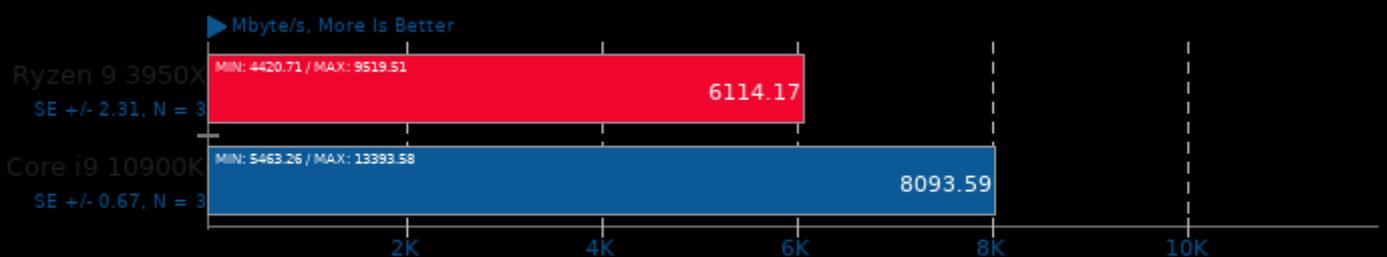
Pfam Database Search



1. (CC) gcc options: -O2 -pthread -lhmmmer -lsquid -lm

Nettle 3.5.1

Test: aes256

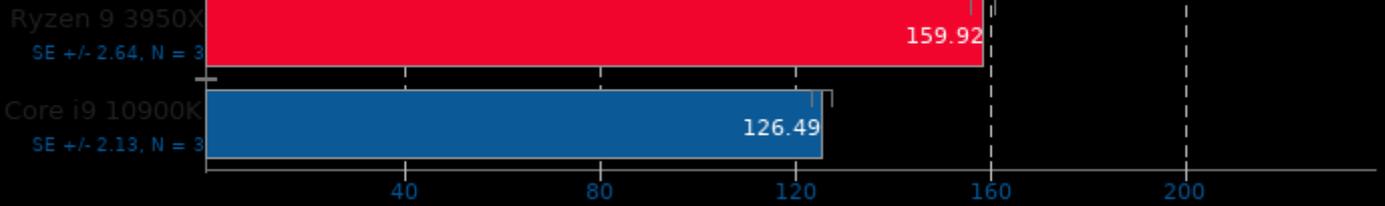


1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto

x264 2019-12-17

H.264 Video Encoding

▶ Frames Per Second, More Is Better

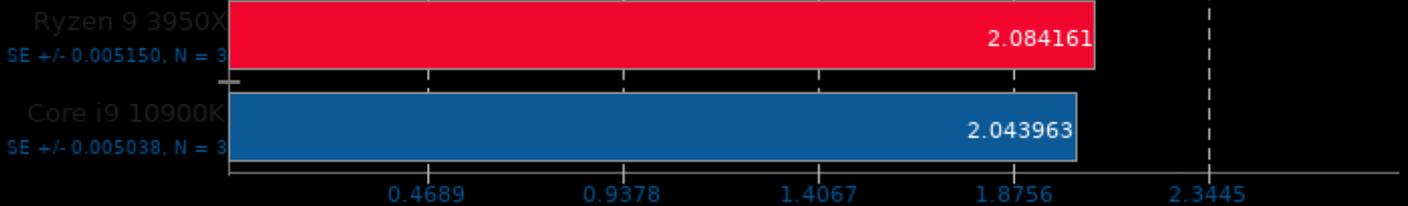


1. (CC) gcc options: -ldl -lavformat -lavcodec -lavutil -lswscale -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fpic -fomit-frame-pointer -fno-tree-vectorize

Bullet Physics Engine 2.81

Test: Raytests

◀ Seconds, Fewer Is Better

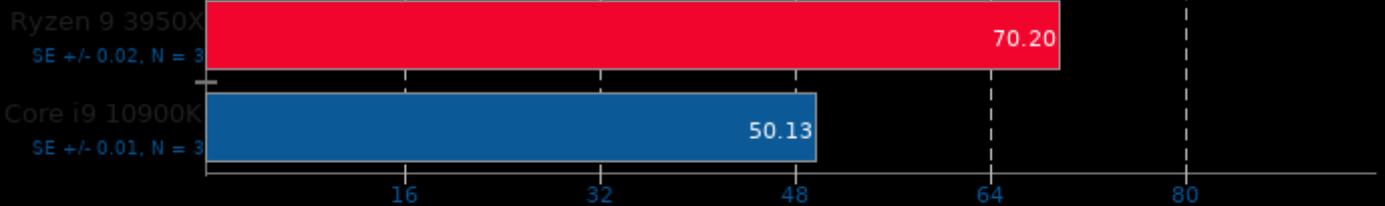


1. (CXX) g++ options: -O3 -rdynamic -lglut -lGL -lGLU

Multichase Pointer Chaser

Test: 1GB Array, 256 Byte Stride, 4 Threads

◀ ns, Fewer Is Better

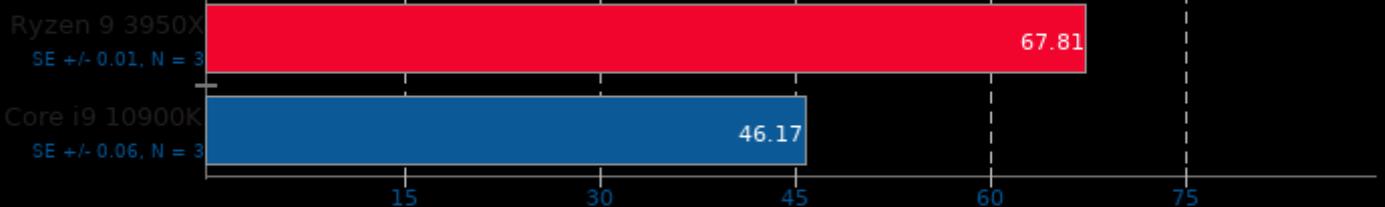


1. (CC) gcc options: -O2 -static -pthread -lrt

Multichase Pointer Chaser

Test: 1GB Array, 256 Byte Stride, 2 Threads

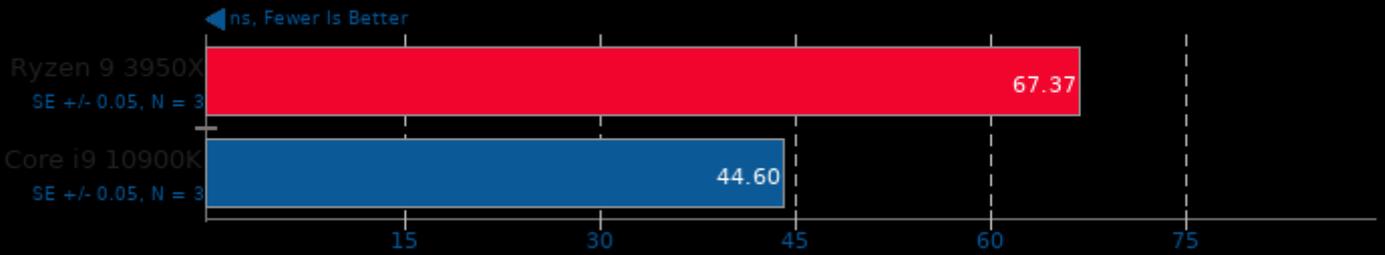
◀ ns, Fewer Is Better



1. (CC) gcc options: -O2 -static -pthread -lrt

Multichase Pointer Chaser

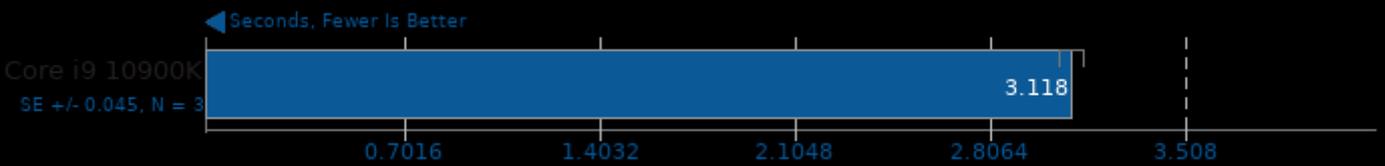
Test: 1GB Array, 256 Byte Stride



1. (CC) gcc options: -O2 -static -pthread -lrt

Parallel BZIP2 Compression 1.1.12

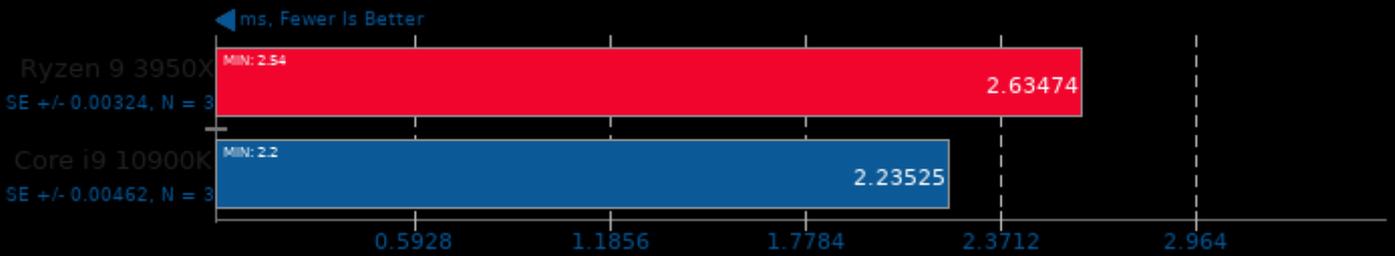
256MB File Compression



1. (CXX) g++ options: -O2 -pthread -lbz2 -lpthread

oneDNN MKL-DNN 1.3

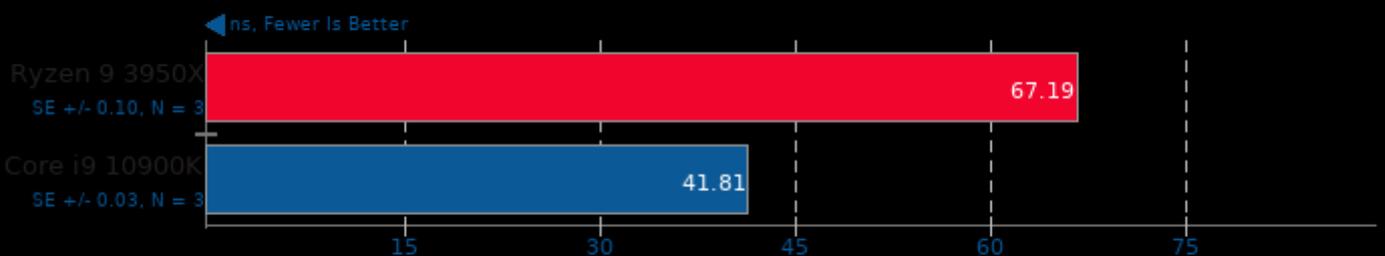
Harness: Deconvolution Batch deconv_3d - Data Type: u8s8f32



1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

Multichase Pointer Chaser

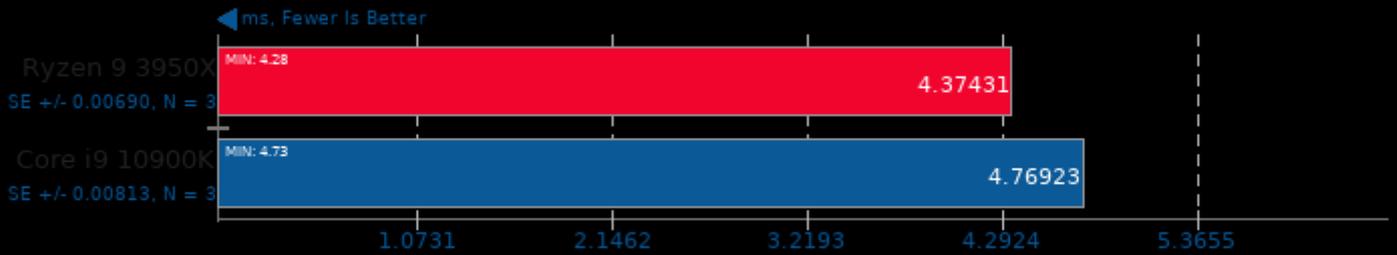
Test: 256MB Array, 256 Byte Stride



1. (CC) gcc options: -O2 -static -pthread -lrt

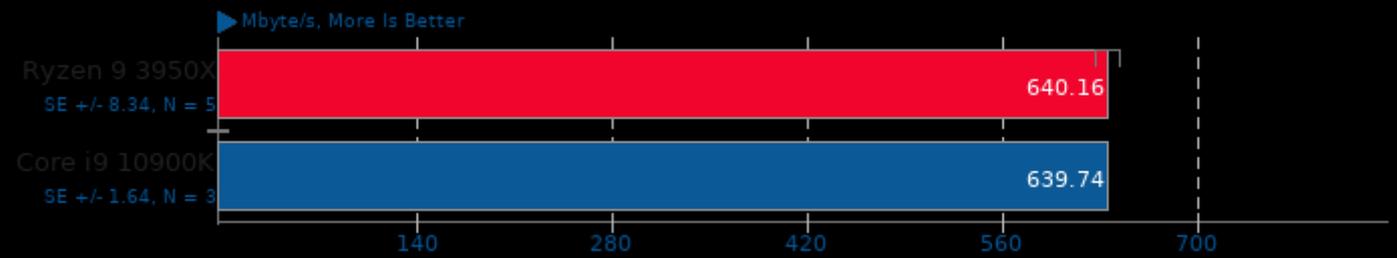
oneDNN MKL-DNN 1.3

Harness: Deconvolution Batch deconv_3d - Data Type: f32



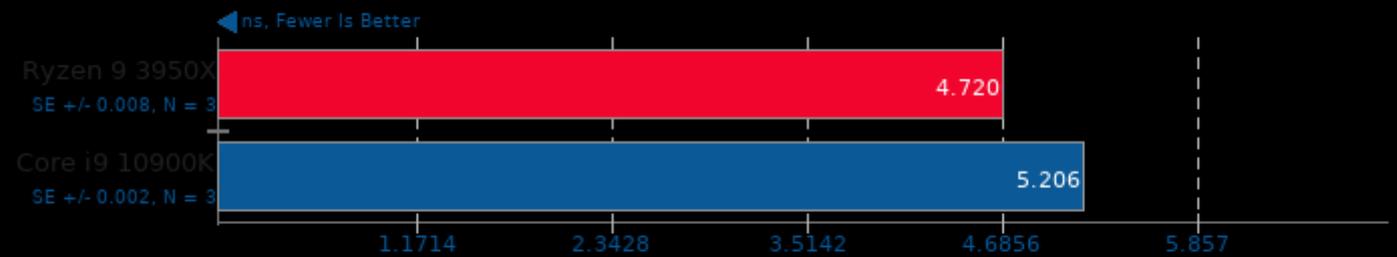
Nettle 3.5.1

Test: sha512



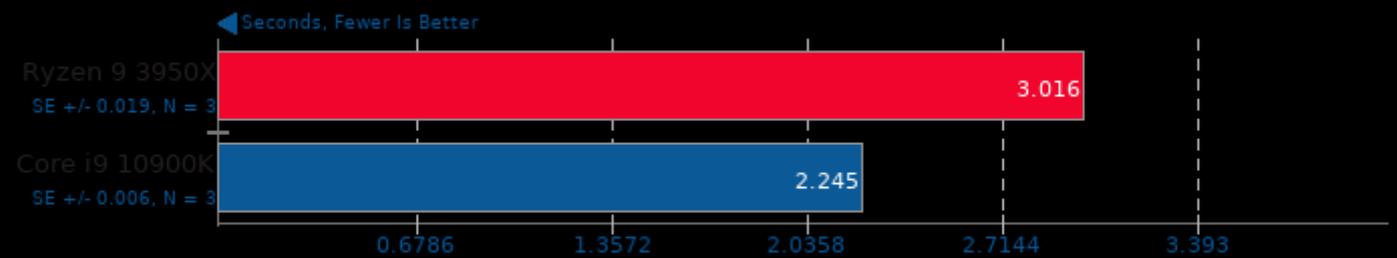
Multichase Pointer Chaser

Test: 4MB Array, 64 Byte Stride



Hackbench

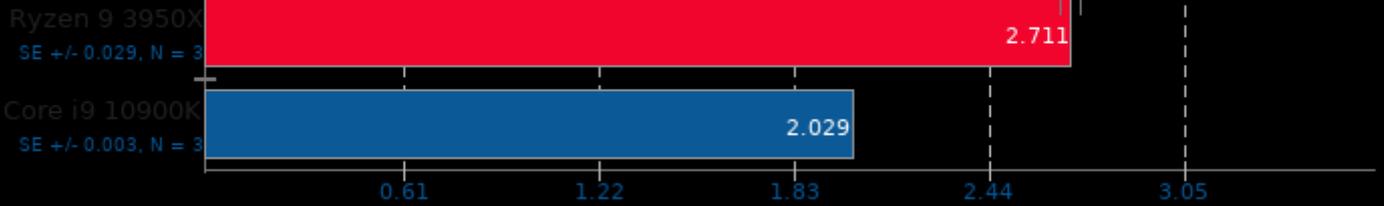
Count: 1 - Type: Thread



Hackbench

Count: 1 - Type: Process

← Seconds, Fewer Is Better

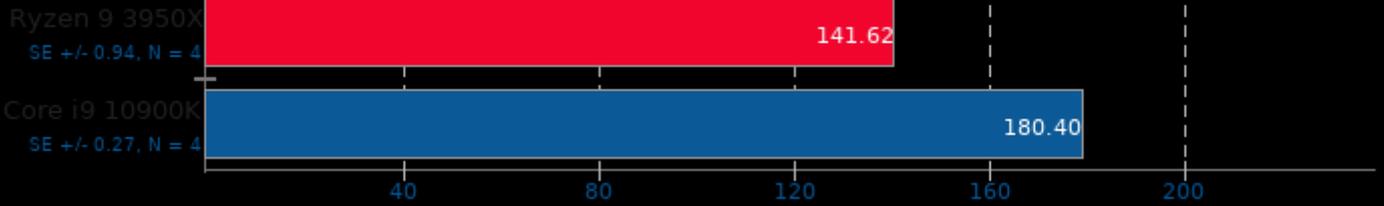


1. (CC) gcc options: -pthread

Optcarrot

Optimized Benchmark

▶ FPS, More Is Better

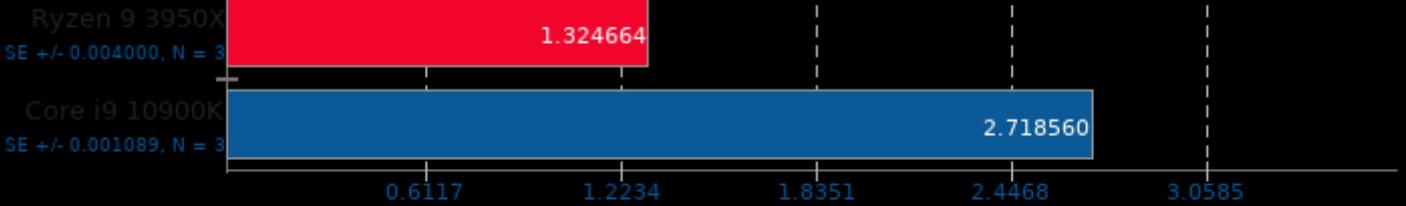


1. ruby 2.7.0p0 (2019-12-25 revision 647ee6f091) [x86_64-linux-gnu]

Parboil 2.5

Test: OpenMP CUTCP

← Seconds, Fewer Is Better

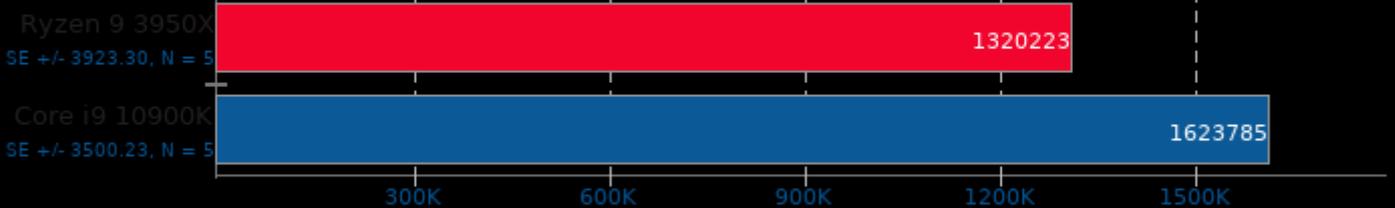


1. (CXX) g++ options: -lm -pthread -lgomp -O3 -fast-math -fopenmp

TSCP 1.81

AI Chess Performance

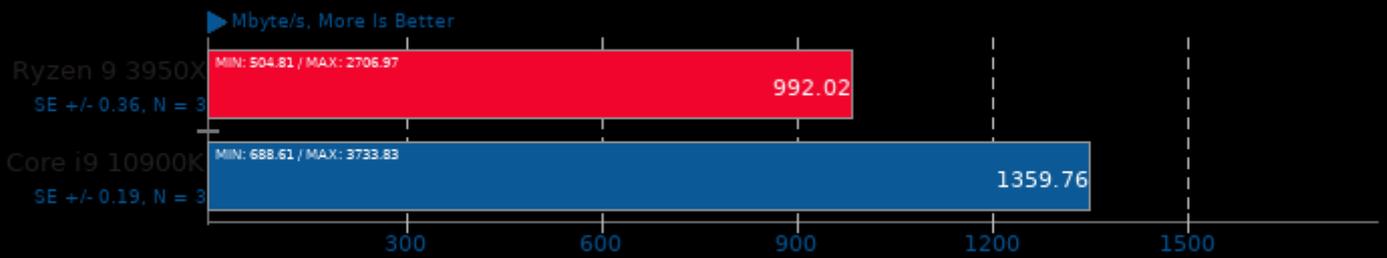
▶ Nodes Per Second, More Is Better



1. (CC) gcc options: -O3 -march=native

Nettle 3.5.1

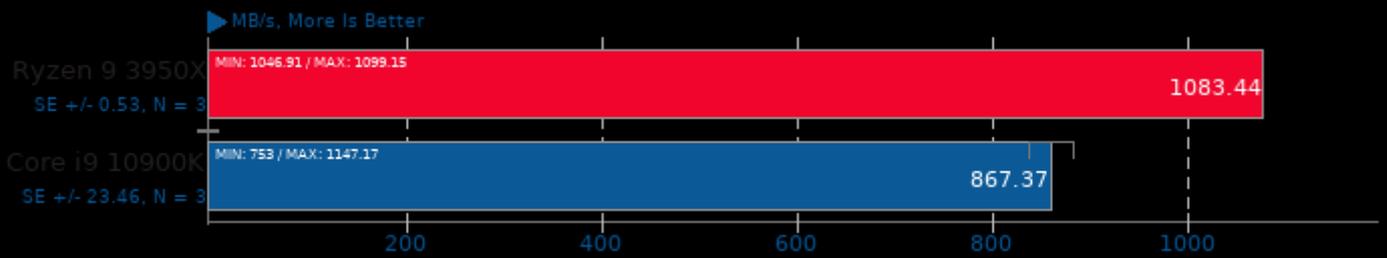
Test: chacha



1. (CC) gcc options: -O2 -ggdb3 -Inettle -lgmp -lm -lcrypto

IOR 3.2.1

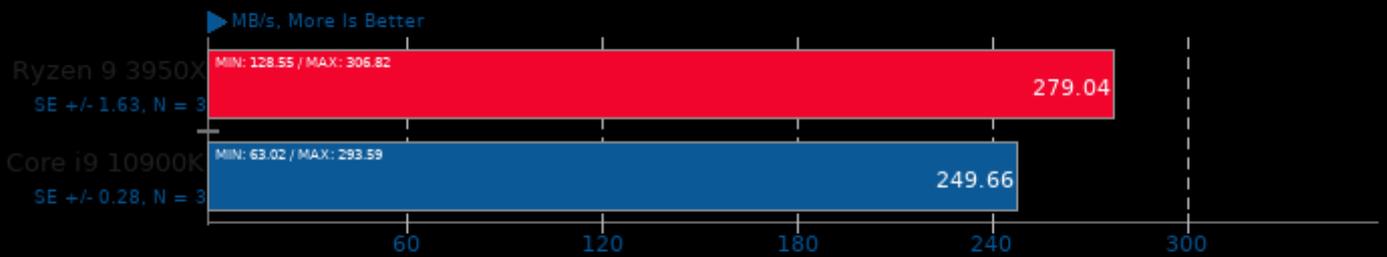
Read Test



1. (CC) gcc options: -O2 -lm -pthread -mpi

IOR 3.2.1

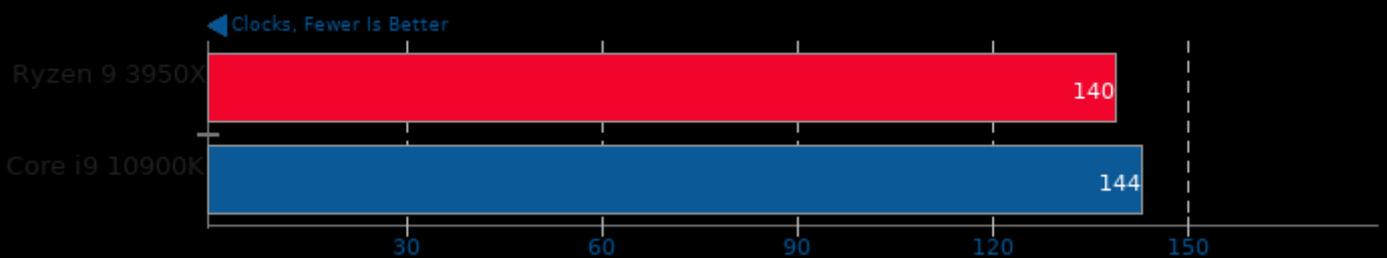
Write Test



1. (CC) gcc options: -O2 -lm -pthread -mpi

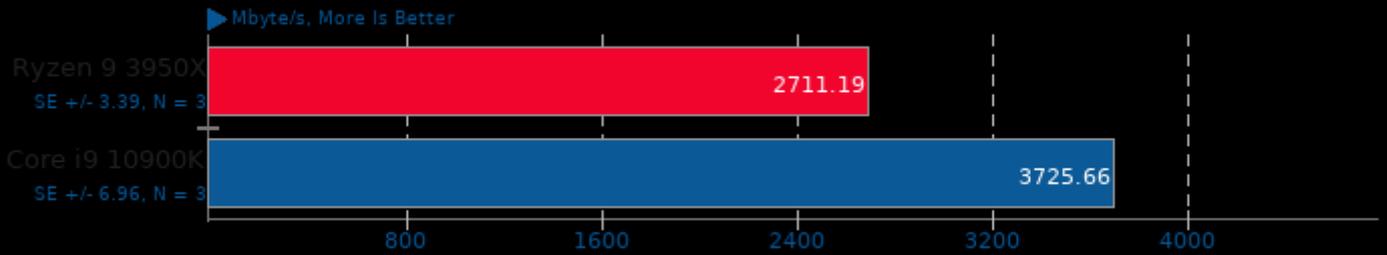
ctx_clock

Context Switch Time



Nettle 3.5.1

Test: poly1305-aes



1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto

BLAKE2 20170307

◀ Cycles Per Byte, Fewer Is Better

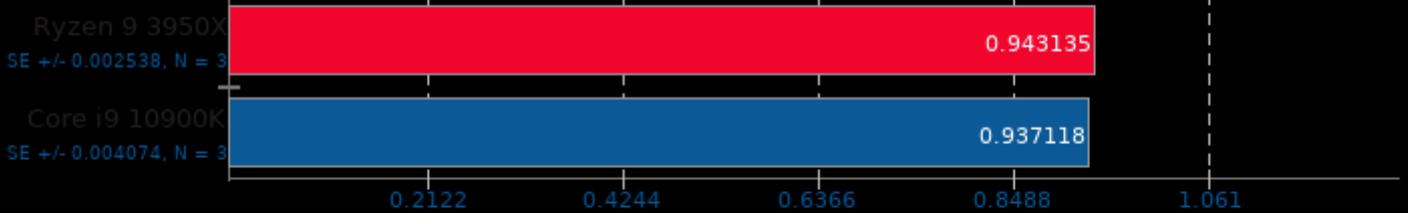


1. (CC) gcc options: -O3 -march=native -lcrypto -lz

Bullet Physics Engine 2.81

Test: Convex Trimesh

◀ Seconds, Fewer Is Better

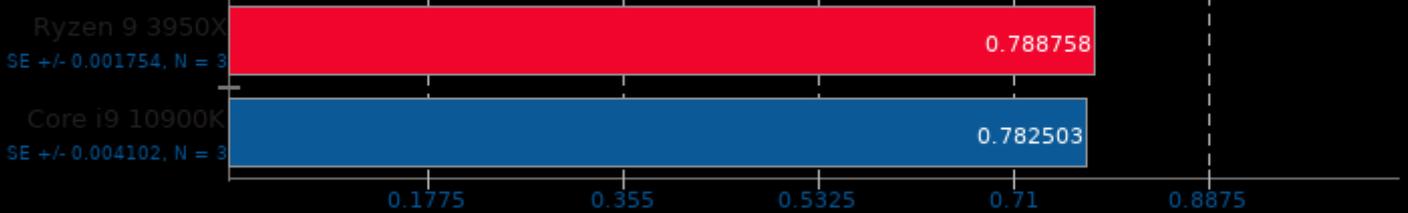


1. (CXX) g++ options: -O3 -rdynamic -lglut -lGL -lGLU

Bullet Physics Engine 2.81

Test: Prim Trimesh

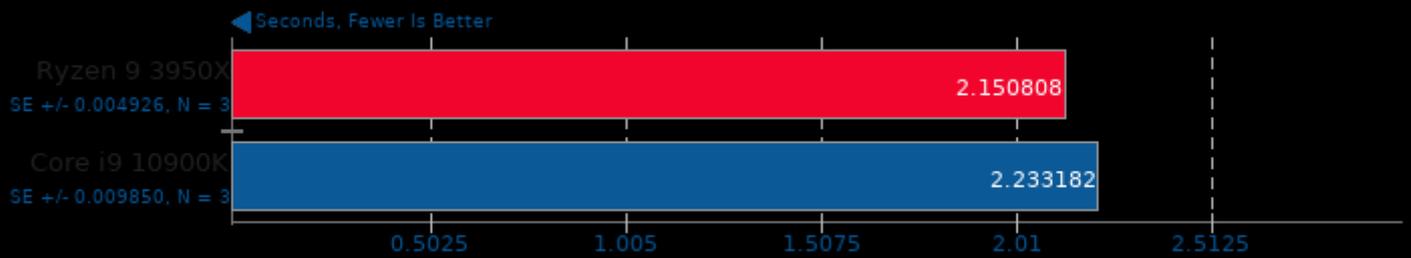
◀ Seconds, Fewer Is Better



1. (CXX) g++ options: -O3 -rdynamic -lglut -lGL -lGLU

Bullet Physics Engine 2.81

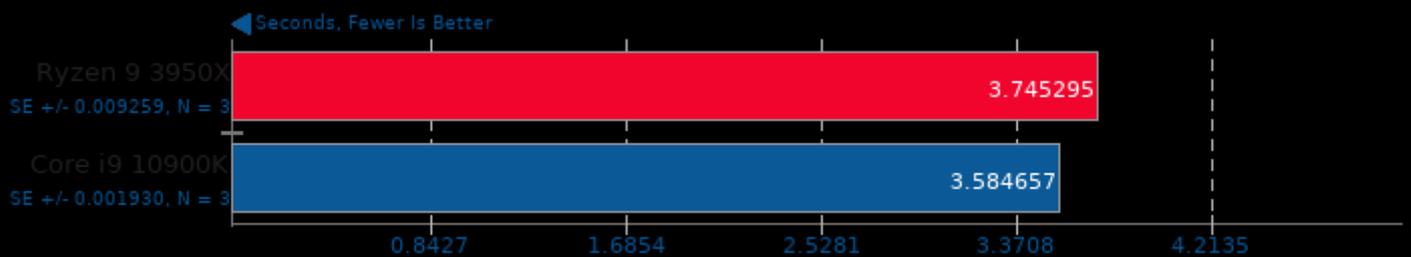
Test: 136 Ragdolls



1. (CXX) g++ options: -O3 -rdynamic -lglut -lGL -lGLU

Bullet Physics Engine 2.81

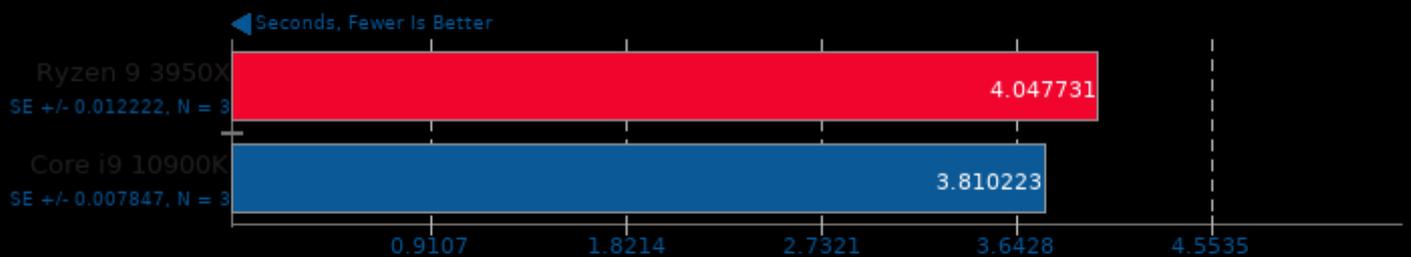
Test: 1000 Convex



1. (CXX) g++ options: -O3 -rdynamic -lglut -lGL -lGLU

Bullet Physics Engine 2.81

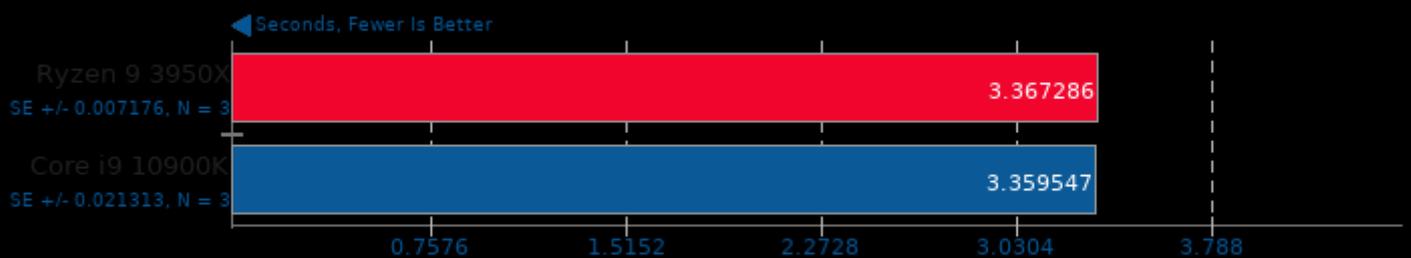
Test: 1000 Stack



1. (CXX) g++ options: -O3 -rdynamic -lglut -lGL -lGLU

Bullet Physics Engine 2.81

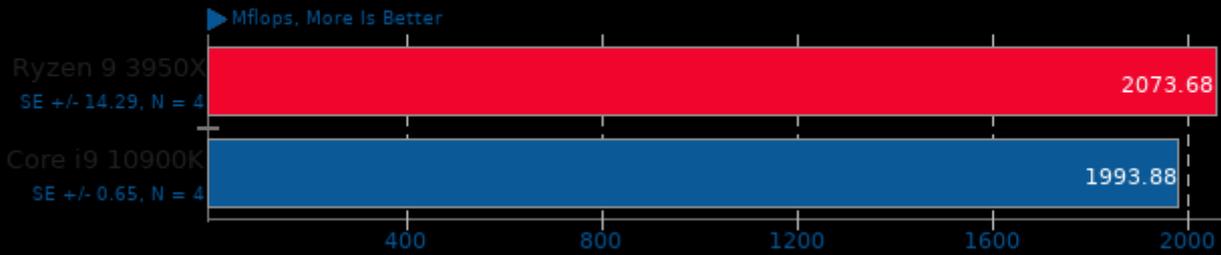
Test: 3000 Fall



1. (CXX) g++ options: -O3 -rdynamic -lglut -lGL -lGLU

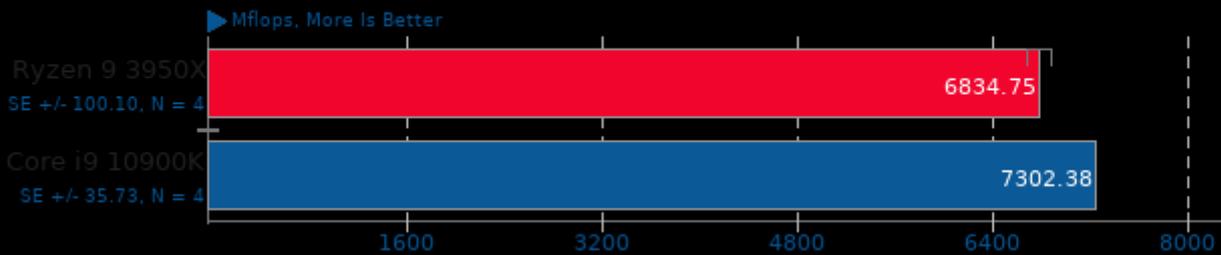
Java SciMark 2.0

Computational Test: Jacobi Successive Over-Relaxation



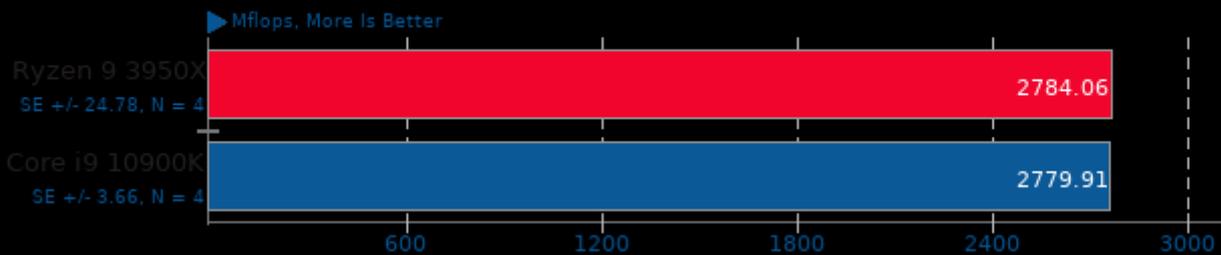
Java SciMark 2.0

Computational Test: Dense LU Matrix Factorization



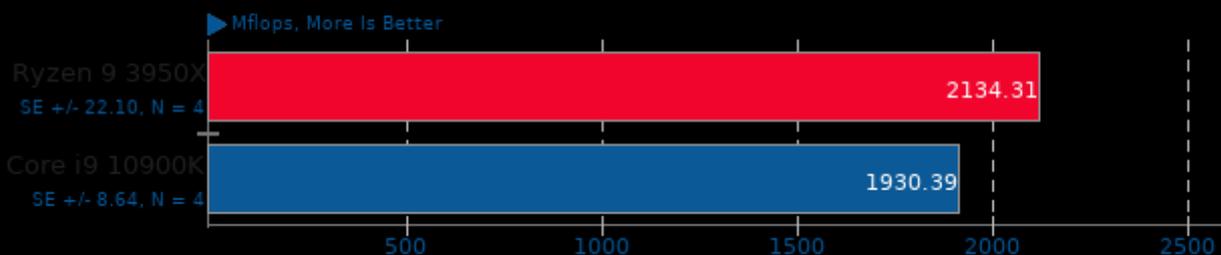
Java SciMark 2.0

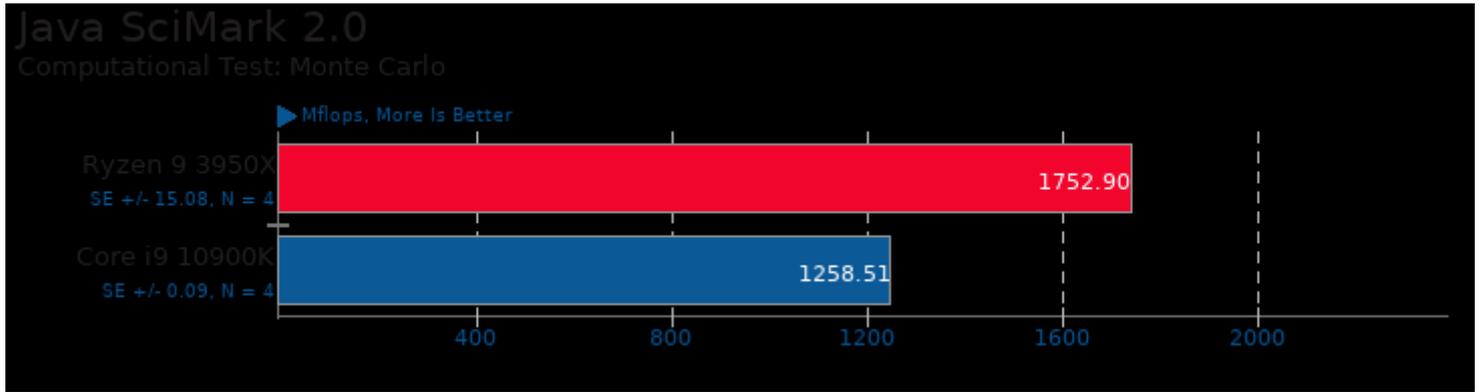
Computational Test: Sparse Matrix Multiply



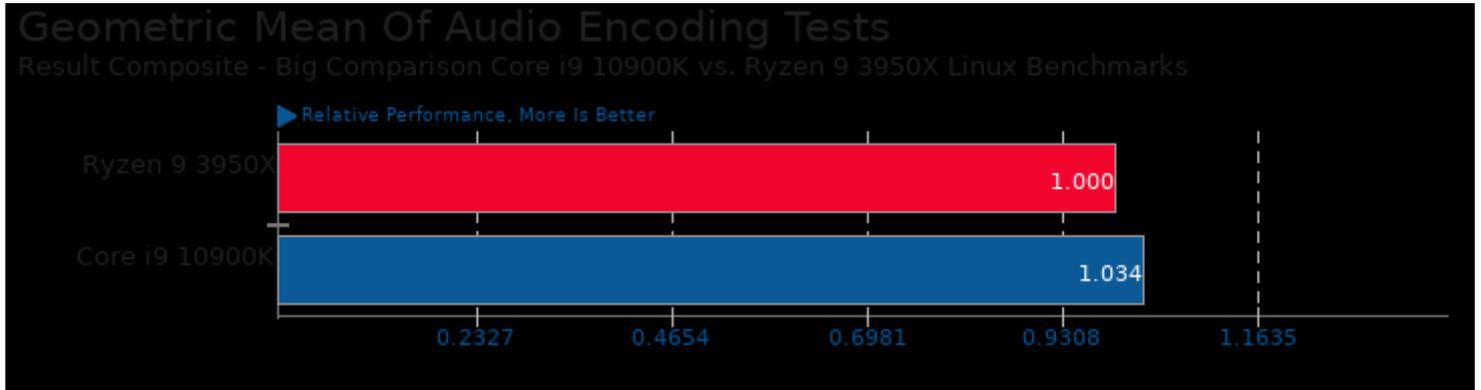
Java SciMark 2.0

Computational Test: Fast Fourier Transform

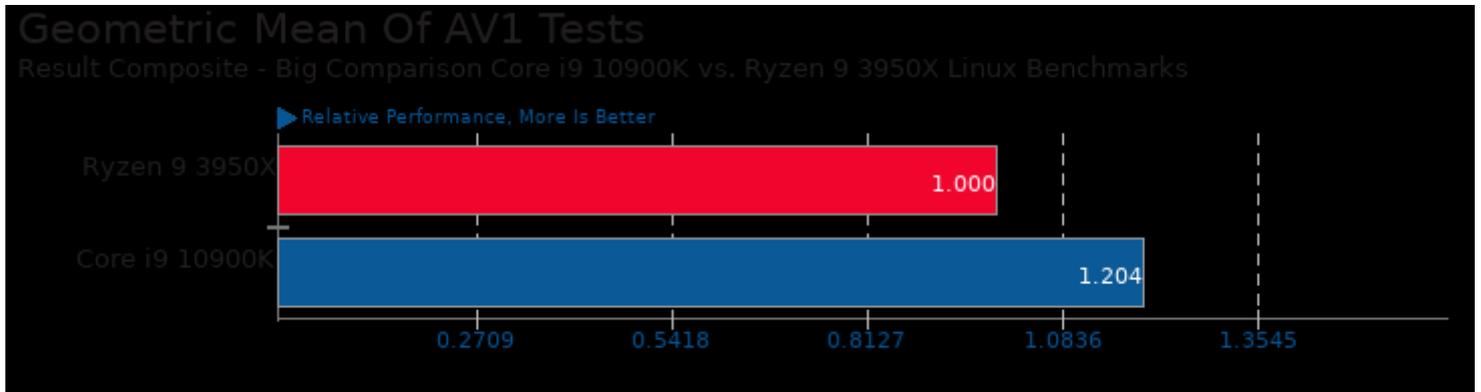




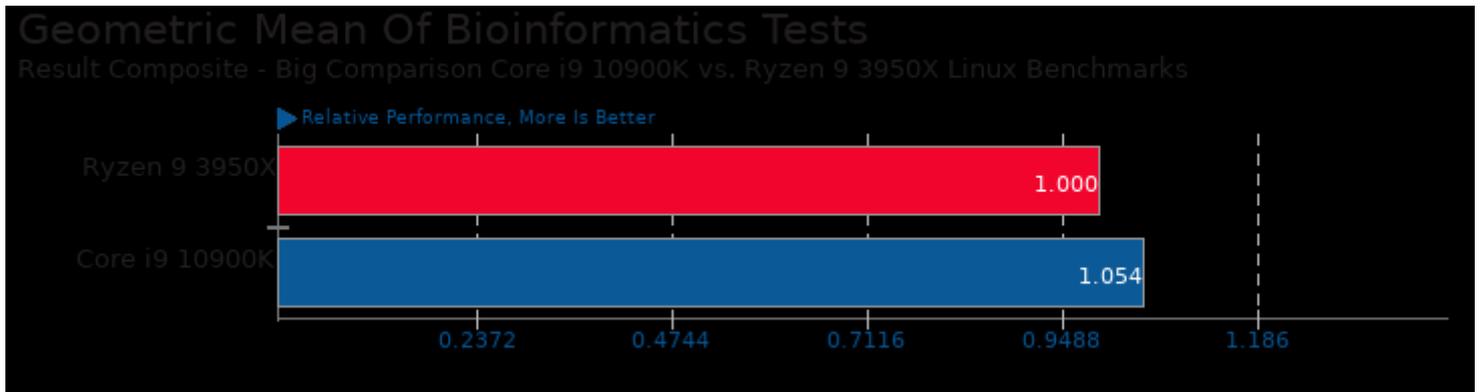
These geometric means are based upon test groupings / test suites for this result file.



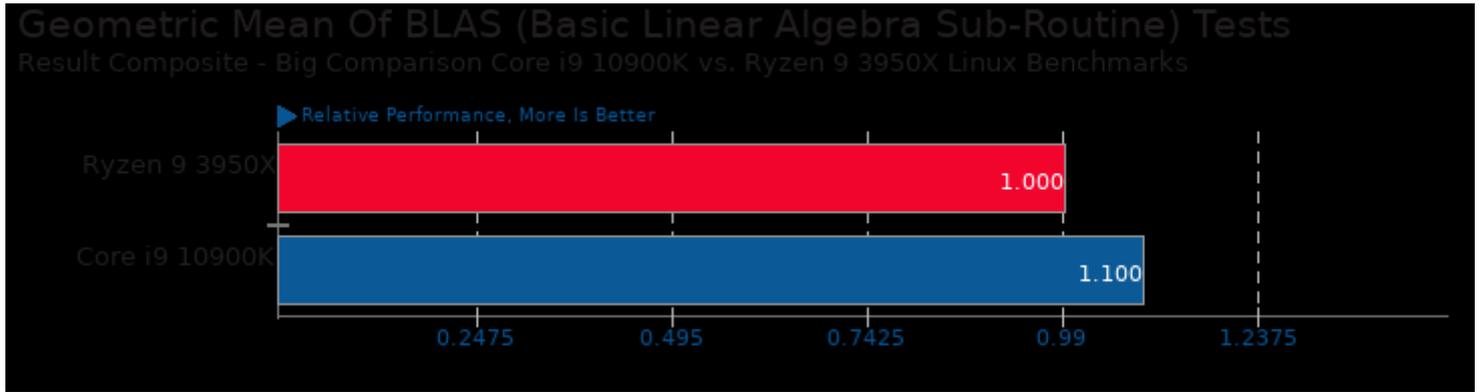
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



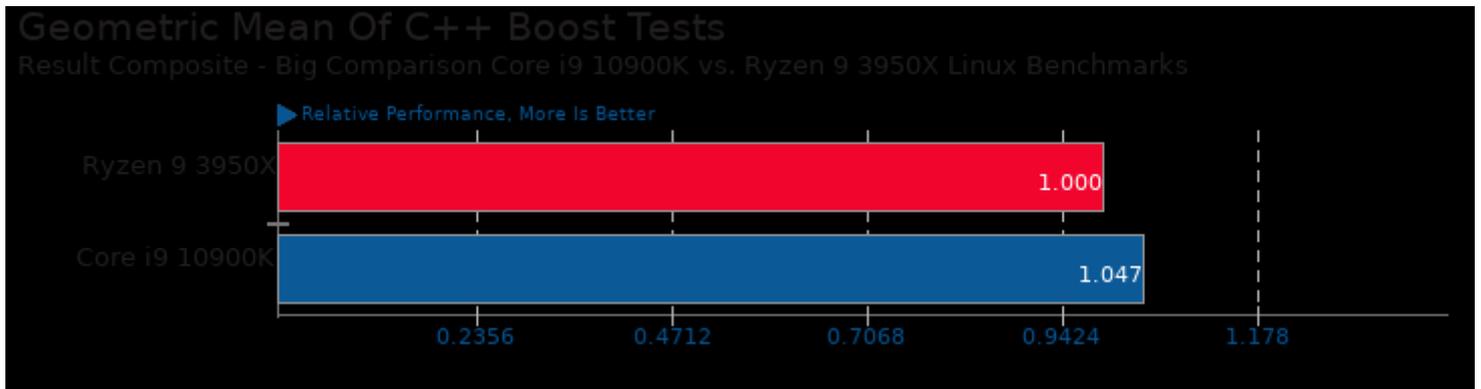
Geometric mean based upon tests: pts/dav1d, pts/aom-av1, pts/libgav1 and pts/rav1e



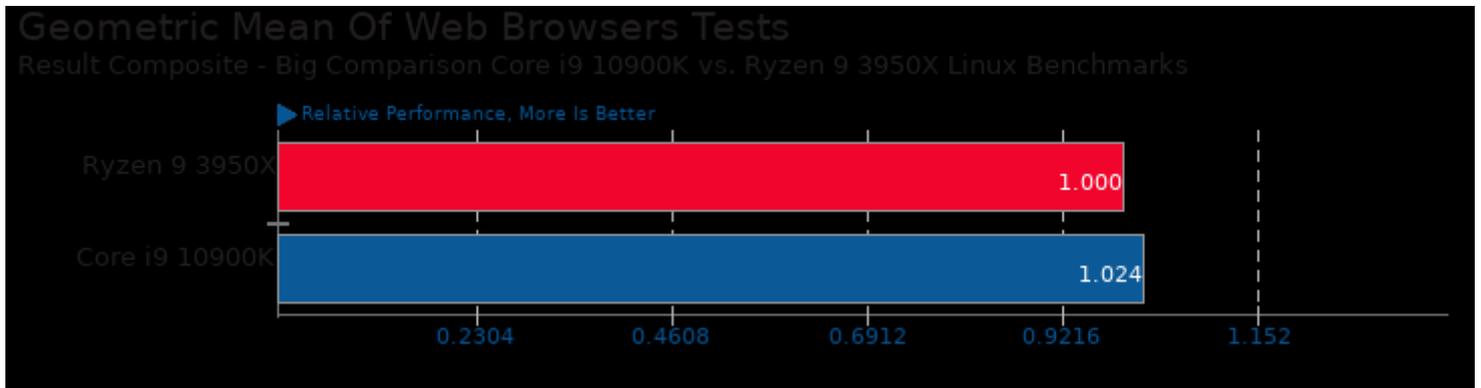
Geometric mean based upon tests: pts/himeno, pts/mrbayes and pts/hmmer



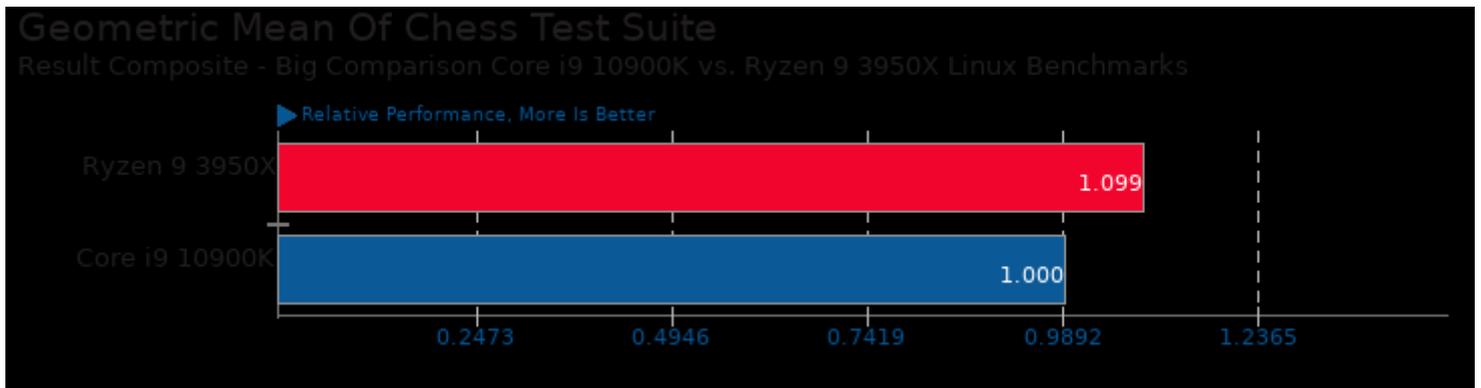
Geometric mean based upon tests: pts/nwchem and pts/lczero



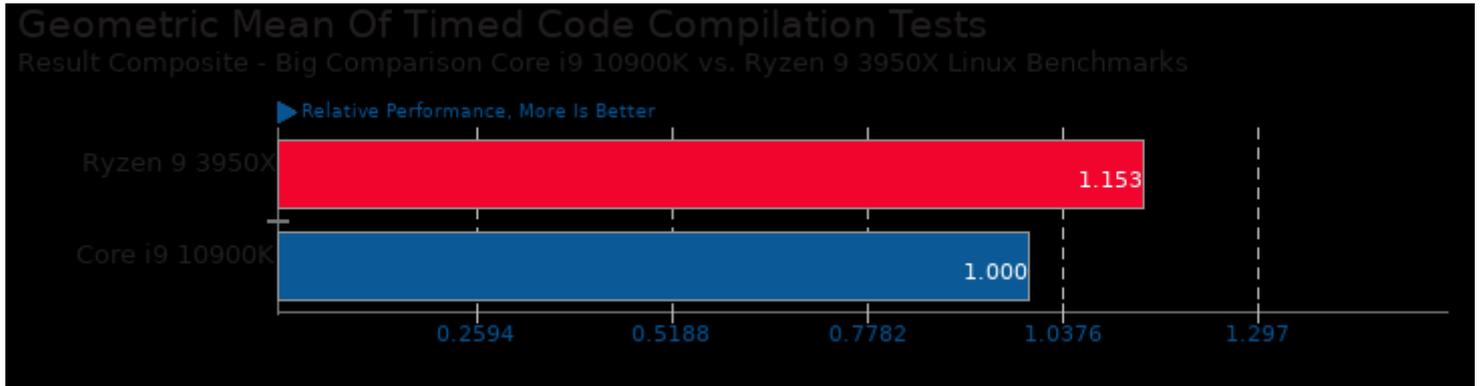
Geometric mean based upon tests: pts/core-latency, pts/minion and pts/yafaray



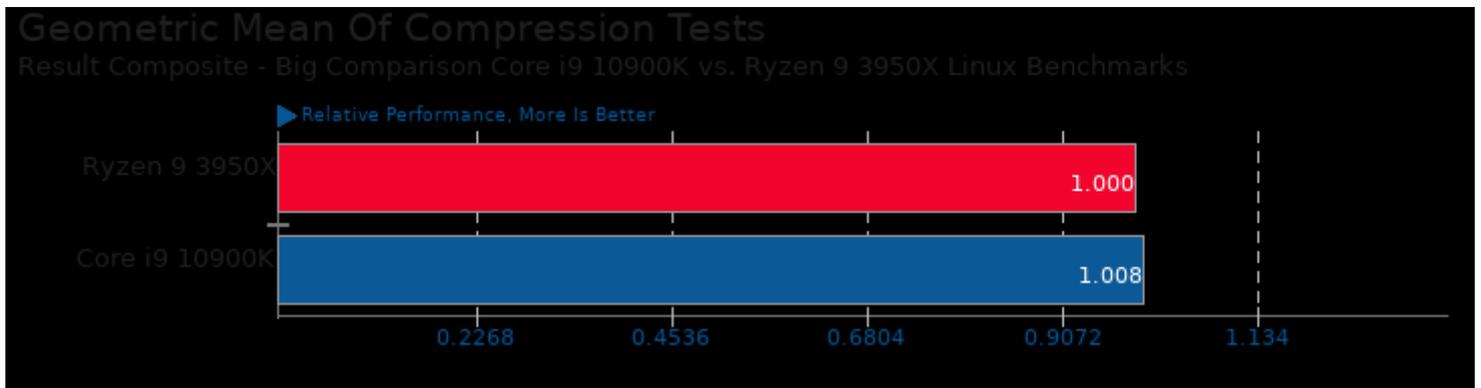
Geometric mean based upon tests: system/selenium



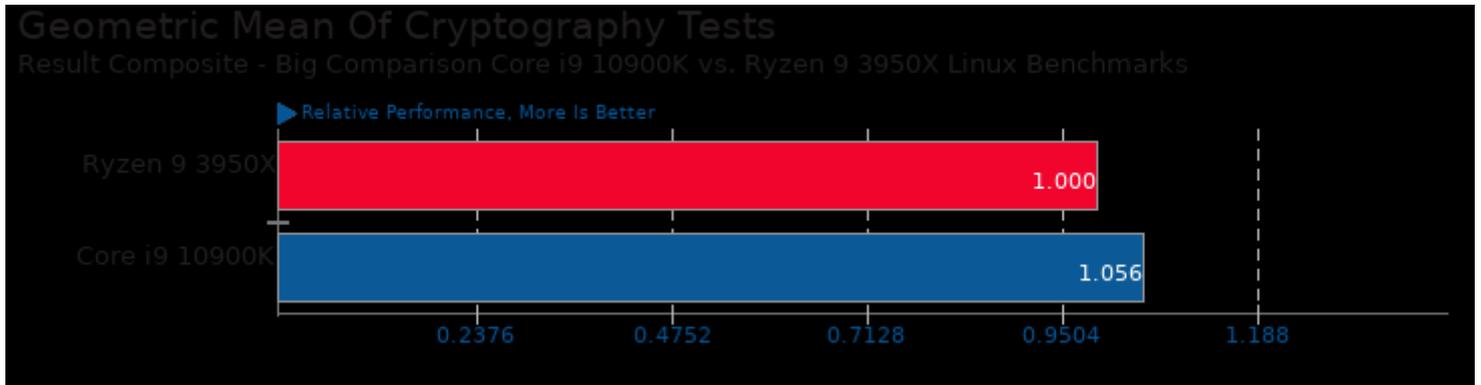
Geometric mean based upon tests: pts/tscp, pts/lczero, pts/stockfish, pts/asmfish, pts/n-queens and pts/m-queens



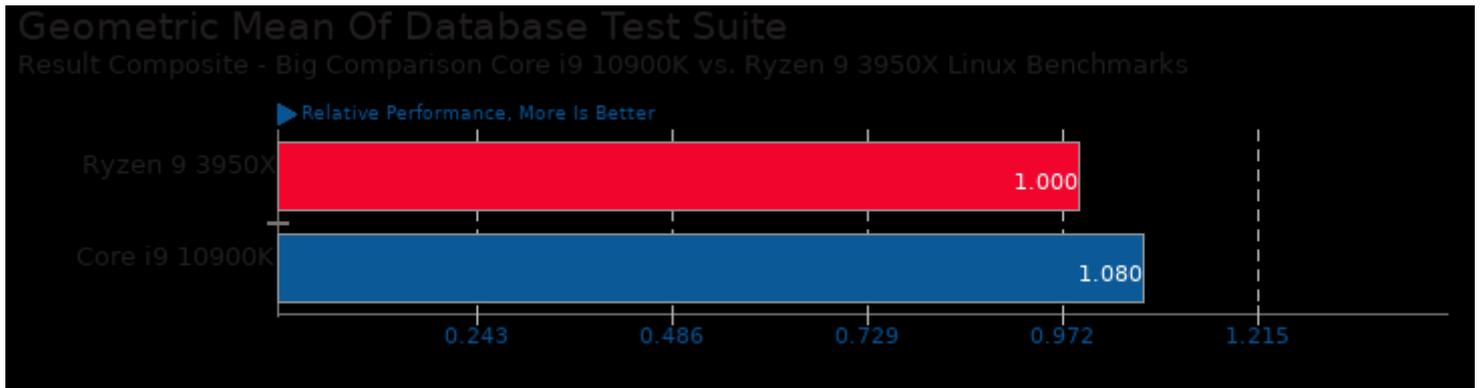
Geometric mean based upon tests: pts/build-apache, pts/build-php, pts/build-linux-kernel, pts/build-imagemagick, pts/build-gcc, pts/build-gdb, pts/build-llvm, pts/build-ffmpeg, pts/build-mplayer and pts/build2



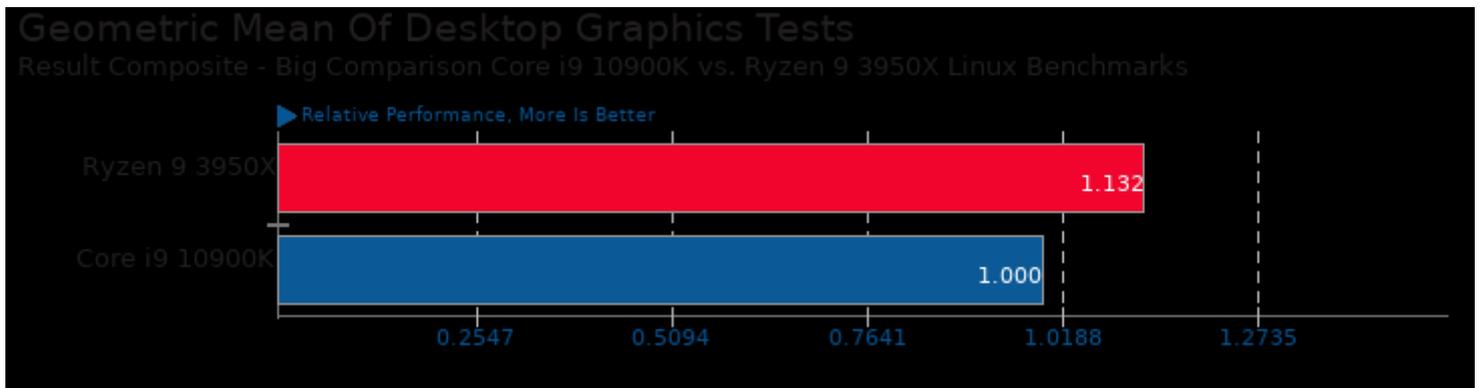
Geometric mean based upon tests: pts/compress-7zip, pts/compress-gzip, pts/compress-pbzip2, pts/compress-zstd, pts/compress-xz, pts/lzbench and pts/blosc



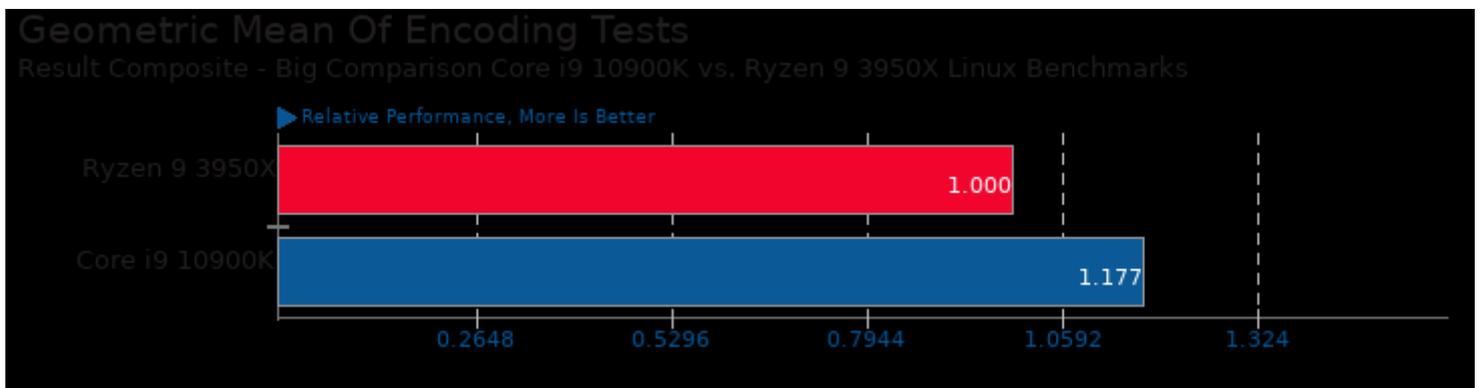
Geometric mean based upon tests: pts/gnupg, pts/openssl, pts/blake2, pts/john-the-ripper, pts/smhasher, pts/botan, pts/cryptopp, pts/bork, pts/nettle, pts/aircrack-ng and pts/cpuminer-opt



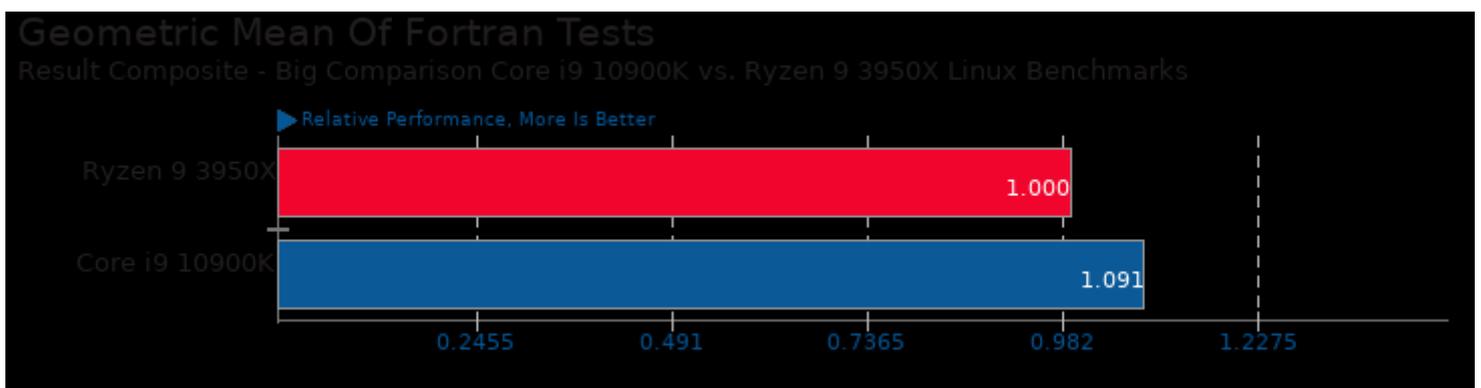
Geometric mean based upon tests: pts/sqlite-speedtest, pts/redis and pts/rocksdb



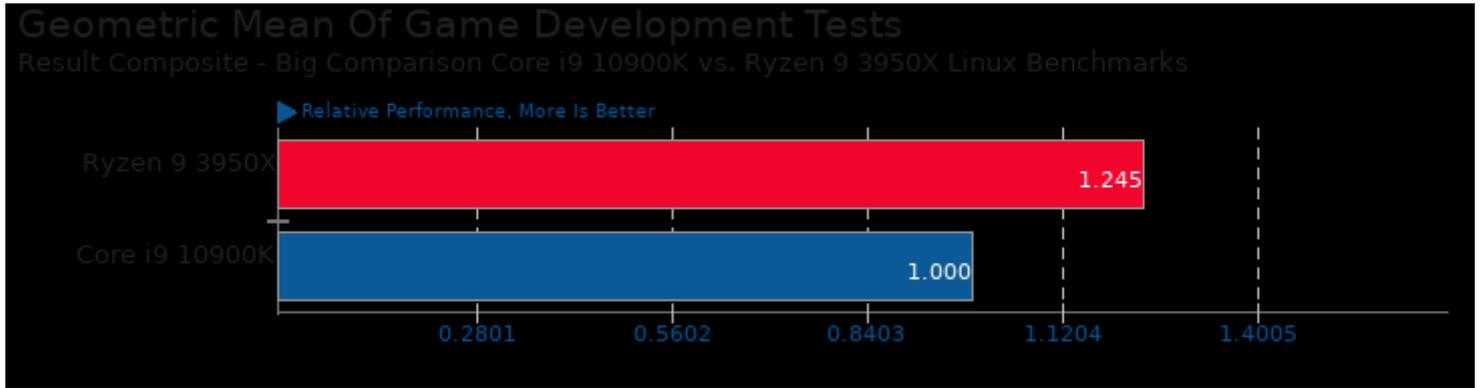
Geometric mean based upon tests: pts/xonotic, pts/tesseract, pts/paraview, pts/unigine-valley and pts/unigine-heaven



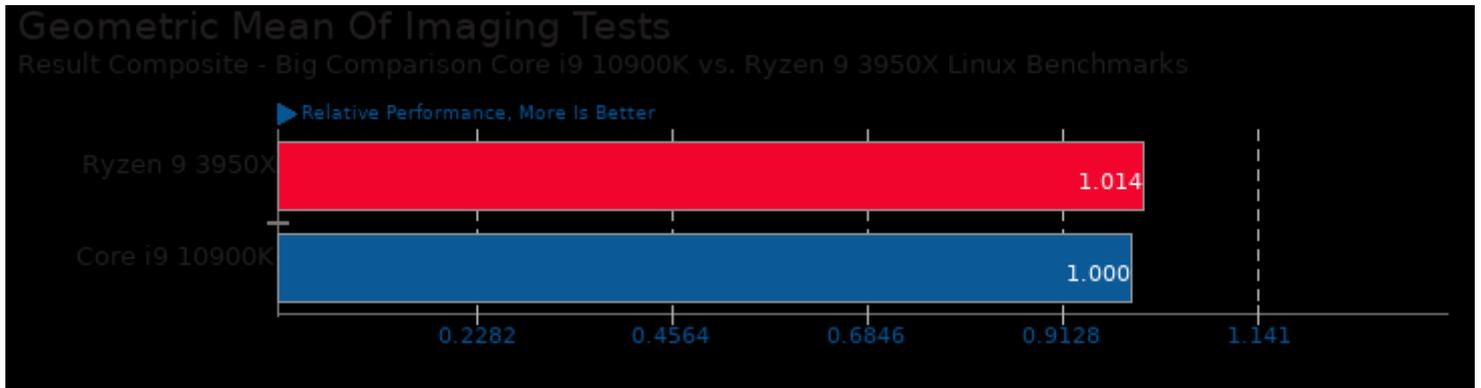
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/x264, pts/x265, pts/ffmpeg, pts/vpxenc, pts/dav1d, pts/aom-av1, pts/libgav1 and pts/rav1e



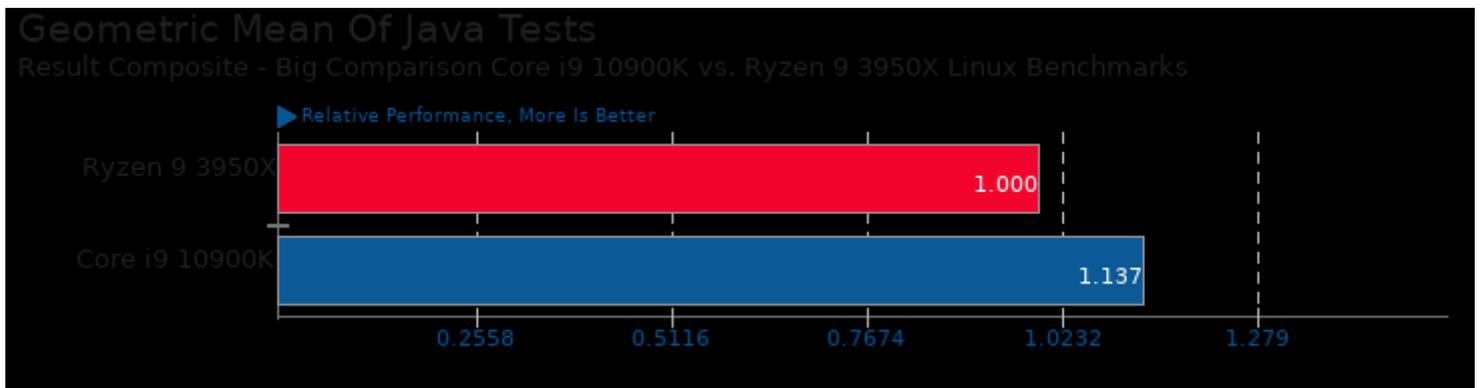
Geometric mean based upon tests: pts/nwchem, pts/polyhedron, pts/hpcg, pts/npb and pts/neat



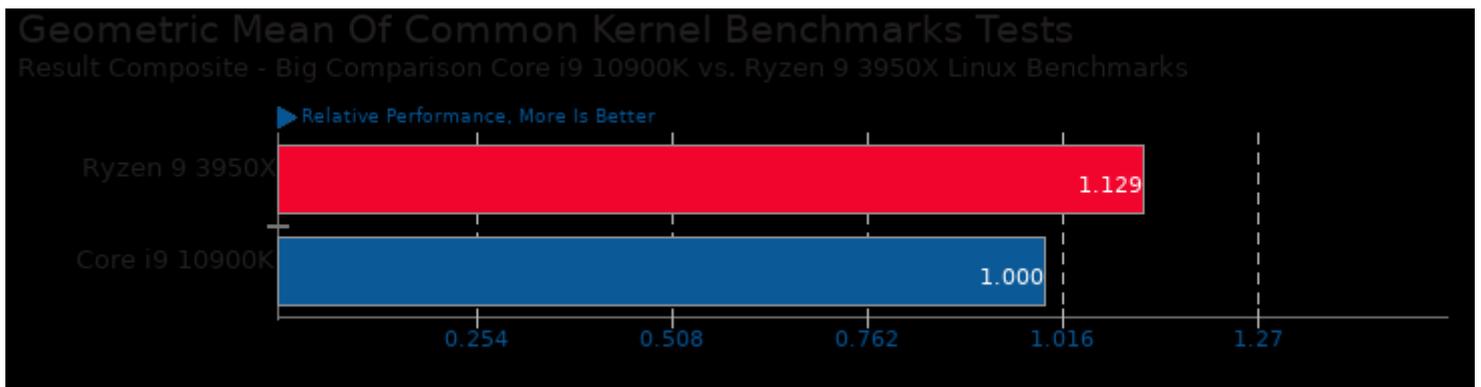
Geometric mean based upon tests: pts/basis, pts/blender, pts/oidn and pts/openvkl



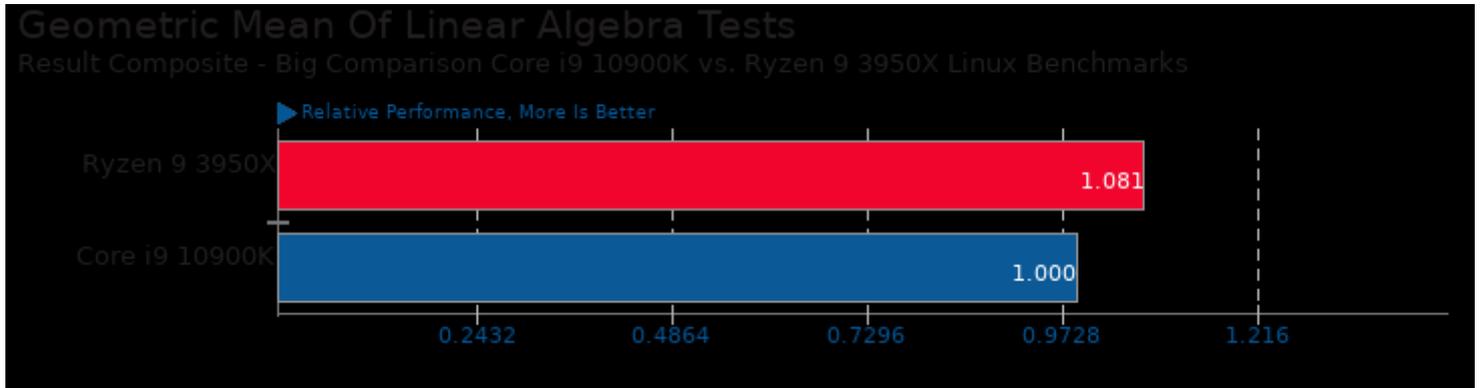
Geometric mean based upon tests: pts/graphics-magick, system/rawtherapee, pts/tjbench, system/gimp and system/gegl



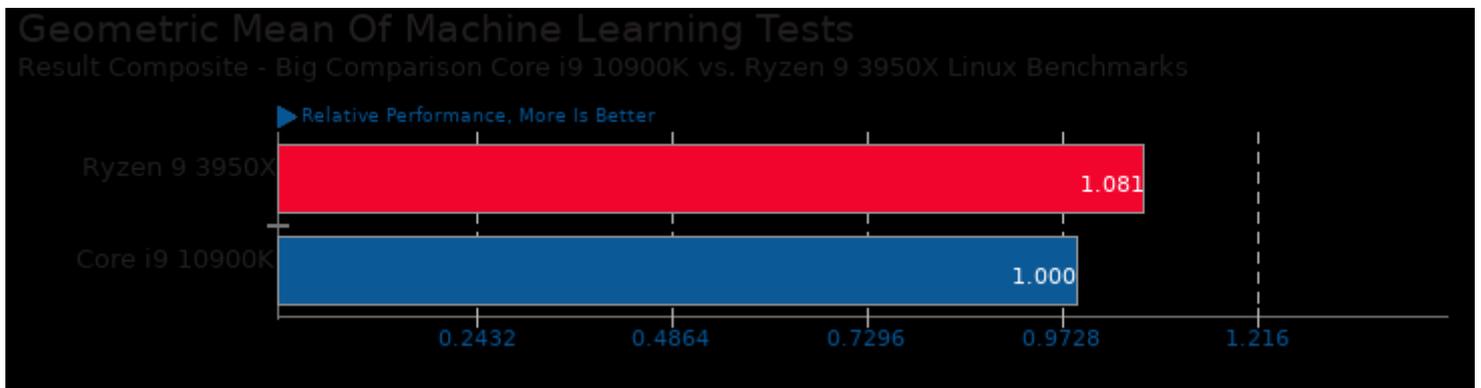
Geometric mean based upon tests: pts/bork, pts/java-scimark2, pts/dacapobench, pts/java-gradle-perf and pts/renaissance



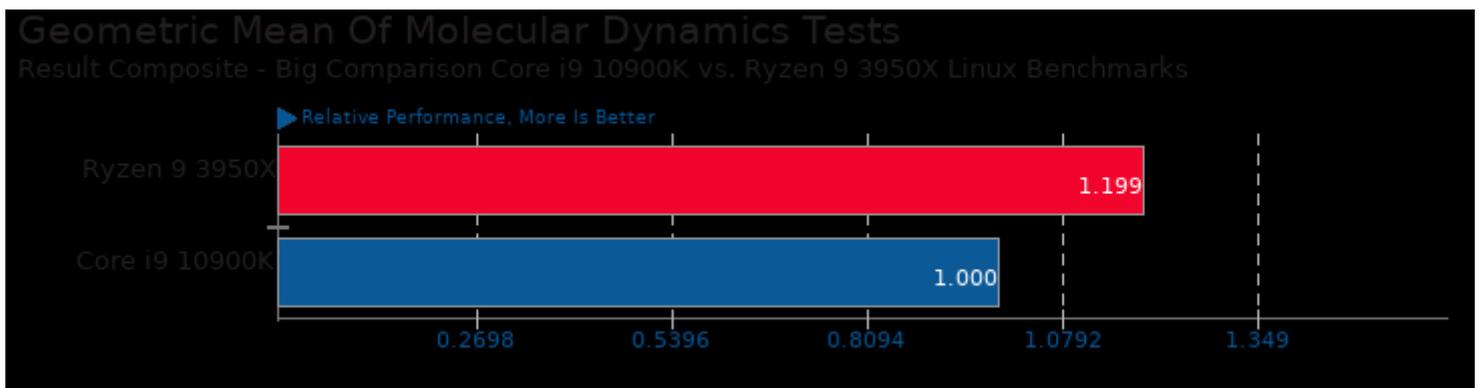
Geometric mean based upon tests: pts/sqlite-speedtest, pts/openssl, pts/ctx-clock, pts/hackbench, pts/ipc-benchmark, pts/stress-ng, pts/osbench and pts/rocksdb



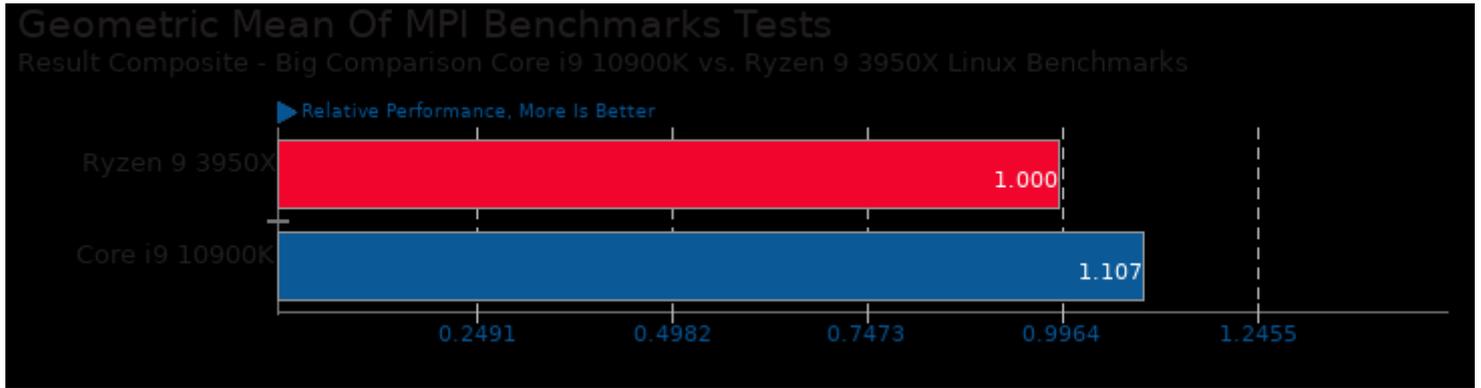
Geometric mean based upon tests: pts/mt-dgemm and pts/amg



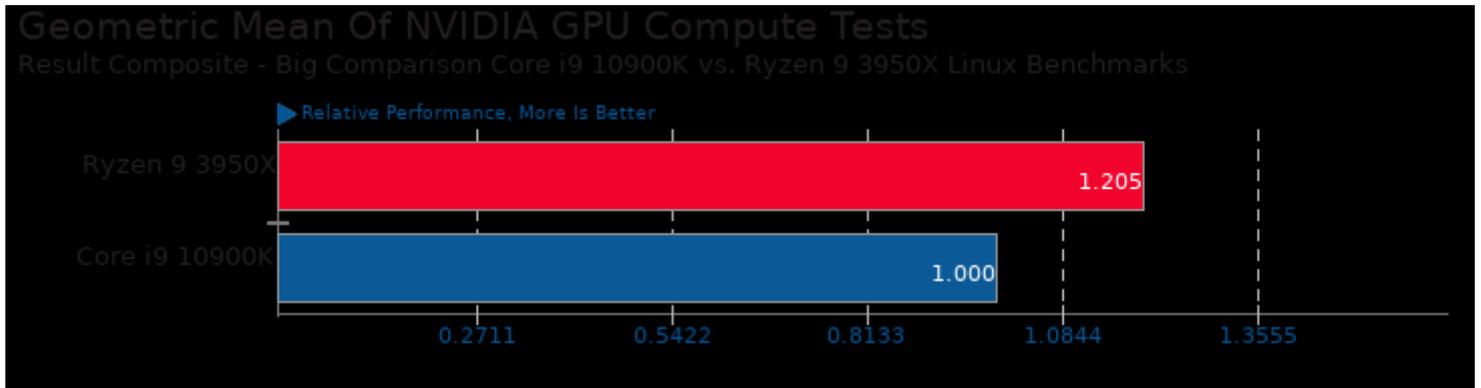
Geometric mean based upon tests: pts/numpy, pts/deepspeech, pts/scikit-learn, pts/mlpack, pts/numenta-nab, pts/plaidml and pts/lczero



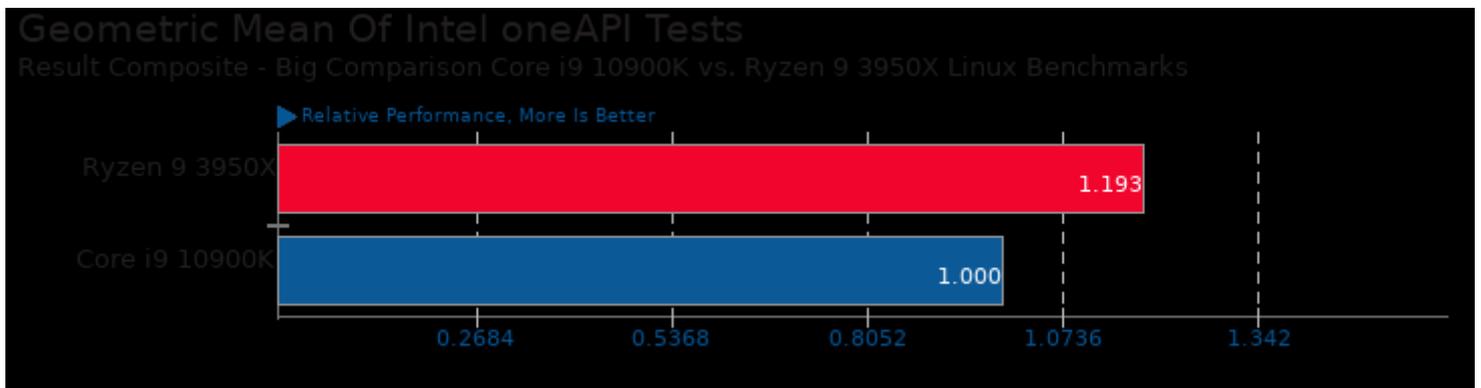
Geometric mean based upon tests: pts/namd, pts/gromacs, pts/cp2k, pts/nwchem, pts/lulesh and pts/pennant



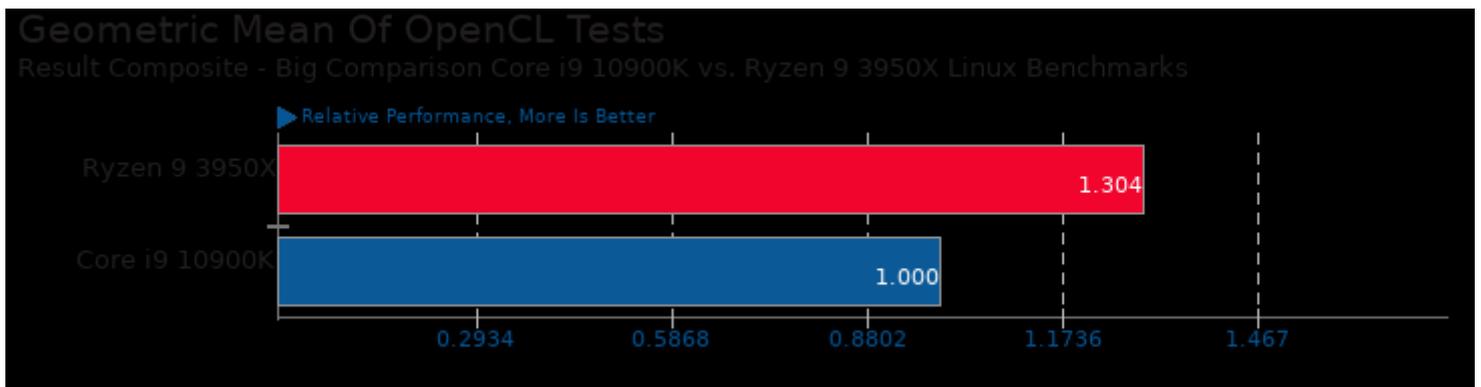
Geometric mean based upon tests: pts/askap, pts/gromacs, pts/pennant, pts/hpcg, pts/mrbyes and pts/npb



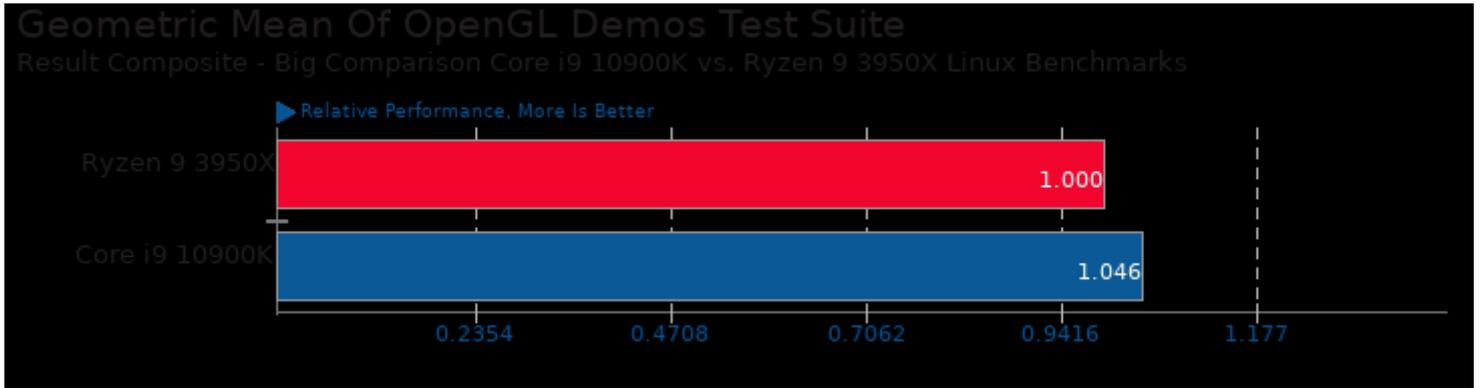
Geometric mean based upon tests: pts/gromacs, pts/luxcorerender, pts/rodinia, pts/neatbench, pts/plaidml, pts/lczero, pts/indigobench and pts/blender



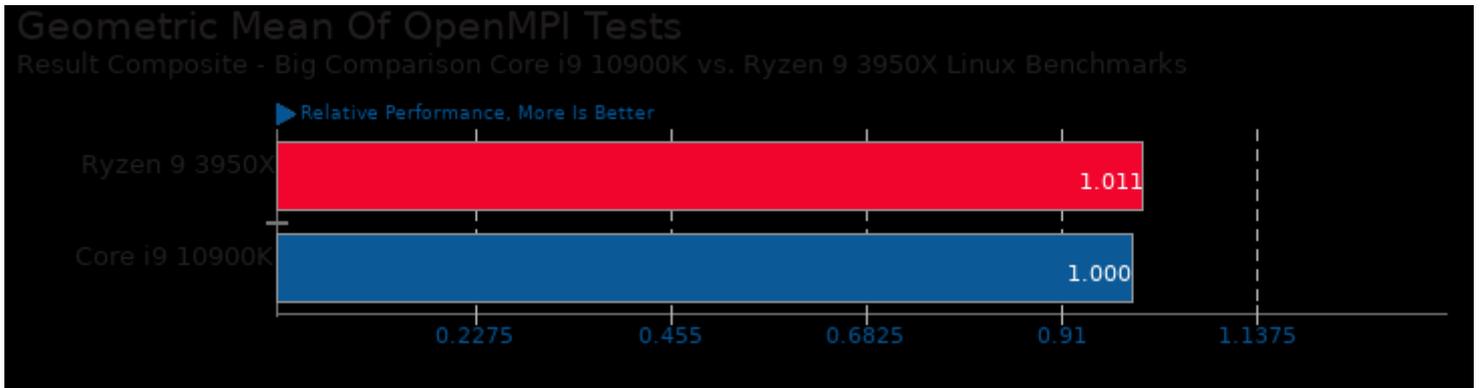
Geometric mean based upon tests: pts/embree, pts/oidn, pts/tungsten and pts/opencvl



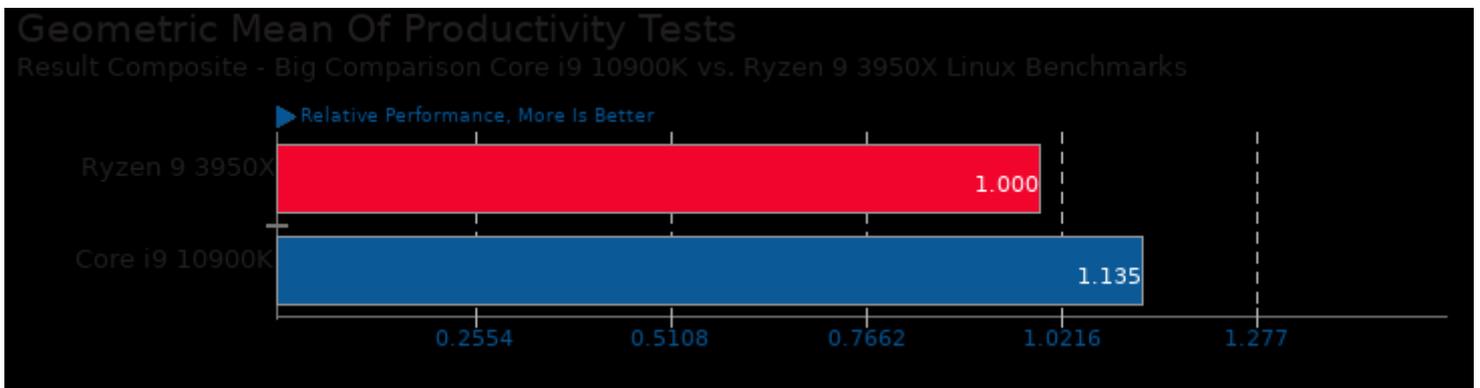
Geometric mean based upon tests: pts/rodinia and pts/parboil



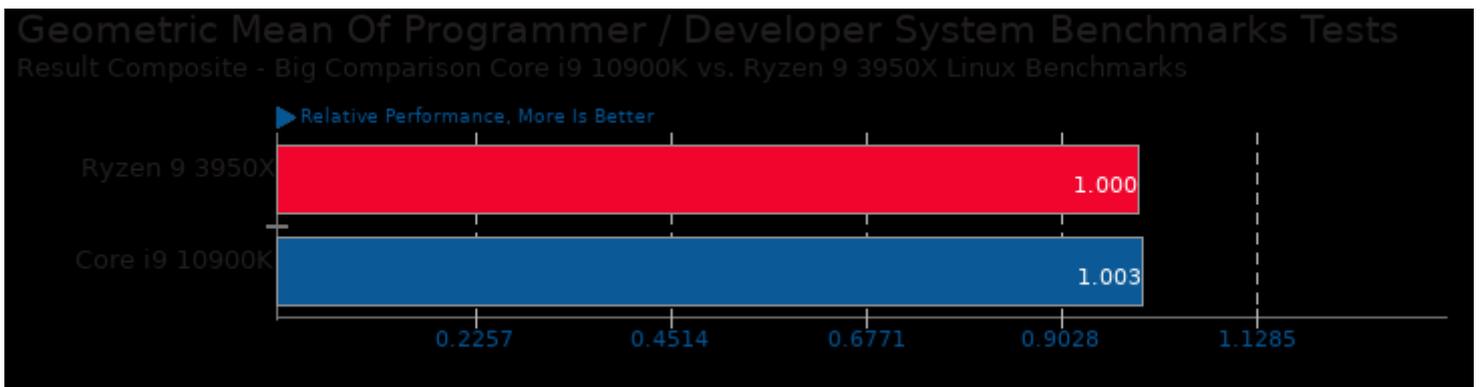
Geometric mean based upon tests: pts/unigine-valley, pts/unigine-heaven and pts/unigine-super



Geometric mean based upon tests: pts/pennant, pts/nwchem, pts/hpcg, pts/amg, pts/gromacs, pts/parboil, pts/npb, pts/askap, pts/mrbayes, pts/lulesh and pts/rodinia

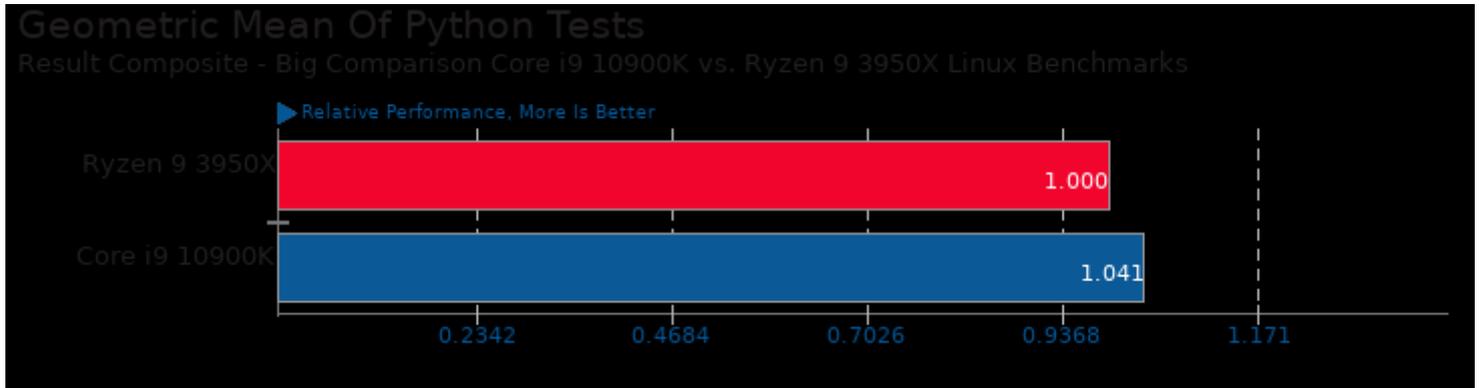


Geometric mean based upon tests: system/libreoffice, system/gimp and system/gegl

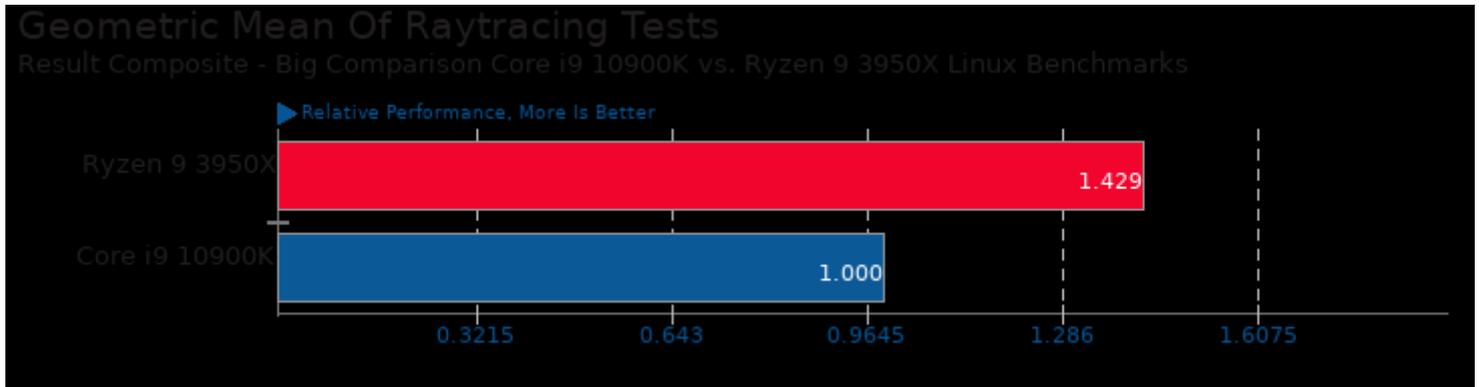


Geometric mean based upon tests: pts/sqlite-speedtest, pts/git, pts/blosc, pts/compress-zstd, pts/pyperformance,

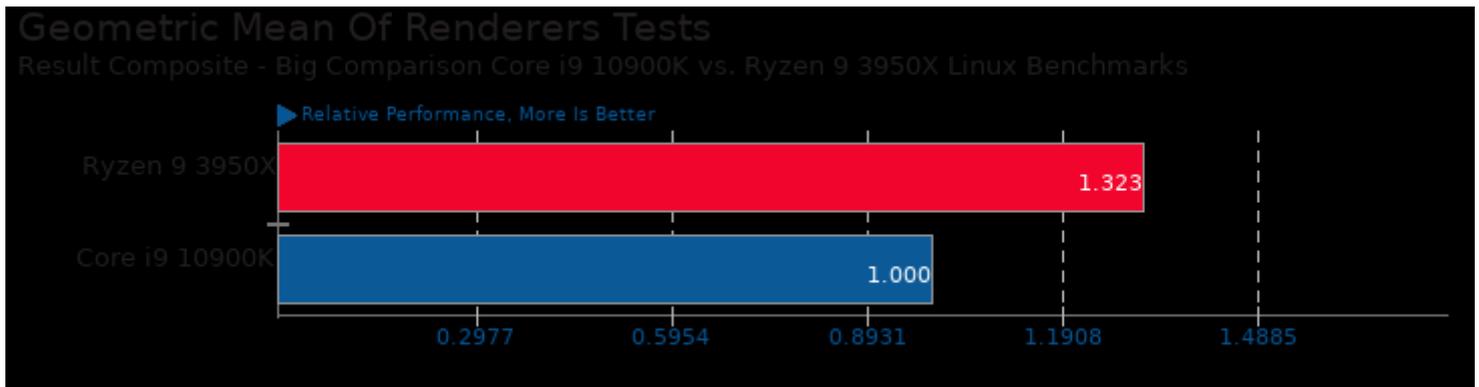
pts/pybench, pts/build-apache, pts/build-php, pts/build-linux-kernel, pts/build-imagemagick, pts/build-gcc, pts/build-gdb, pts/build-llvm, pts/build-ffmpeg, pts/build-mplayer, pts/build2, pts/mt-dgemm and pts/amg



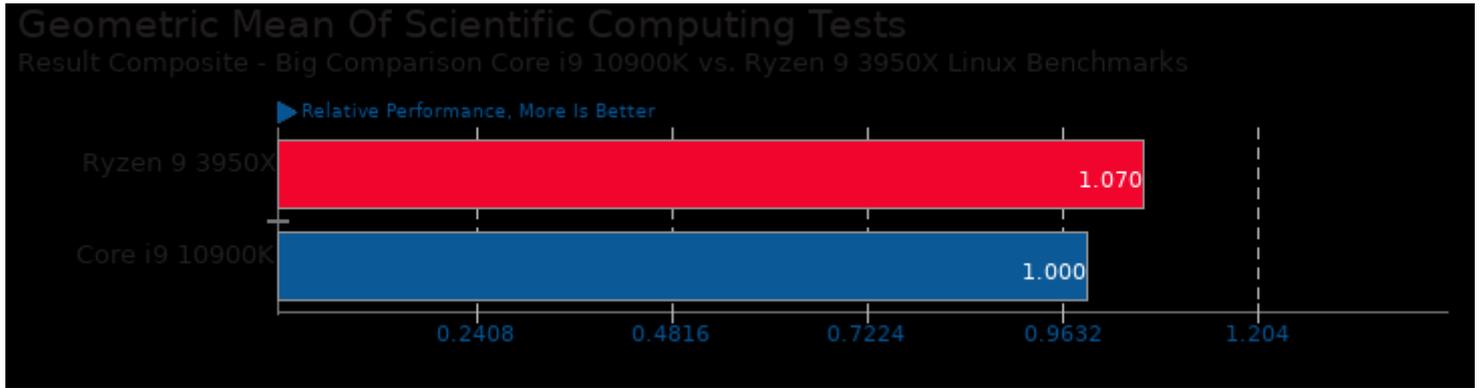
Geometric mean based upon tests: pts/pybench, pts/numenta-nab, pts/cython-bench, pts/numpy, pts/mlpack, pts/scikit-learn and pts/pyperformance



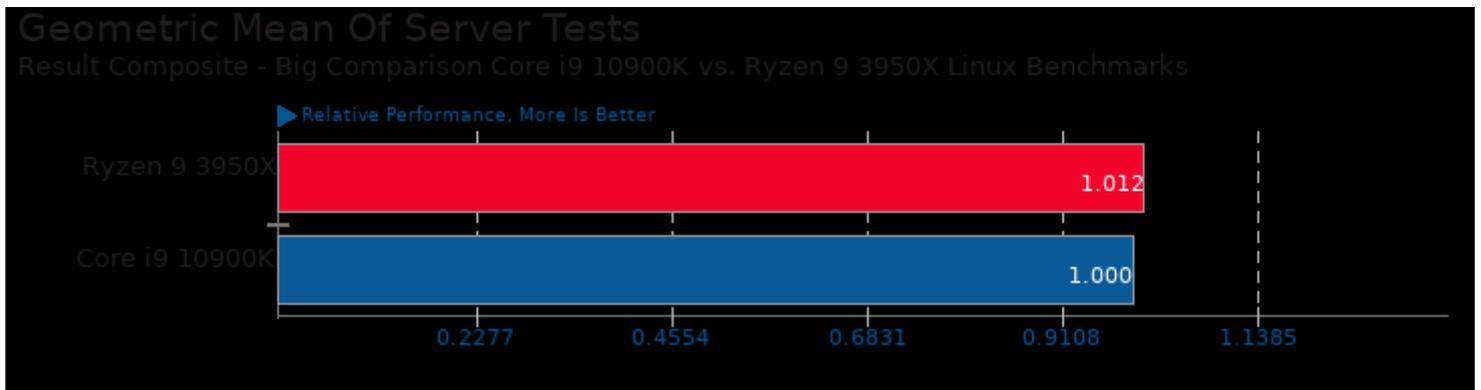
Geometric mean based upon tests: pts/c-ray, pts/tachyon, pts/rays1bench and pts/yafaray



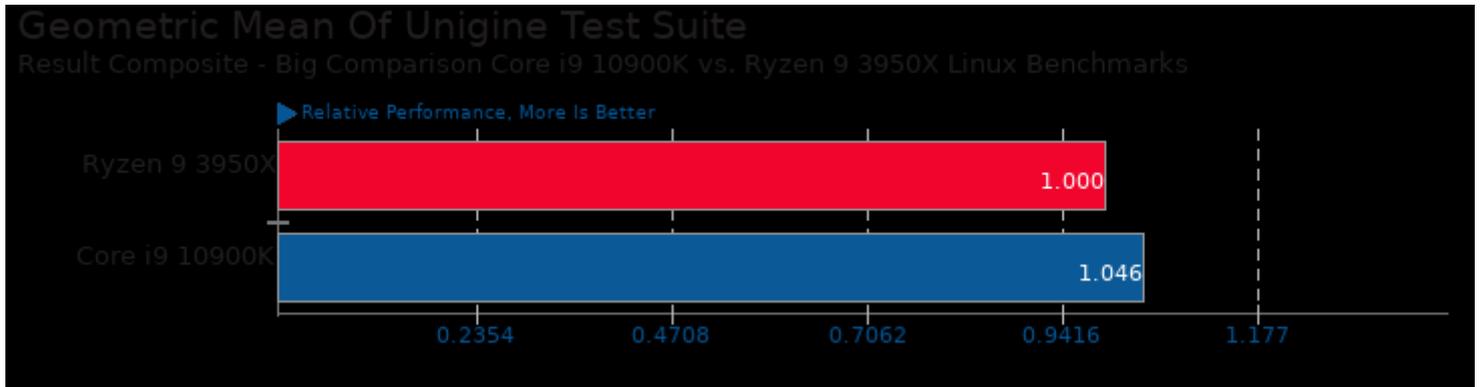
Geometric mean based upon tests: pts/c-ray, pts/tachyon, pts/rays1bench, pts/yafaray, pts/blender, pts/tungsten, pts/appleseed, pts/radiance, pts/aobench, pts/luxcorerender, pts/smallpt, pts/ttsiod-renderer and pts/indigobench



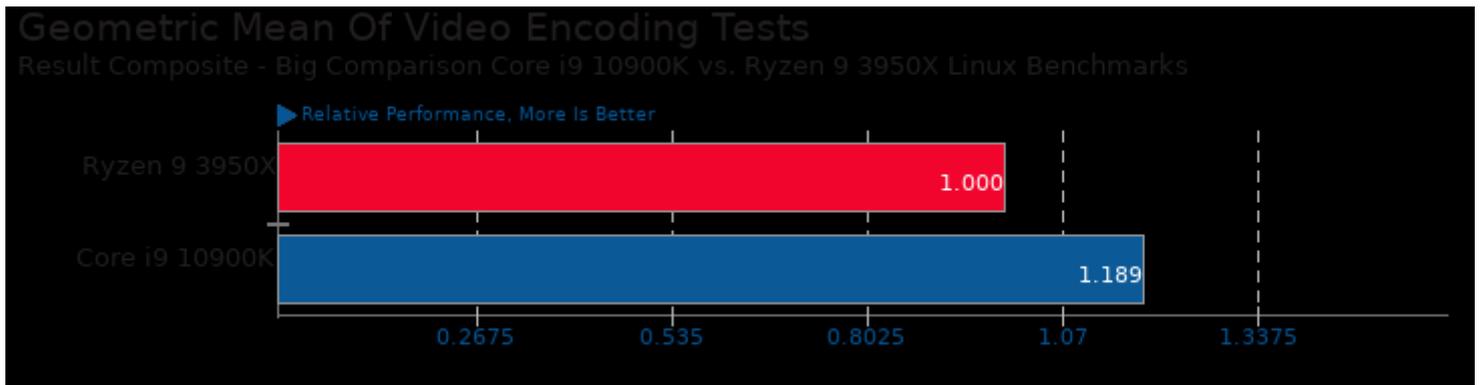
Geometric mean based upon tests: pts/fftw, pts/neat, pts/mt-dgemm, pts/amg, pts/namd, pts/gromacs, pts/cp2k, pts/nwchem, pts/lulesh, pts/pennant, pts/himeno, pts/mrbayes and pts/hmmer



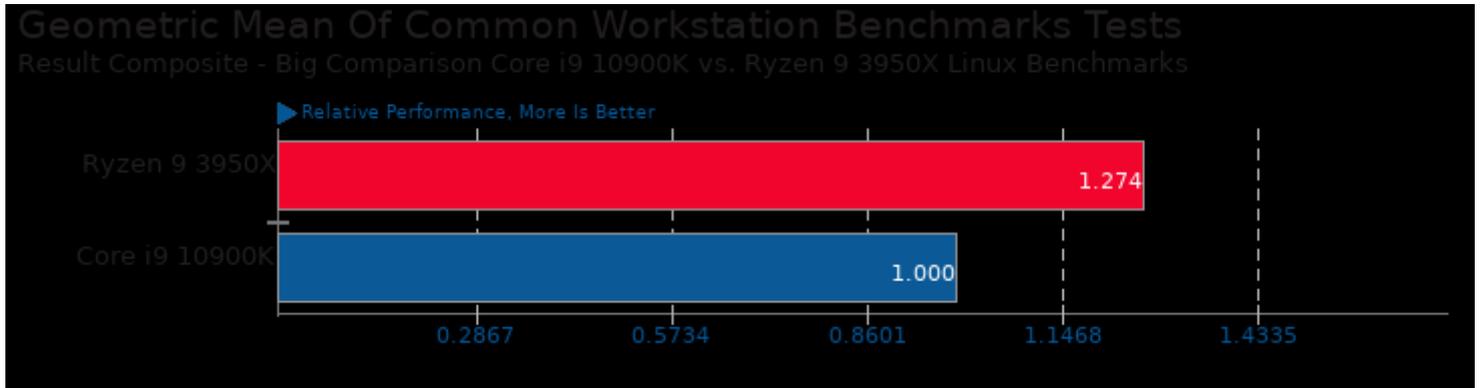
Geometric mean based upon tests: pts/ebizzy, pts/redis, pts/rocksdb, pts/openssl, pts/perl-benchmark and pts/sqlite-speedtest



Geometric mean based upon tests: pts/unigine-valley, pts/unigine-heaven and pts/unigine-super



Geometric mean based upon tests: pts/x264, pts/x265, pts/ffmpeg, pts/vpxenc, pts/dav1d, pts/aom-av1, pts/libgav1 and pts/rav1e



Geometric mean based upon tests: pts/blender, pts/rodinia, pts/parboil, pts/himeno, pts/brl-cad, pts/x265, pts/paraview, pts/swet, pts/sysbench and pts/git

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