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Raspberry Pi 400

Comparing my workstation vs Pi 4s

Automated Executive Summary

Z440 vs Pi 4 had the most wins, coming in first place for 72% of the tests.

Based on the geometric mean of all complete results, the fastest (Z440 vs Pi 4) was 4.85x the speed of the slowest (Raspberry Pi 3 Model B). Raspberry Pi 400 was 0.493x the speed of Z440 vs Pi 4, Raspberry Pi 4 Model B was 0.866x the speed of Raspberry Pi 400, Raspberry Pi 3 Model B was 0.483x the speed of Raspberry Pi 4 Model B.

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

PyPerformance (Benchmark: 2to3) at 301.07x

PyPerformance (Benchmark: raytrace) at 257.394x

PyPerformance (Benchmark: go) at 247.857x

PyPerformance (Benchmark: pickle_pure_python) at 227.667x

Kvazaar (Video Input: Bosphorus 1080p - Video Preset: Very Fast) at 37.83x

Kvazaar (Video Input: Bosphorus 1080p - Video Preset: Ultra Fast) at 32.262x

GraphicsMagick (Operation: Rotate) at 23.321x

FLAC Audio Encoding (WAV To FLAC) at 20.441x

Zstd Compression (Compression Level: 3) at 17.249x

Himeno Benchmark (Poisson Pressure Solver) at 15.567x.

Test Systems:

Raspberry Pi 4 Model B

Processor: ARMv8 Cortex-A72 @ 1.50GHz (4 Cores), Motherboard: BCM2835 Raspberry Pi 4 Model B Rev 1.1, Memory: 2048MB, Disk: 32GB GB1QT, Graphics: vc4drmfb, Monitor: VA2431

OS: Debian 10, Kernel: 5.4.51-v8+ (aarch64), Desktop: LXDE 0.10.0, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: snd_bcm2835.enable_compat_alsa=0 snd_bcm2835.enable_hdmi=1 snd_bcm2835.enable_headphones=1
Compiler Notes: --build=aarch64-linux-gnu --disable-libphobos --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap
--enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object
--enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin
--enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new
--with-gcc-major-version-only -v
Processor Notes: Scaling Governor: cpufreq-dt ondemand
Disk Mount Options Notes: noatime,rw
Java Notes: OpenJDK Runtime Environment (build 11.0.8+10-post-Debian-1deb10u1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Vulnerable + srbds: Not affected + tsx_async_abort: Not affected

Raspberry Pi 3 Model B

Processor: ARMv8 Cortex-A53 @ 1.40GHz (4 Cores), Motherboard: BCM2835 Raspberry Pi 3 Model B Plus Rev 1.3, Memory: 913MB, Disk: 32GB GB1QT, Graphics: vc4drmfb, Monitor: VA2431

OS: Debian 10, Kernel: 5.4.51-v8+ (aarch64), Desktop: LXDE 0.10.0, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: snd_bcm2835.enable_compat_alsa=0 snd_bcm2835.enable_hdmi=1 snd_bcm2835.enable_headphones=1
Compiler Notes: --build=aarch64-linux-gnu --disable-libphobos --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap
--enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object
--enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin
--enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new
--with-gcc-major-version-only -v
Processor Notes: Scaling Governor: cpufreq-dt ondemand
Disk Mount Options Notes: noatime,rw
Java Notes: OpenJDK Runtime Environment (build 11.0.8+10-post-Debian-1deb10u1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Not affected + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Not affected + srbds: Not affected + tsx_async_abort: Not affected

Raspberry Pi 400

Processor: ARMv8 Cortex-A72 @ 1.80GHz (4 Cores), Motherboard: BCM2835 Raspberry Pi 400 Rev 1.0, Memory: 4096MB, Disk: 32GB GB1QT, Graphics: vc4drmfb, Monitor: VA2431

OS: Debian 10, Kernel: 5.4.51-v8+ (aarch64), Desktop: LXDE 0.10.0, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: snd_bcm2835.enable_compat_alsa=0 snd_bcm2835.enable_hdmi=1 snd_bcm2835.enable_headphones=1
Compiler Notes: --build=aarch64-linux-gnu --disable-libphobos --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap

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--enable-checking=release      --enable-clocale=gnu      --enable-default-pie      --enable-fix-cortex-a53-843419      --enable-gnu-unique-object
--enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++  --enable-libstdcxx-debug  --enable-libstdcxx-time=yes  --enable-multiarch  --enable-nls  --enable-plugin
--enable-shared   --enable-threads=posix  --host=aarch64-linux-gnu  --program-prefix=aarch64-linux-gnu-  --target=aarch64-linux-gnu  --with-default-libstdcxx-abi=new
--with-gcc-major-version-only -v
Processor Notes: Scaling Governor: cpufreq-dt ondemand
Disk Mount Options Notes: noatime,rw
Java Notes: OpenJDK Runtime Environment (build 11.0.8+10-post-Debian-1deb10u1)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Vulnerable + srbds: Not affected + tsx_async_abort: Not affected
```

Z440 vs Pi 4

Processor: Intel Xeon E5-1630 v3 (4 Cores / 8 Threads), Memory: 26GB, Disk: 2 x 275GB Virtual Disk

OS: Ubuntu 22.04, Kernel: 5.10.102.1-microsoft-standard-WSL2 (x86_64), Vulkan: 1.2.204, Compiler: GCC 11.3.0, File-System: ext4, System Layer: wsl

Kernel Notes: Transparent Huge Pages: always
 Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --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++,m2 --enable-libphobos-checking=release
 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto
 --enable-offload-targets=nvptx-none=/build/gcc-11-xKiWfi/gcc-11-11.3.0/debian/tmp-nvptx/usr,amdgn-amdhsa=/build/gcc-11-xKiWfi/gcc-11-11.3.0/debian/tmp-gcn/usr
 --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-build-config=bootstrap-lto-lean --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 / data=ordered,discard,errors=remount-ro,relatime,rw / Block Size: 4096
 Processor Notes: CPU Microcode: 0xffffffff
 Java Notes: OpenJDK Runtime Environment (build 11.0.17+8-post-Ubuntu-1ubuntu22.04)
 Python Notes: Python 3.10.6
 Security Notes: itlb_multihit: KVM: Mitigation of VMX unsupported + l1tf: Mitigation of PTE Inversion + mds: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown + meltdown: Mitigation of PTI + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retrpeline IPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	Raspberry Pi 4 Model B	Raspberry Pi 3 Model B	Raspberry Pi 400	Z440 vs Pi 4
IOR - Write Test (MB/s)	9.90	7.44	10.72	46.79
Normalized	21.16%	15.9%	22.91%	100%
Standard Deviation	1.7%	2%	17.4%	2.3%
IOR - Read Test (MB/s)	37.77	19.19	40.47	214.48
Normalized	17.61%	8.95%	18.87%	100%
Standard Deviation	2.3%	1.3%	0.7%	7%
CloverLeaf - L.E.H (sec)	46.04	88.07	45.05	8.54
Normalized	18.55%	9.7%	18.96%	100%
Standard Deviation	0.2%	1.3%	0.3%	13.7%
Dolfyn - C.F.D (sec)	106.986	344.278	95.521	32.042
Normalized	29.95%	9.31%	33.54%	100%
Standard Deviation	1%	6.1%	0.7%	1.4%
FFTE - N.2.3.C.F.R (MFLOPS)	1932	978.40	1972	14593
Normalized	13.24%	6.7%	13.51%	100%
Standard Deviation	0.8%	0.6%	0.9%	1.2%
LAMMPS Molecular Dynamics	0.509	0.203	0.574	
Simulator - Rhodopsin Protein				
Normalized	88.68%	35.37%	100%	
Standard Deviation	0.5%	0.6%	1.1%	

WebP Image Encode - Default	8.937	16.036	7.464	2.267
(Encode Time - sec)				
Normalized	25.37%	14.14%	30.37%	100%
Standard Deviation	0.4%	0.2%	0.3%	6.3%
WebP Image Encode - Quality 100	12.212	19.877	10.259	3.607
(Encode Time - sec)				
Normalized	29.54%	18.15%	35.16%	100%
Standard Deviation	0.2%	4.3%	0.4%	1.6%
WebP Image Encode - Q.1.L (Encode	92.951	153.353	84.688	30.646
Time - sec)				
Normalized	32.97%	19.98%	36.19%	100%
Standard Deviation	0.8%	0.1%	3.5%	1.7%
WebP Image Encode - Q.1.H.C	27.795	46.048	23.155	9.108
(Encode Time - sec)				
Normalized	32.77%	19.78%	39.33%	100%
Standard Deviation	0.3%	0.4%	0.5%	0.5%
WebP Image Encode - Q.1.L.H.C	216.139		195.378	57.192
(Encode Time - sec)				
Normalized	26.46%		29.27%	100%
Standard Deviation	0.3%		0.4%	4.4%
DaCapo Benchmark - H2 (msec)	15200	63605	14053	4781
Normalized	31.45%	7.52%	34.02%	100%
Standard Deviation	4.6%	0.6%	3%	4.8%
DaCapo Benchmark - Jython (msec)	29475	55388	28481	6702
Normalized	22.74%	12.1%	23.53%	100%
Standard Deviation	5.4%	2.7%	10.2%	10%
DaCapo Benchmark - Tradebeans	31281	51166	28292	7106
(msec)				
Normalized	22.72%	13.89%	25.12%	100%
Standard Deviation	10.1%	5.9%	12%	27.9%
Zstd Compression - 3 (MB/s)	194.7	121	214.1	2087
Normalized	9.33%	5.8%	10.26%	100%
Standard Deviation	0.3%		3.5%	1.5%
Zstd Compression - 19 (MB/s)	2.50		2.75	16.8
Normalized	14.88%		16.37%	100%
Standard Deviation	1.2%		2%	8.9%
LibRaw - P.P.B (Mpix/sec)	5.66	2.40	6.57	20.82
Normalized	27.19%	11.53%	31.56%	100%
Standard Deviation	0.1%	0.6%	0.4%	2.3%
TSCP - A.C.P (Nodes/s)	344454	184288	412801	1162722
Normalized	29.62%	15.85%	35.5%	100%
Standard Deviation	0.3%	3.9%	0.2%	1.6%
GraphicsMagick - Rotate	98	28	107	653
Normalized	15.01%	4.29%	16.39%	100%
Standard Deviation	3.8%		4.8%	0.7%
GraphicsMagick - Sharpen	15	7	17	41
(Iterations/min)				
Normalized	36.59%	17.07%	41.46%	100%
Standard Deviation				0%
GraphicsMagick - Enhanced	18	6	21	48
(Iterations/min)				
Normalized	37.5%	12.5%	43.75%	100%
Standard Deviation				1.2%

GraphicsMagick - Resizing	50 (Iterations/min)	21	55	325
Normalized	15.38%	6.46%	16.92%	100%
Standard Deviation				3.5%
GraphicsMagick - Noise-Gaussian	23 (Iterations/min)	9	27	105
Normalized	21.9%	8.57%	25.71%	100%
Standard Deviation		5.5%		0.6%
GraphicsMagick - HWB Color Space	137 (Iterations/min)	52	159	501
Normalized	27.35%	10.38%	31.74%	100%
Standard Deviation			0.4%	1.4%
Kvazaar - Bosphorus 1080p - Very Fast (FPS)	1.27	0.53	1.53	20.05
Normalized	6.33%	2.64%	7.63%	100%
Standard Deviation	0%	0%	0.4%	2.3%
Kvazaar - Bosphorus 1080p - Ultra Fast (FPS)	2.53	1.07	3.02	34.52
Normalized	7.33%	3.1%	8.75%	100%
Standard Deviation	0.2%	0%	0%	0.4%
Coremark - CoreMark Size 666 - I.P.S	33044 (Iterations/Sec)	15603	39684	133687
Normalized	24.72%	11.67%	29.68%	100%
Standard Deviation	0.3%	0.1%	0.1%	5.5%
Himeno Benchmark - P.P.S (MFLOPS)	580.679620	143.553754	728.803695	2235
Normalized	25.98%	6.42%	32.61%	100%
Standard Deviation	1.3%	3%	1.2%	1.2%
asmFish - 1.H.M.2.D (Nodes/s)	2428892		2779745	9723150
Normalized	24.98%		28.59%	100%
Standard Deviation	2.2%		1.6%	0.9%
Timed Apache Compilation - Time To Compile (sec)	197.374	349.969	155.907	43.989
Normalized	22.29%	12.57%	28.21%	100%
Standard Deviation	1.1%	0.4%	1.1%	1.8%
Timed GDB GNU Debugger	1019		924.107	
Compilation - Time To Compile (sec)				
Normalized	90.7%		100%	
Standard Deviation	2.8%		1.1%	
Timed ImageMagick Compilation - Time To Compile (sec)	570.425		513.651	81.836
Normalized	14.35%		15.93%	100%
Standard Deviation	1.6%		0.7%	0.5%
Timed PHP Compilation - Time To Compile (sec)	801.272		731.514	160.926
Normalized	20.08%		22%	100%
Standard Deviation	0.5%		0.9%	0.2%
Build2 - Time To Compile (sec)	1714	1569		
Normalized	91.51%		100%	
Standard Deviation	1%		1.8%	
C-Ray - Total Time - 4.1.R.P.P (sec)	607.312	1979	539.718	224.961
Normalized	37.04%	11.37%	41.68%	100%
Standard Deviation	1.1%	0.1%	9.6%	0.3%
Smallpt - G.I.R.1.S (sec)	121.564	269.788	101.358	33.725
Normalized	27.74%	12.5%	33.27%	100%

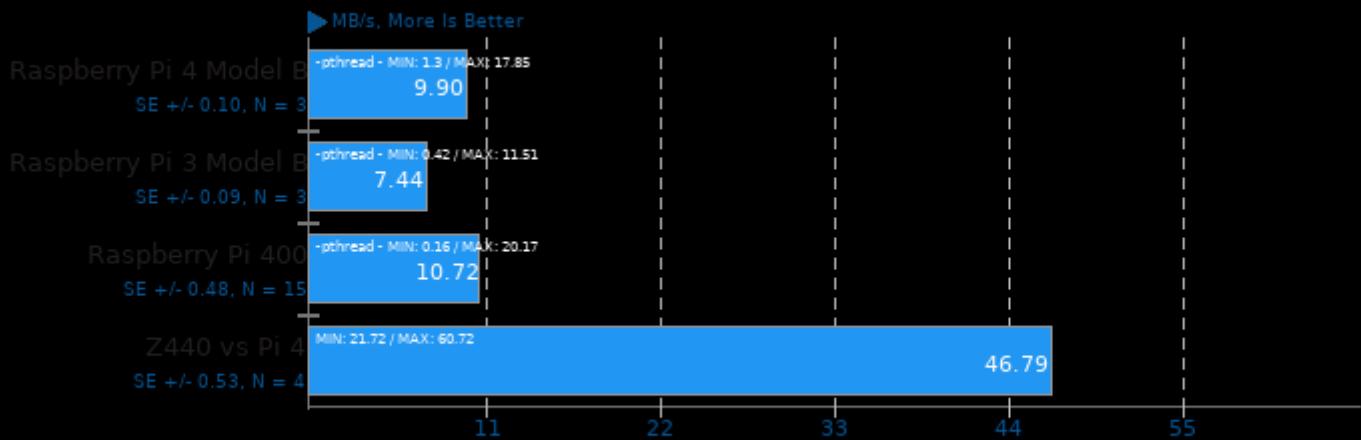
Numpy Benchmark (Score)	46.88	0.2%	0.6%	0.6%
		25.77	54.69	198.30
AOBench - 2048 x 2048 - Total Time (sec)	124.471	13%	27.58%	100%
		262.532	103.725	47.586
FLAC Audio Encoding - WAV To FLAC (sec)	94.648	18.13%	45.88%	100%
		300.952	82.552	14.723
LAME MP3 Encoding - WAV To MP3 (sec)	29.235	4.89%	17.83%	100%
		54.957	24.405	13.850
eSpeak-NG Speech Engine - T.T.S.S (sec)	161.560	25.2%	56.75%	100%
		297.746	154.696	46.365
Perl Benchmarks - Pod2html (sec)	0.56889272	15.57%	29.97%	100%
		1.12228333	0.47305417	0.20654121
Perl Benchmarks - Interpreter (sec)	0.00417488	18.4%	43.66%	100%
		0.00661400	0.00370104	0.00178684
RNNoise (sec)	71.126	0.8%	0.2%	3.4%
		175.305	61.961	35.150
OpenSSL - R.4.b.P (Signs/sec)	95.5	27.02%	48.28%	100%
		63.9	114.3	601.1
SQLite Speedtest - Timed Time - Size 1,000 (sec)	537.637	10.63%	19.02%	100%
		987.198	466.329	122.039
GEGL - Crop (sec)	47.762	2.7%	0.2%	6.3%
		79.574	40.613	14.416
GEGL - Reflect (sec)	13.441	12.36%	26.17%	100%
		27.231	2.6%	1.3%
GEGL - Color Enhance (sec)	297.290	79.574	40.613	14.416
		11.589	2.3%	2.6%
GEGL - Rotate 90 Degrees (sec)	216.108	42.56%	100%	23.88%
		522.034	0.3%	2.4%
GIMP - rotate (sec)	3.643	0.8%	93.328	48.525
		8.544	257.795	100%
GIMP - auto-levels (sec)	4.976	17.88%	36.2%	100%
		382.494	0.9%	4.1%
		3.111	0.3%	68.121
		3.100	0.3%	2.3%
		3.100	100%	
		3.100	1.1%	
		3.100	100%	
		3.100	1.2%	

GIMP - unsharp-mask (sec)	4.298	9.702	3.116
Normalized	72.5%	32.12%	100%
Standard Deviation	26.6%	33.1%	1.8%
Inkscape - SVG Files To PNG (sec)	117.213	209.427	100.848
Normalized	86.04%	48.15%	100%
Standard Deviation	0.6%	0.7%	1.3%
OCRMypdf - P.6.P.P.D (sec)	339.025	849.612	294.326
Normalized	86.82%	34.64%	100%
Standard Deviation	1.1%	2.2%	3.3%
GNU Octave Benchmark (sec)	40.614	86.950	36.662
Normalized	90.27%	42.16%	100%
Standard Deviation	1.5%	7.5%	1.2%
librsvg - SVG Files To PNG (sec)	71.543	125.042	62.183
Normalized	67.03%	38.35%	77.12%
Standard Deviation	0.9%	4.2%	2%
Mobile Neural Network - SqueezeNetV1.0 (ms)	67.211	124.589	57.236
Normalized	85.16%	45.94%	100%
Standard Deviation	1%	0.3%	0.8%
Mobile Neural Network - resnet-v2-50 (ms)	325.661	599.905	283.985
Normalized	87.2%	47.34%	100%
Standard Deviation	0.4%	0%	1.1%
Mobile Neural Network - MobileNetV2_224 (ms)	37.700	68.440	32.784
Normalized	86.96%	47.9%	100%
Standard Deviation	0.3%	0.4%	0.3%
Mobile Neural Network - mobilenet-v1-1.0 (ms)	65.299	112.955	56.044
Normalized	85.83%	49.62%	100%
Standard Deviation	0.3%	0.1%	0.1%
Mobile Neural Network - inception-v3 (ms)	427.886	854.295	366.491
Normalized	85.65%	42.9%	100%
Standard Deviation	0.1%	0.2%	1.2%
TNN - CPU - MobileNet v2 (ms)	1640	3985	1356
Normalized	24.03%	9.89%	29.08%
Standard Deviation	1%	2.9%	0.6%
TNN - CPU - SqueezeNet v1.1 (ms)	1329	3284	1148
Normalized	31.18%	12.62%	36.08%
Standard Deviation	1%	1.2%	0.7%
PyBench - T.F.A.T.T (Milliseconds)	5758	13254	4784
Normalized	21.99%	9.55%	26.46%
Standard Deviation	0.9%	0.1%	0.4%
PyPerformance - go (Milliseconds)	1.68	3.23	1.4
Normalized	83.33%	43.34%	100%
Standard Deviation	0%	0%	0%
PyPerformance - 2to3 (Milliseconds)	2.21	4	1.87
Normalized	84.62%	46.75%	100%
Standard Deviation	0%	0%	0.33%
PyPerformance - pathlib	162	262	136
Normalized	17.96%	11.11%	21.4%
Standard Deviation			100%
PyPerformance - raytrace (Milliseconds)	3.41	6.78	2.84
			731

	Normalized	83.28%	41.89%	100%	0.39%
	Standard Deviation	0%	0.2%	0%	0.7%
PyPerformance - json.loads	153 (Milliseconds)	290	127	36.9	
	Normalized	24.12%	12.72%	29.06%	100%
	Standard Deviation	0.3%	0.3%	0.5%	0.5%
PyPerformance - python_startup	43.6 (Milliseconds)	76.3	38.1	17.6	
	Normalized	40.37%	23.07%	46.19%	100%
	Standard Deviation	0%	0.1%	0.2%	10.2%
PyPerformance - django_template	466 (Milliseconds)	841	390	70.8	
	Normalized	15.19%	8.42%	18.15%	100%
	Standard Deviation	0.2%	0.3%	2.3%	2.3%
PyPerformance - pickle_pure_python	3.58 (Milliseconds)	6.64	3.00	683	
	Normalized	83.8%	45.18%	100%	0.44%
	Standard Deviation	0.3%	0.1%	0.4%	1.5%
Hierarchical INTegration - FLOAT	105866488 (QUIPs)	62697907	126728793	281064645	
	Normalized	37.67%	22.31%	45.09%	100%
	Standard Deviation	0%	0%	0.3%	1.2%
PHPBench - P.B.S (Score)	124303	56935	149237		
	Normalized	83.29%	38.15%	100%	
	Standard Deviation	1.1%	0.2%	0.7%	
Tesseract OCR - T.T.O.7.I (sec)	121.650	269.375	102.837		
	Normalized	84.54%	38.18%	100%	
	Standard Deviation	0%	1.6%	0.5%	
GIMP - rotate (sec)					27.417
	Standard Deviation				1.7%
GIMP - auto-levels (sec)					28.052
	Standard Deviation				1.4%
GIMP - unsharp-mask (sec)					32.482
	Standard Deviation				1.4%
OCRMyPDF - P.6.P.P.D (sec)					51.938
	Standard Deviation				0.4%
GNU Octave Benchmark (sec)					11.998
	Standard Deviation				1.8%
Tesseract OCR - T.T.O.7.I (sec)					34.699
	Standard Deviation				0.9%

IOR 3.2.1

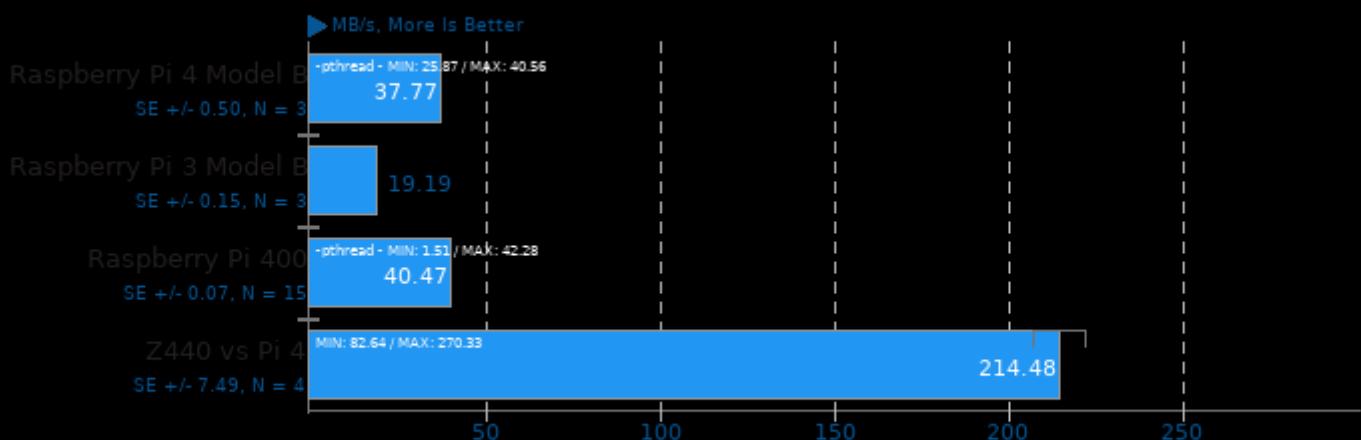
Write Test



1. (CC) gcc options: -O2 -lm -lmpi

IOR 3.2.1

Read Test

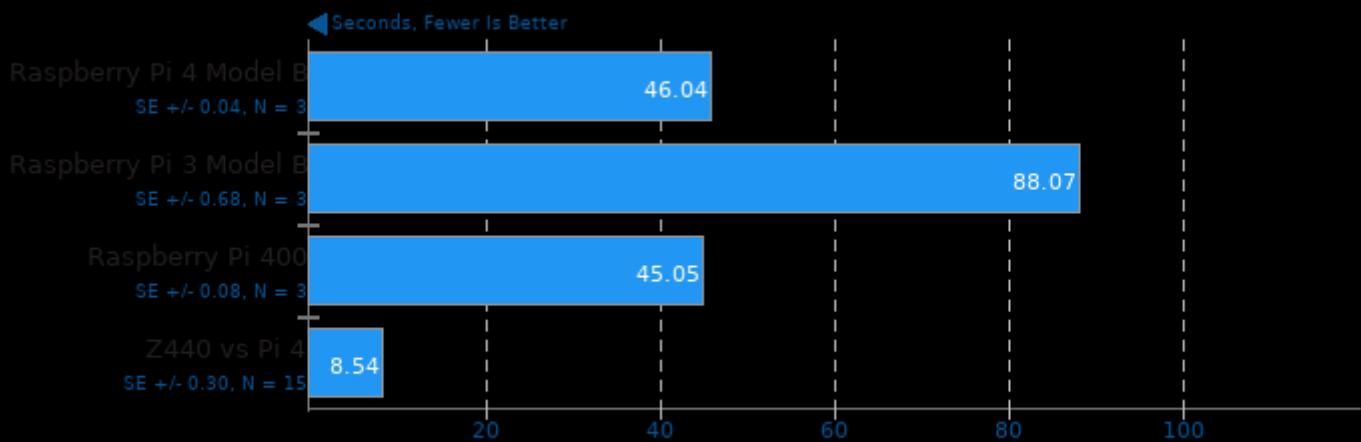


1. (CC) gcc options: -O2 -lm -lmpi

Raspberry Pi 400

CloverLeaf

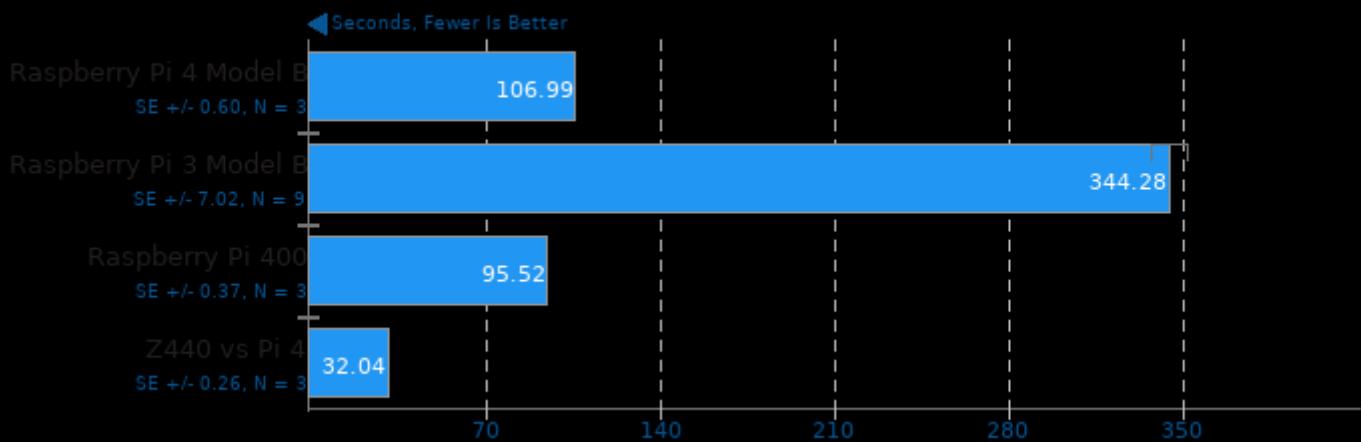
Lagrangian-Eulerian Hydrodynamics



1. (F9X) gfortran options: -O3 -march=native -funroll-loops -fopenmp

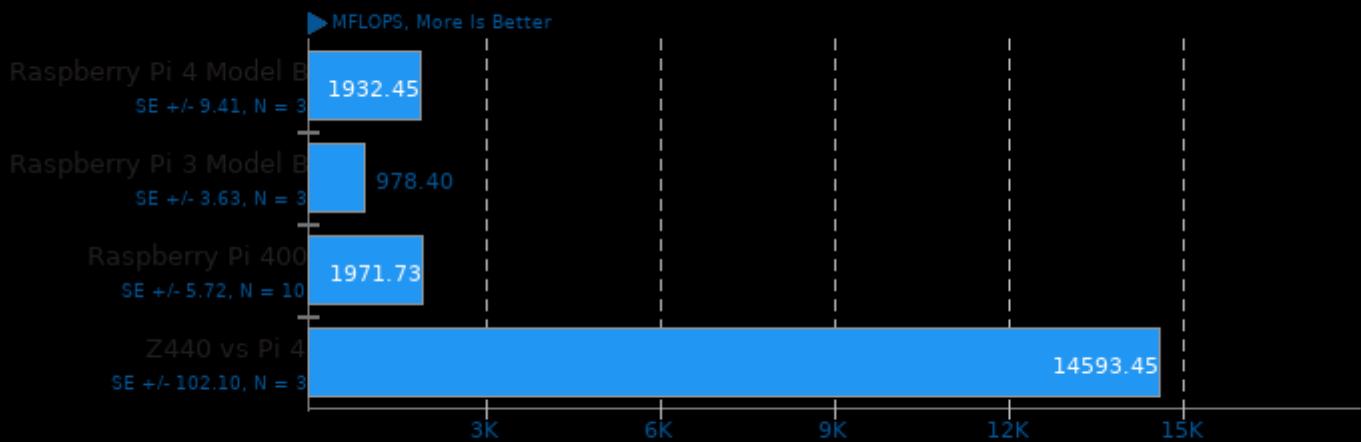
Dolfyn 0.527

Computational Fluid Dynamics



FFTE 7.0

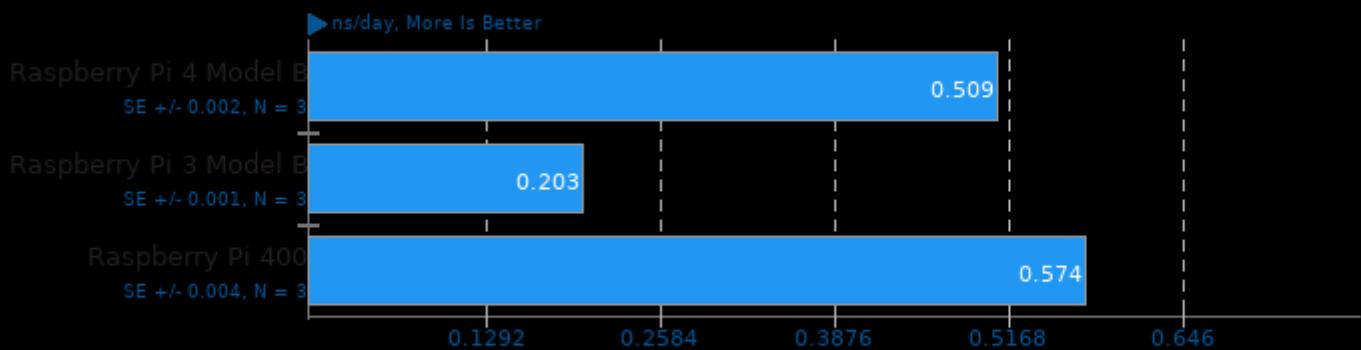
N=256, 3D Complex FFT Routine



1. (F9X) gfortran options: -O3 -fomit-frame-pointer -fopenmp

LAMMPS Molecular Dynamics Simulator 24Aug2020

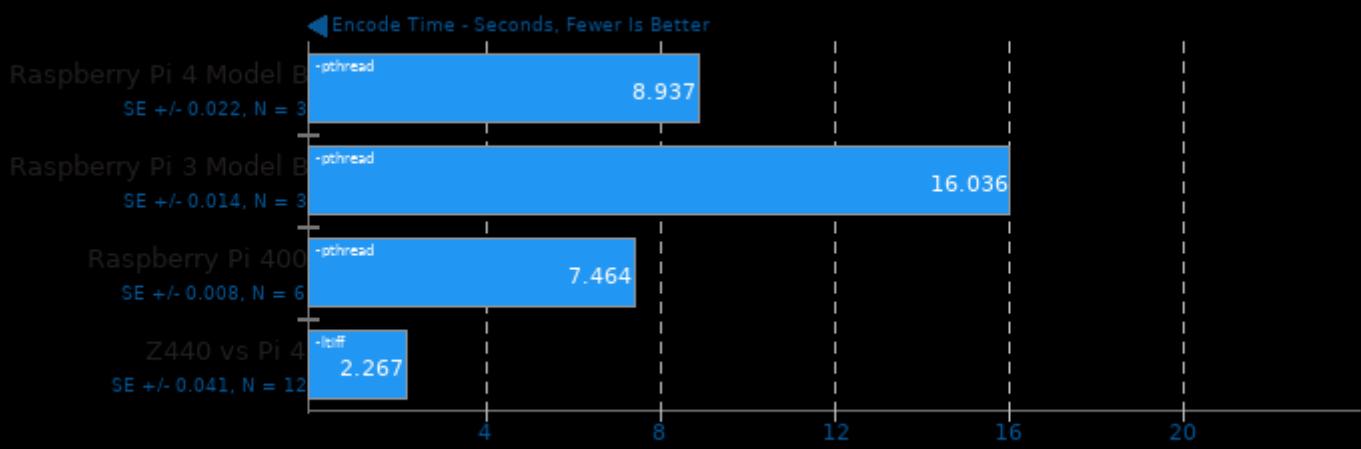
Model: Rhodopsin Protein



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

WebP Image Encode 1.1

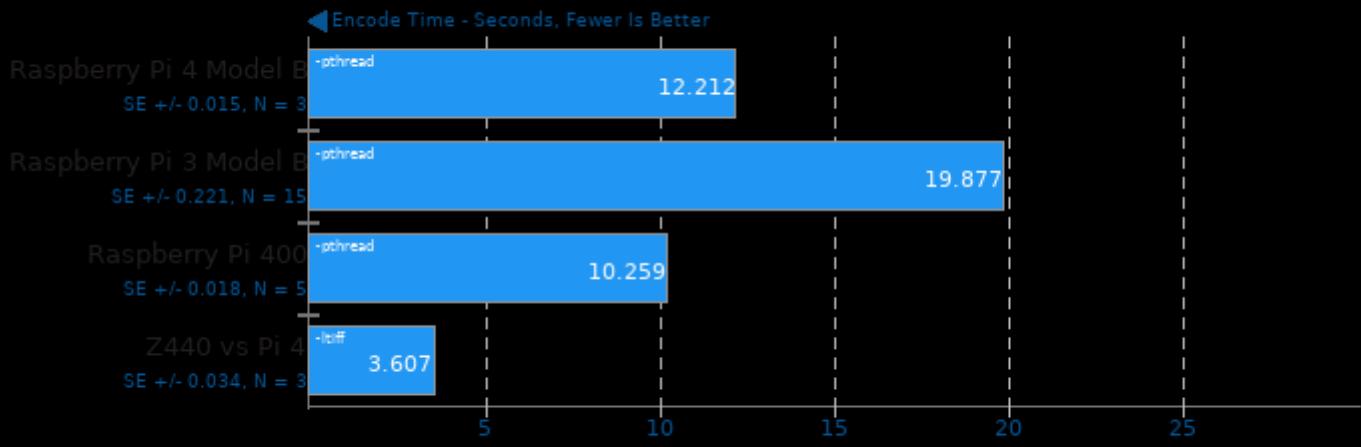
Encode Settings: Default



1. (CC) gcc options: -fvisibility=hidden -O2 -lm -lpng16 -jpeg

WebP Image Encode 1.1

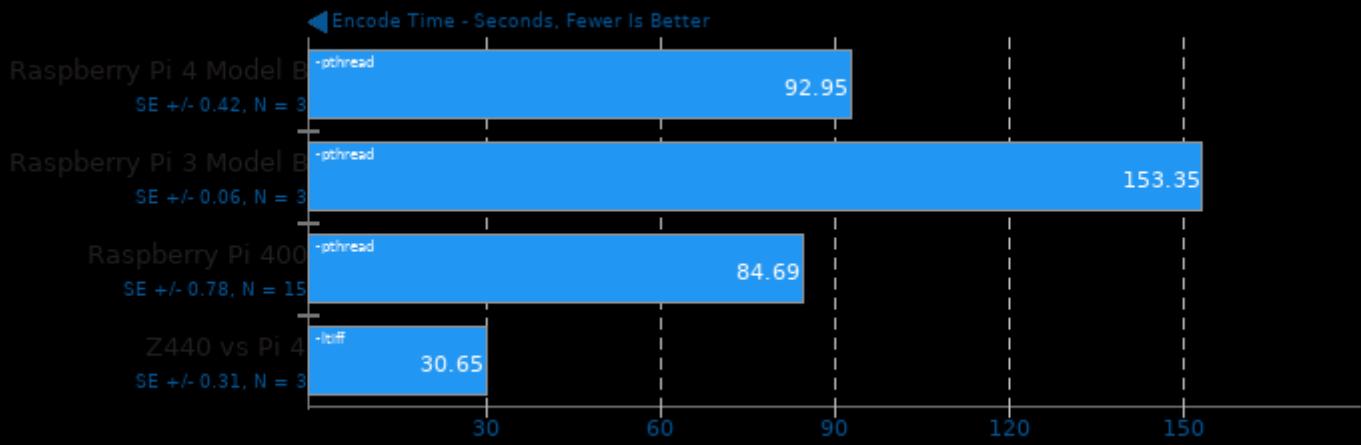
Encode Settings: Quality 100



1. (CC) gcc options: -fvisibility=hidden -O2 -lm -lpng16 -jpeg

WebP Image Encode 1.1

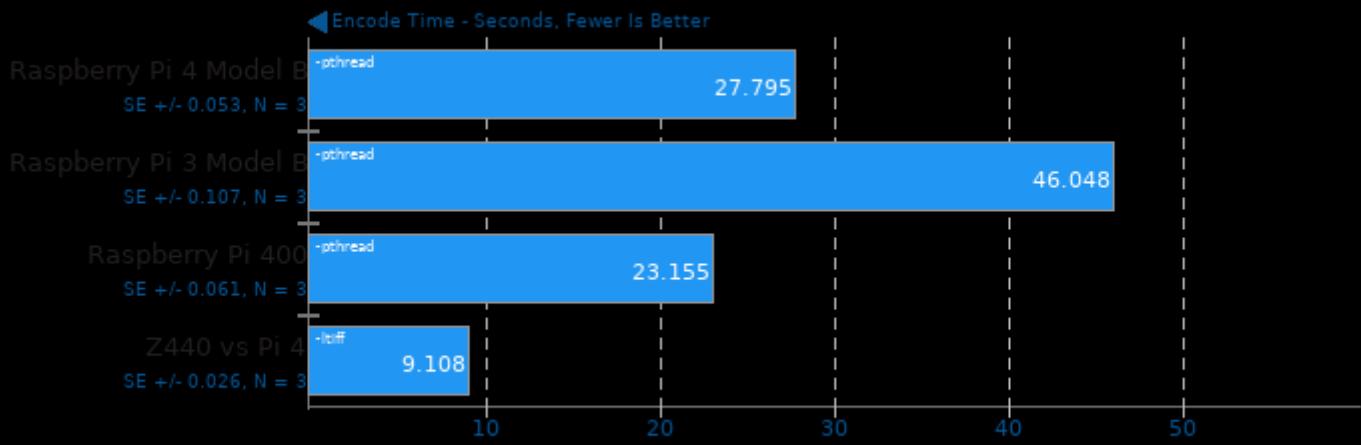
Encode Settings: Quality 100, Lossless



1. (CC) gcc options: -fvisibility=hidden -O2 -lm -lpng16 -jpeg

WebP Image Encode 1.1

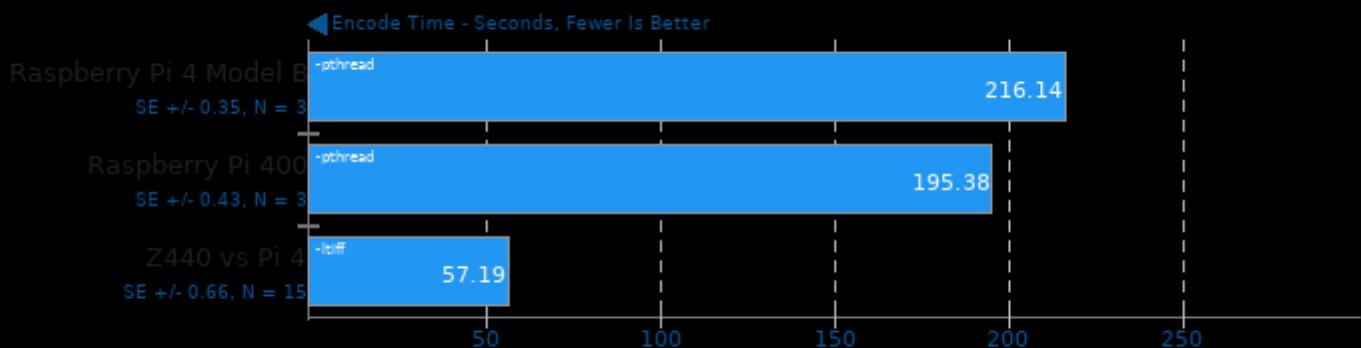
Encode Settings: Quality 100, Highest Compression



1. (CC) gcc options: -fvisibility=hidden -O2 -lm -lpng16 -jpeg

WebP Image Encode 1.1

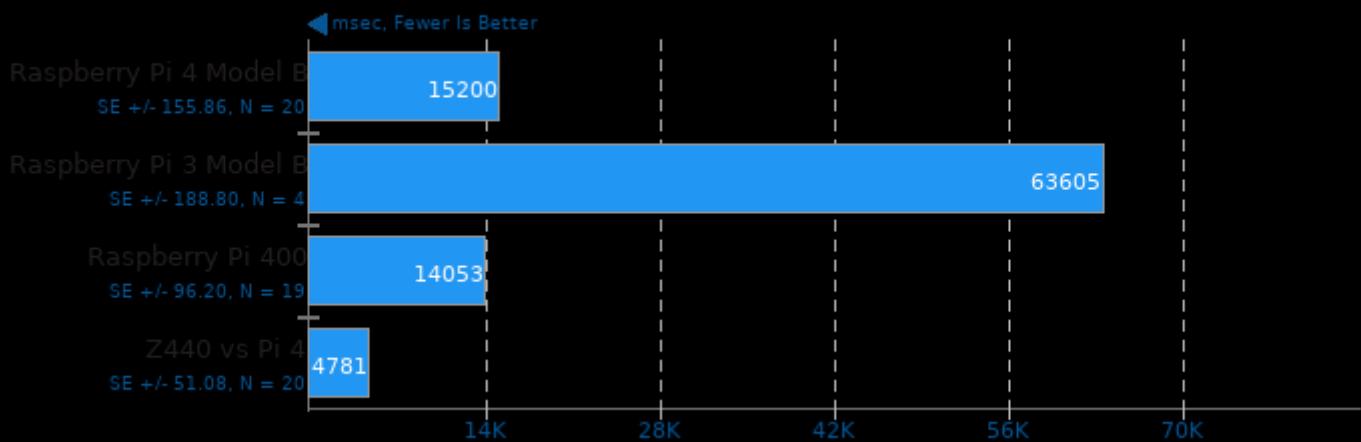
Encode Settings: Quality 100, Lossless, Highest Compression



1. (CC) gcc options: -fvisibility=hidden -O2 -lm -lpng16 -jpeg

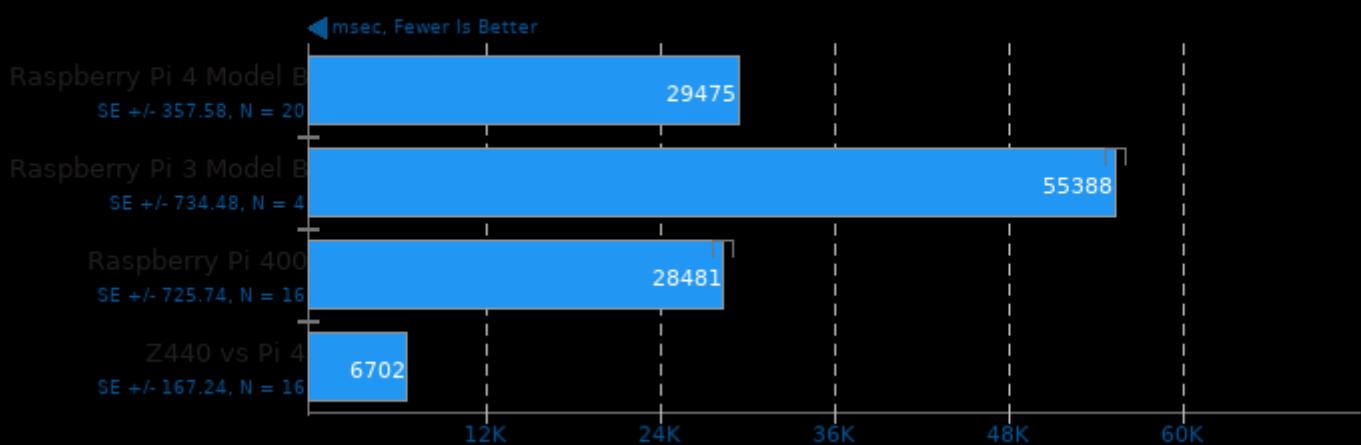
DaCapo Benchmark 9.12-MR1

Java Test: H2



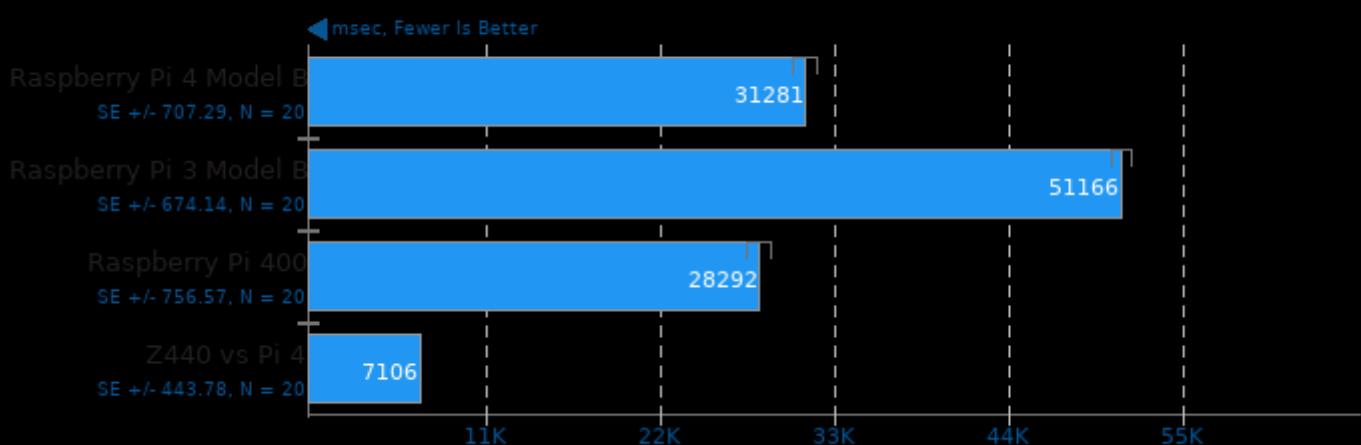
DaCapo Benchmark 9.12-MR1

Java Test: Jython



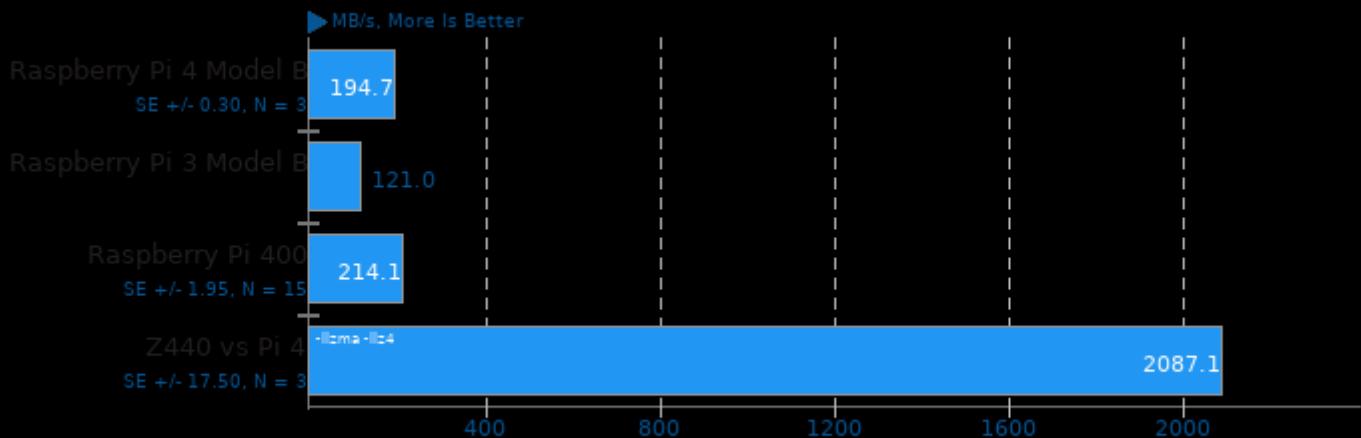
DaCapo Benchmark 9.12-MR1

Java Test: Tradebeans



Zstd Compression 1.4.5

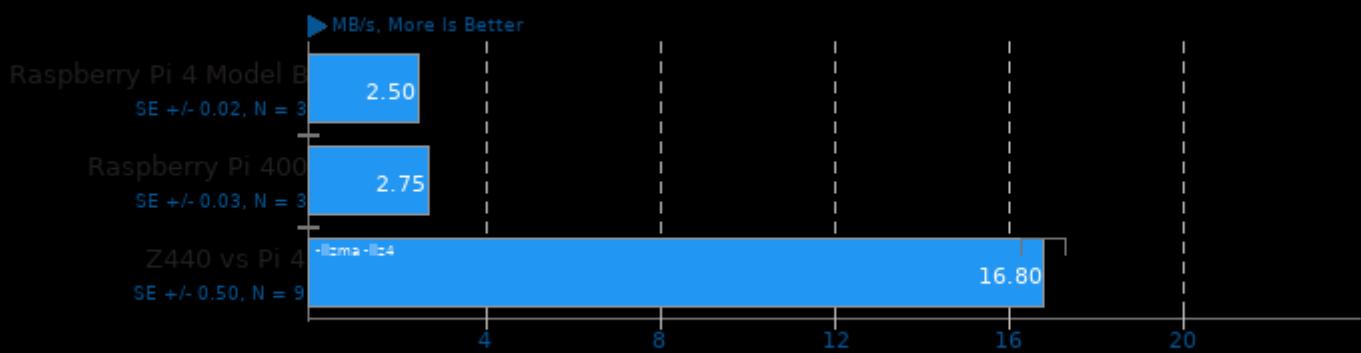
Compression Level: 3



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

Zstd Compression 1.4.5

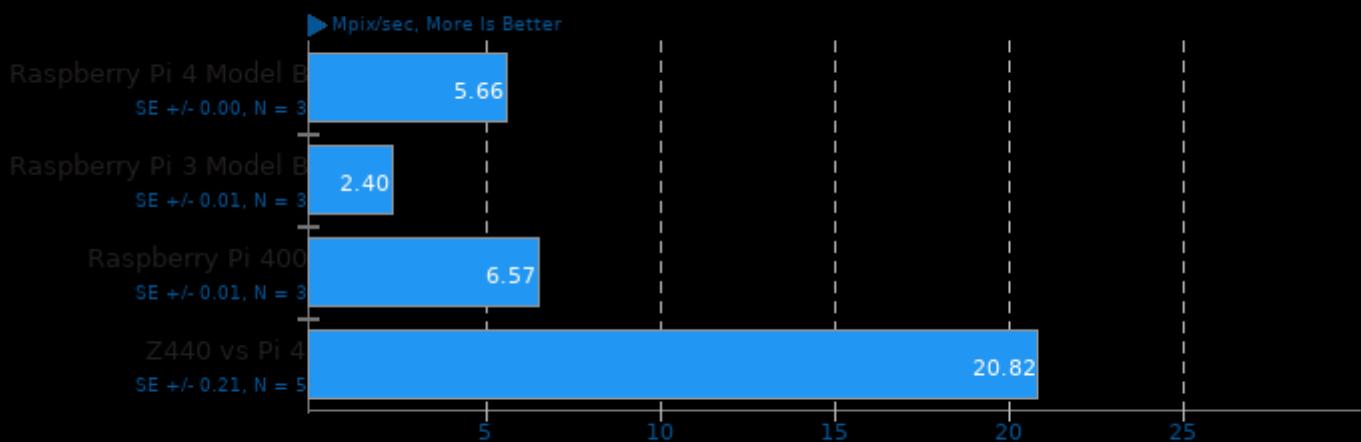
Compression Level: 19



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

LibRaw 0.20

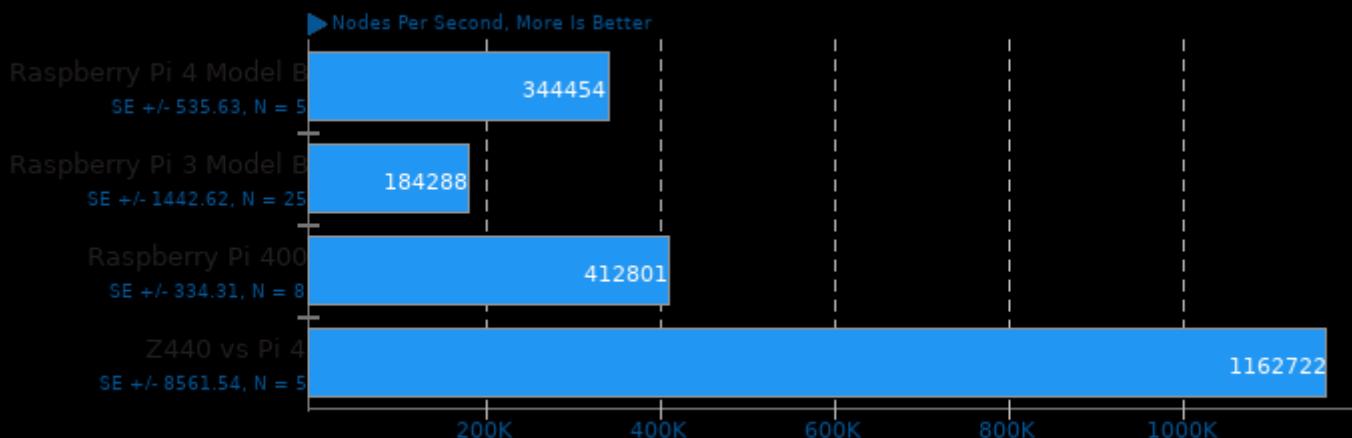
Post-Processing Benchmark



1. (CXX) g++ options: -O2 -fopenmp -ljpeg -lz -lm

TSCP 1.81

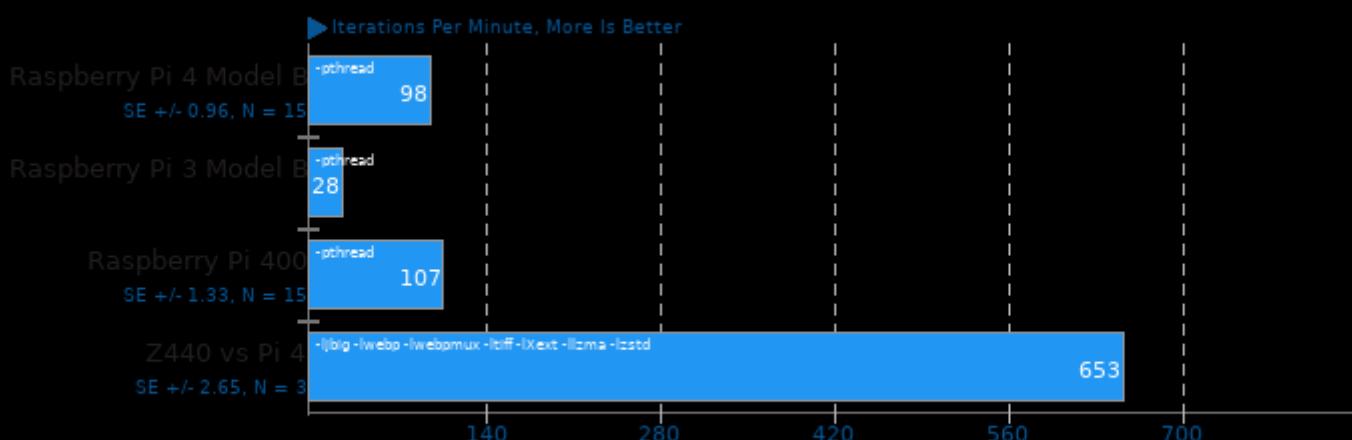
AI Chess Performance



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

GraphicsMagick 1.3.33

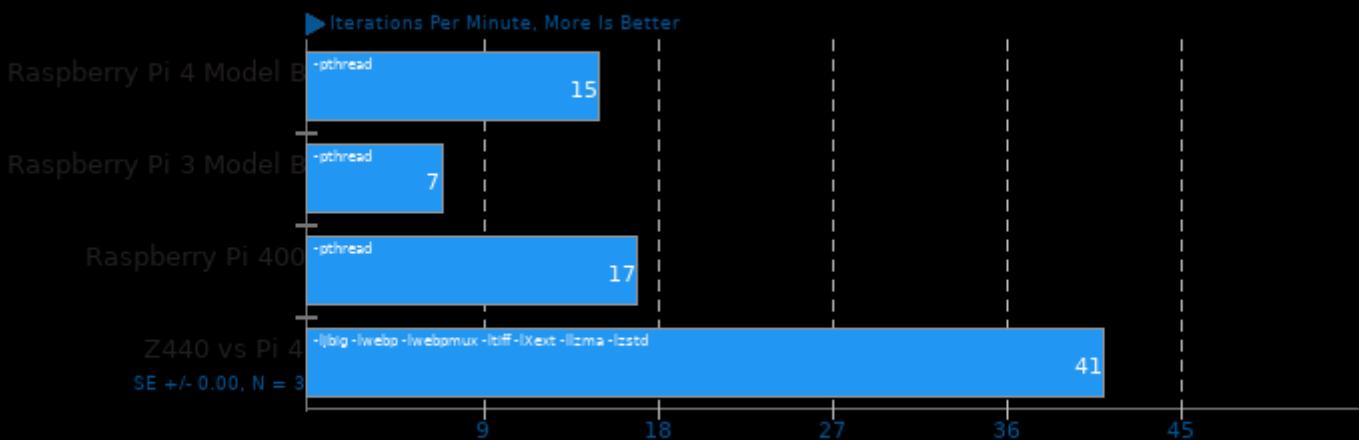
Operation: Rotate



1. (CC) gcc options: -fopenmp -O2 -lfreetype -ljpeg -lSM -ICE -lX11 -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

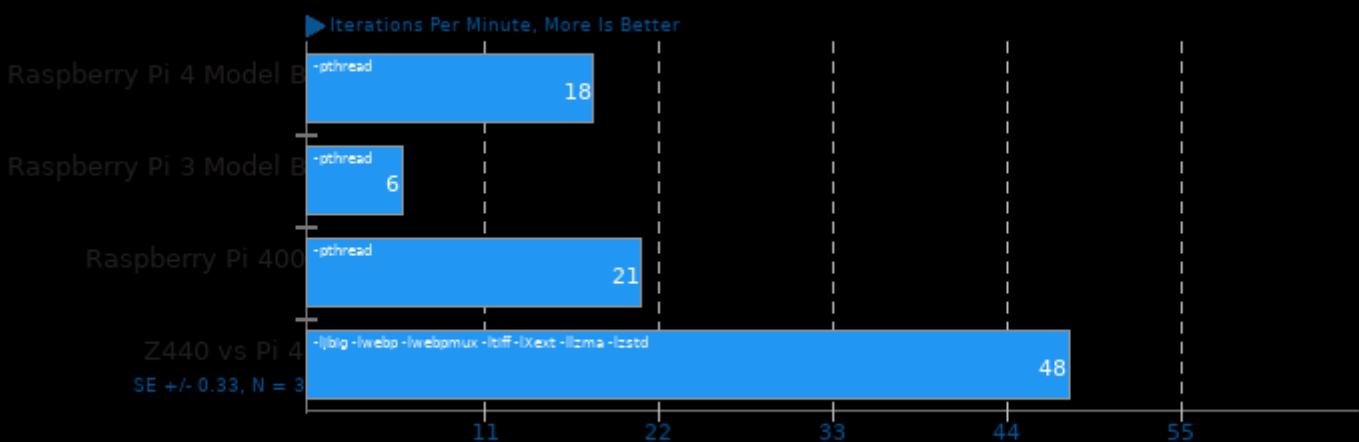
Operation: Sharpen



1. (CC) gcc options: -fopenmp -O2 -lfreetype -ljpeg -lSM -ICE -lX11 -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

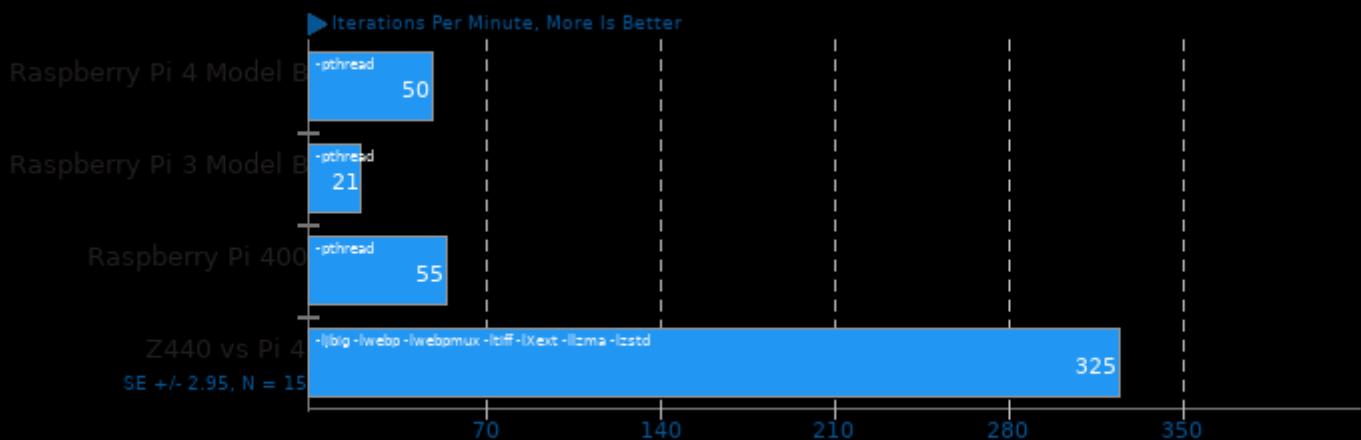
Operation: Enhanced



1. (CC) gcc options: -fopenmp -O2 -lfreetype -ljpeg -lSM -ICE -lX11 -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

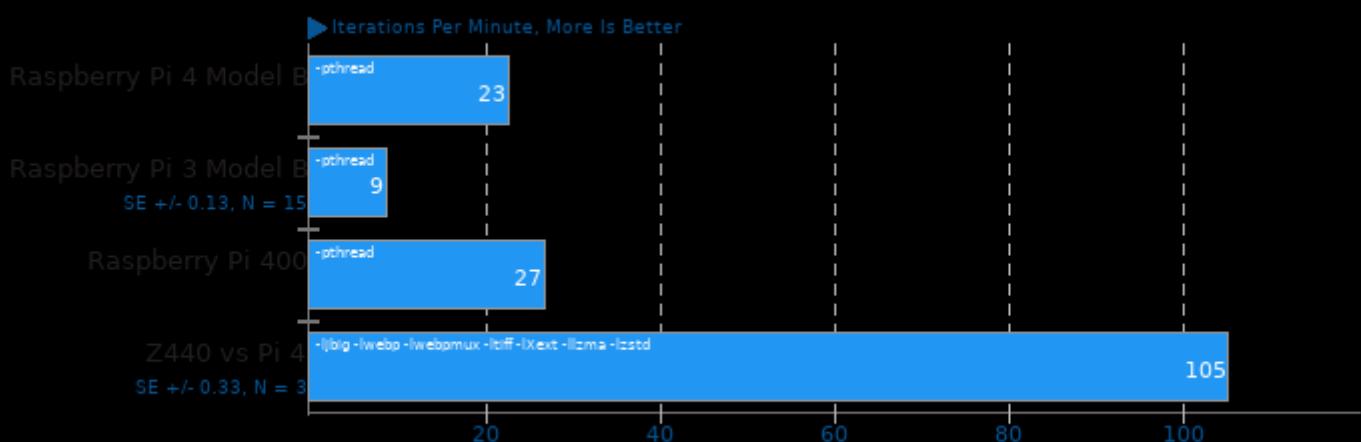
Operation: Resizing



1. (CC) gcc options: -fopenmp -O2 -lfreetype -ljpeg -lSM -ICE -lX11 -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

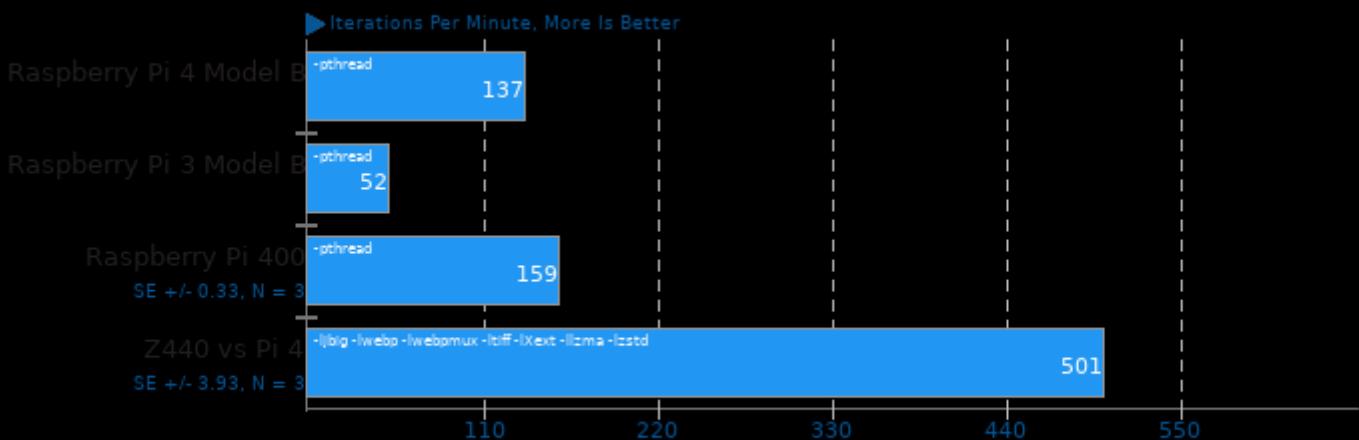
Operation: Noise-Gaussian



1. (CC) gcc options: -fopenmp -O2 -lfreetype -ljpeg -lSM -ICE -lX11 -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

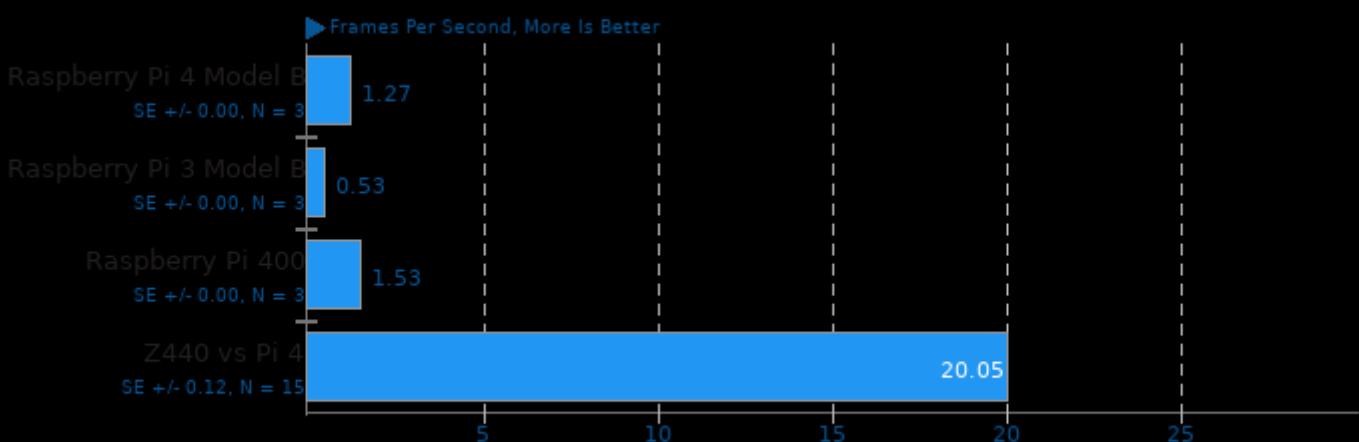
Operation: HWB Color Space



1. (CC) gcc options: -fopenmp -O2 -lfreetype -ljpeg -lSM -ICE -lX11 -lxml2 -lz -lm -lpthread

Kvazaar 2.0

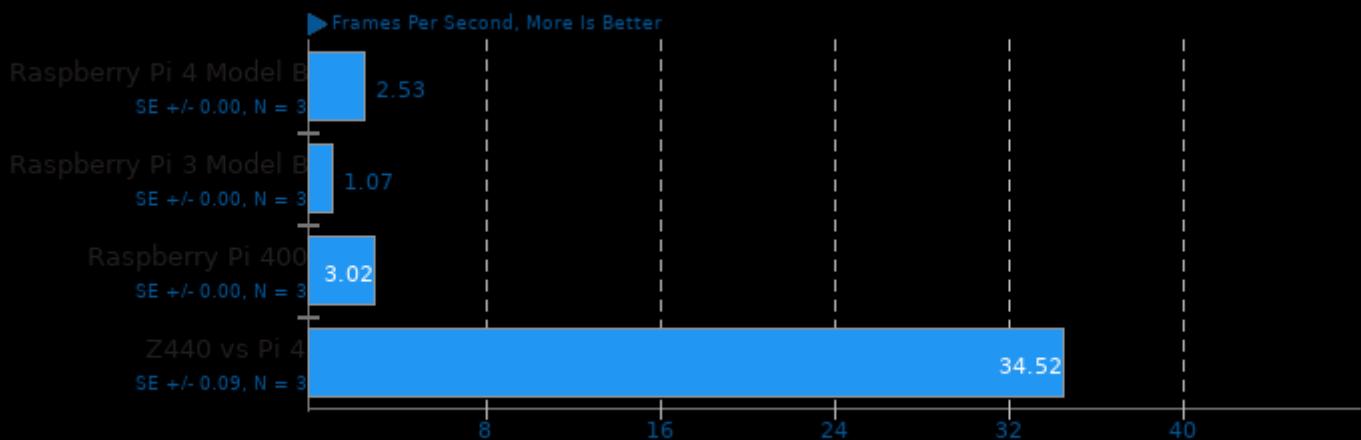
Video Input: Bosphorus 1080p - Video Preset: Very Fast



1. (CC) gcc options: -pthread -ftree-vectorize -visibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

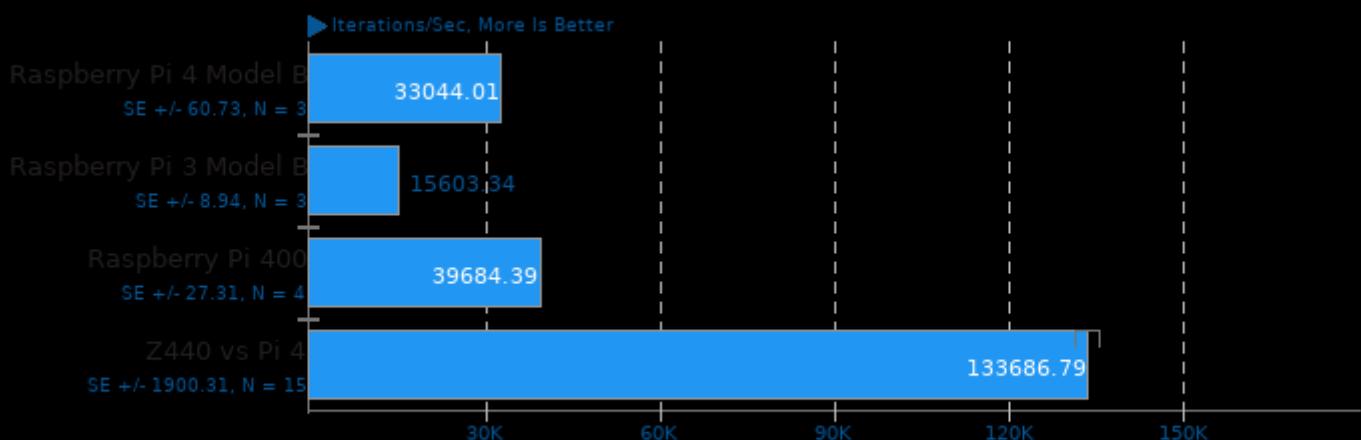
Video Input: Bosphorus 1080p - Video Preset: Ultra Fast



1. (CC) gcc options: -pthread -ftree-vectorize -visibility=hidden -O2 -lpthread -lm -lrt

Coremark 1.0

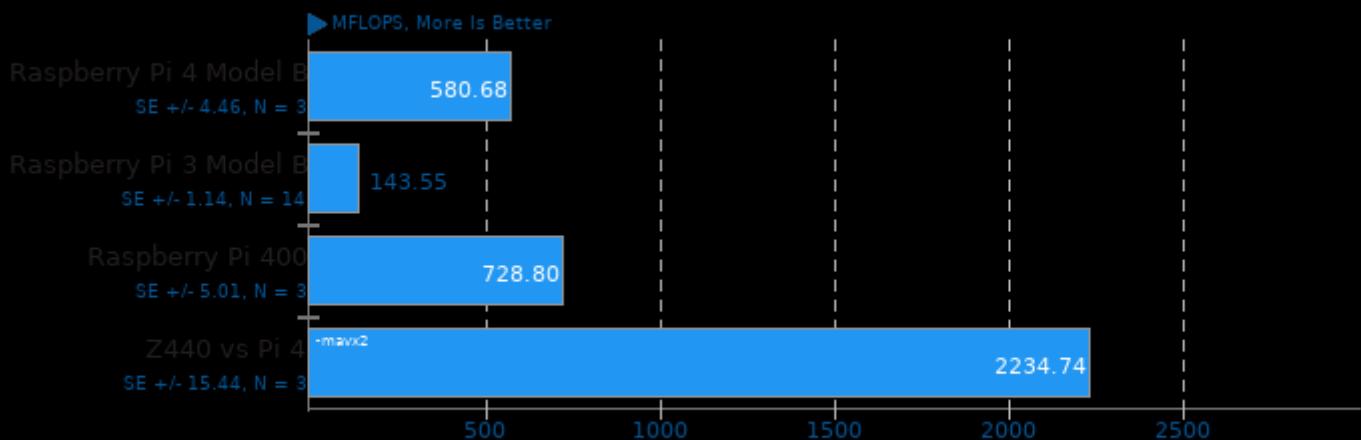
CoreMark Size 666 - Iterations Per Second



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

Himeno Benchmark 3.0

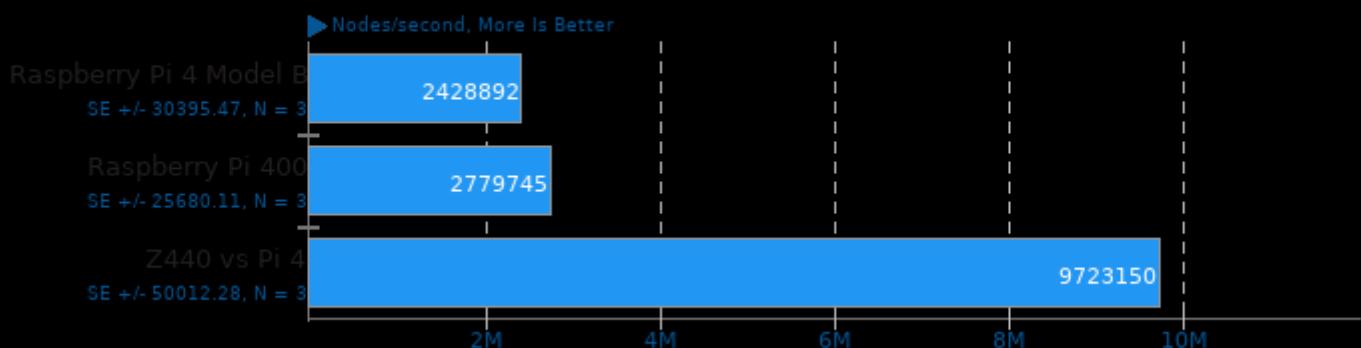
Poisson Pressure Solver



1. (CC) gcc options: -O3

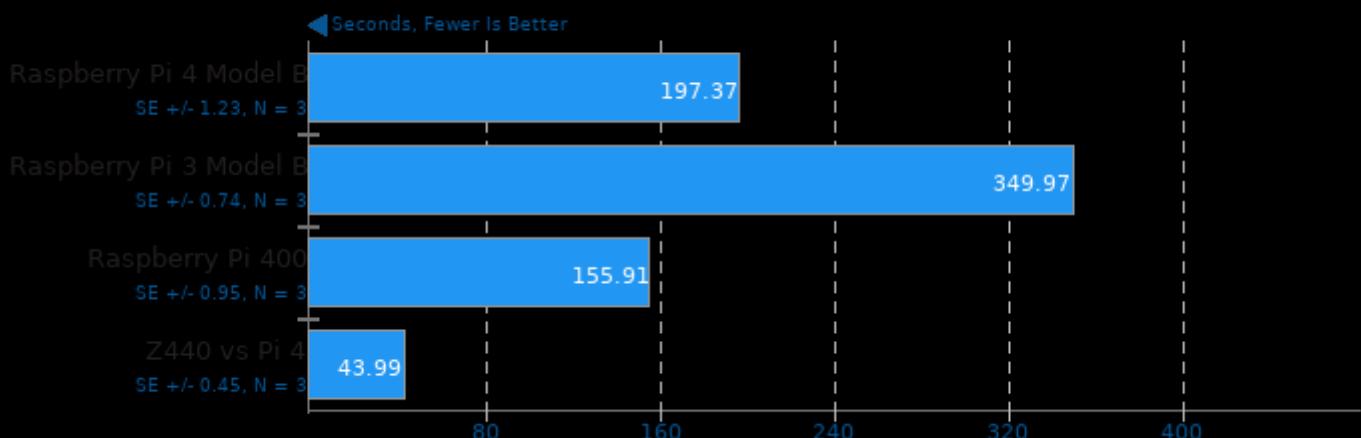
asmFish 2018-07-23

1024 Hash Memory, 26 Depth



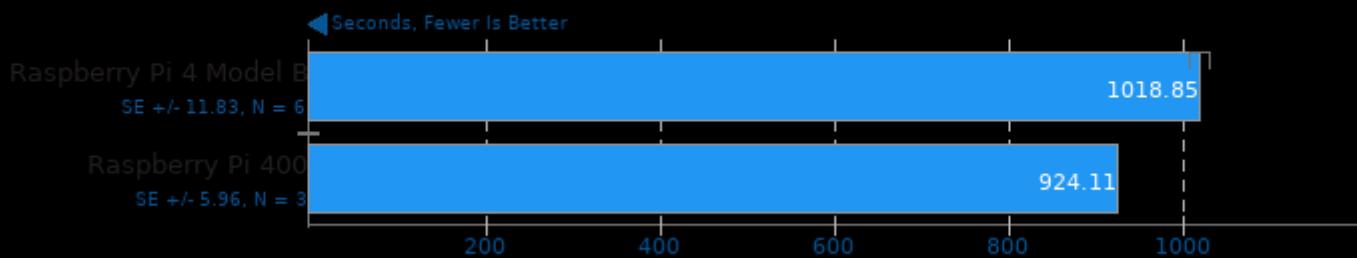
Timed Apache Compilation 2.4.41

Time To Compile



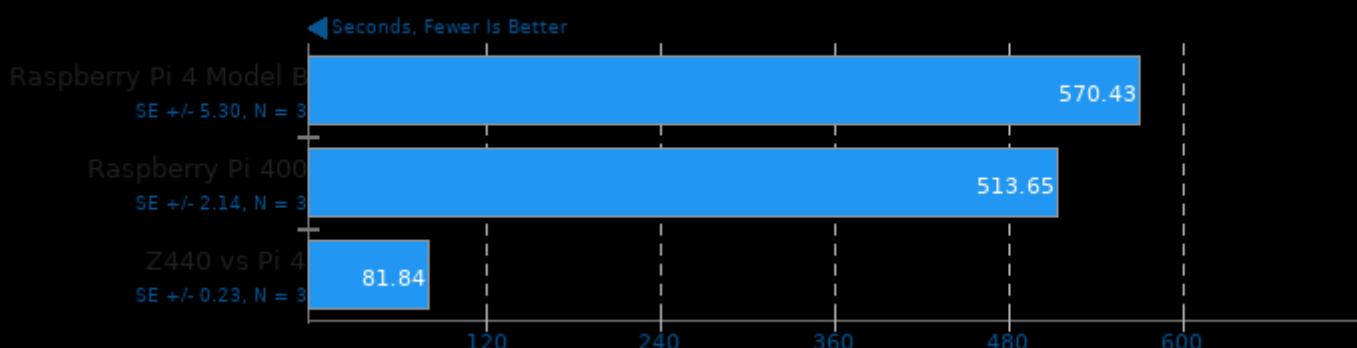
Timed GDB GNU Debugger Compilation 9.1

Time To Compile



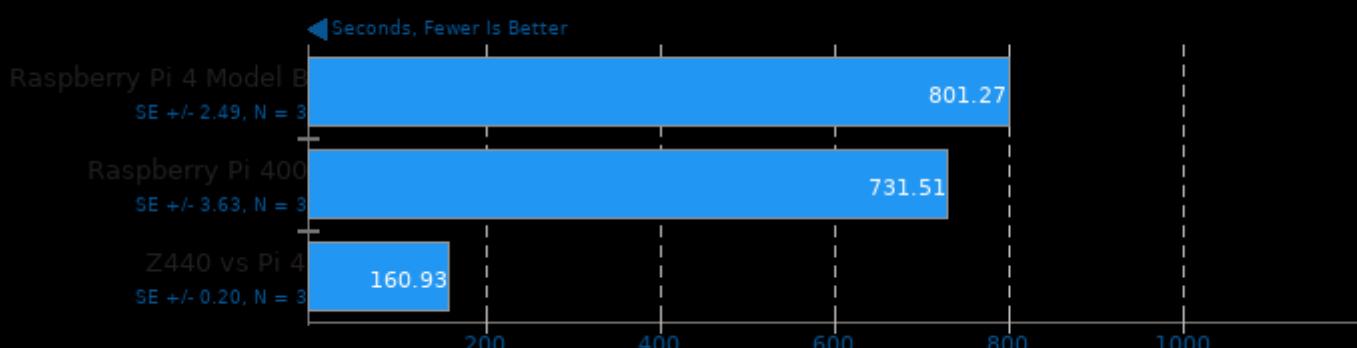
Timed ImageMagick Compilation 6.9.0

Time To Compile



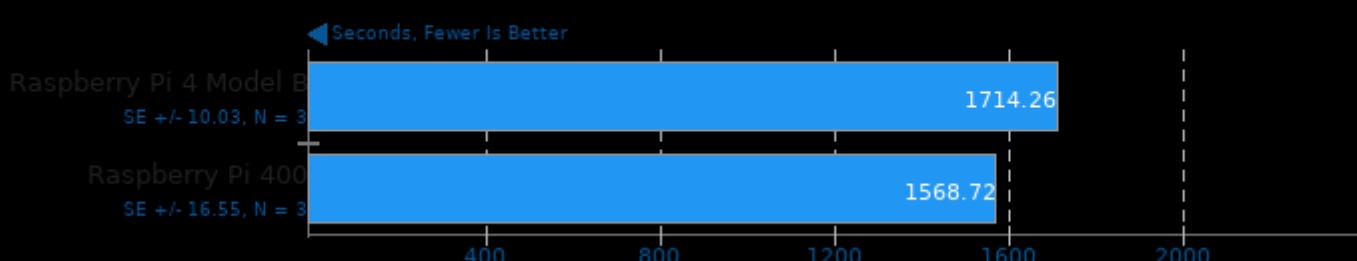
Timed PHP Compilation 7.4.2

Time To Compile



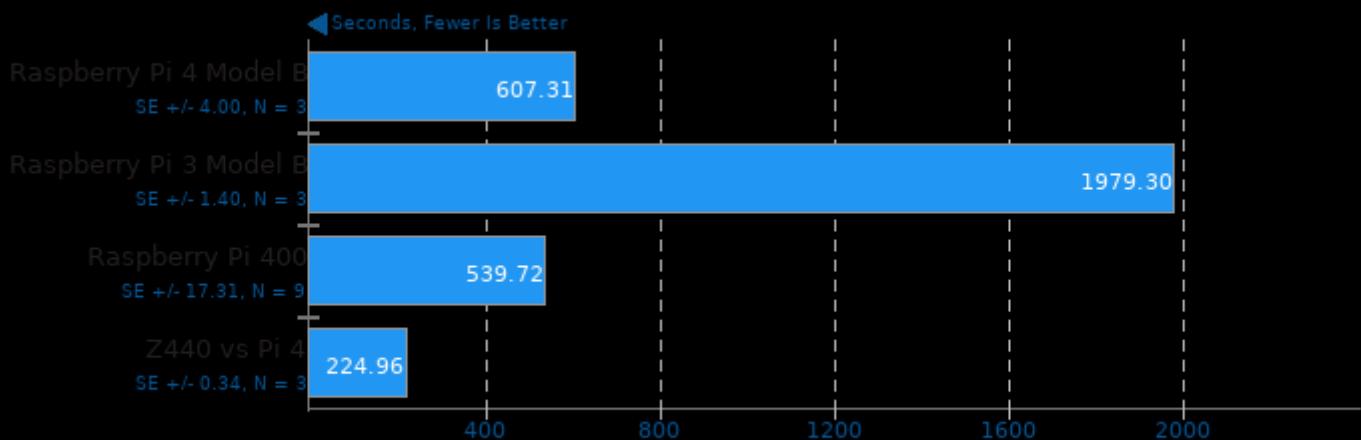
Build2 0.12

Time To Compile



C-Ray 1.1

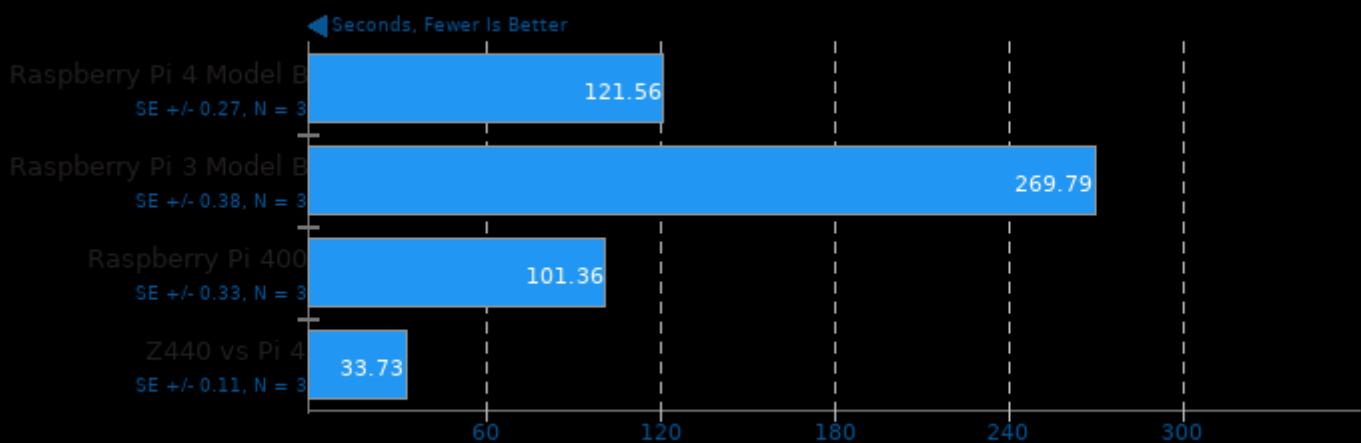
Total Time - 4K, 16 Rays Per Pixel



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

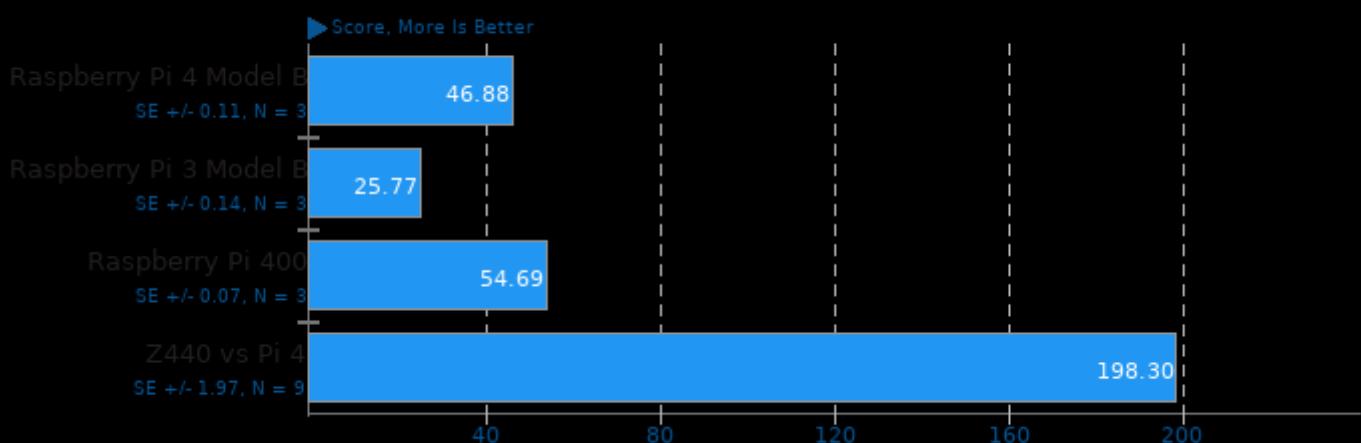
Smallpt 1.0

Global Illumination Renderer; 128 Samples



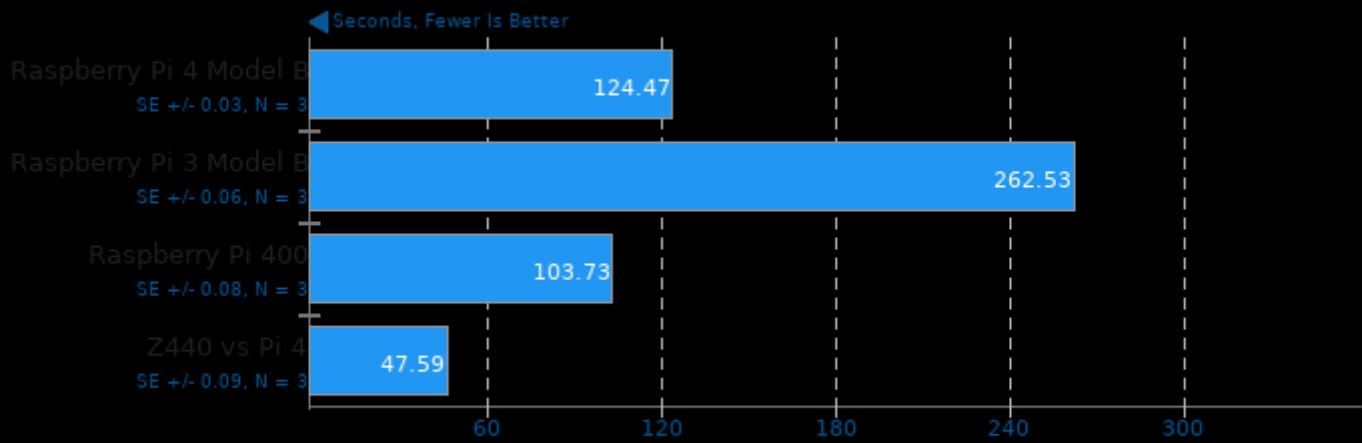
1. (CXX) g++ options: -fopenmp -O3

Numpy Benchmark



AOBench

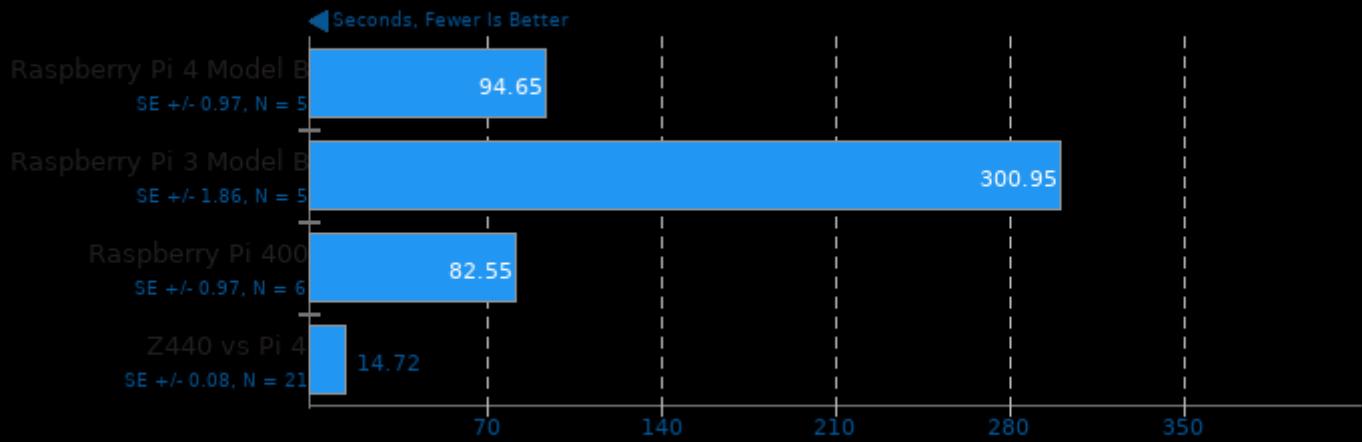
Size: 2048 x 2048 - Total Time



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

FLAC Audio Encoding 1.3.2

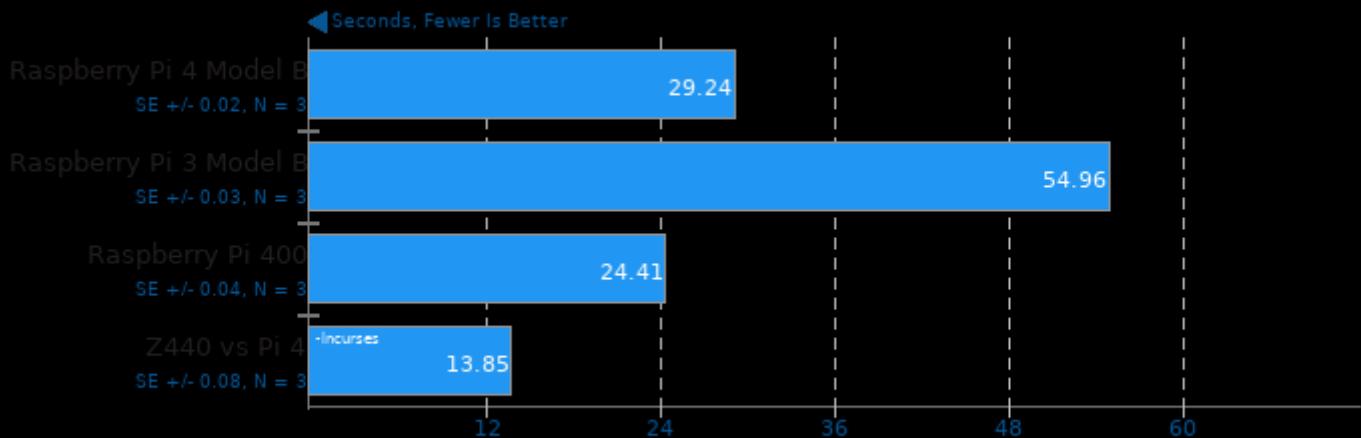
WAV To FLAC



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

LAME MP3 Encoding 3.100

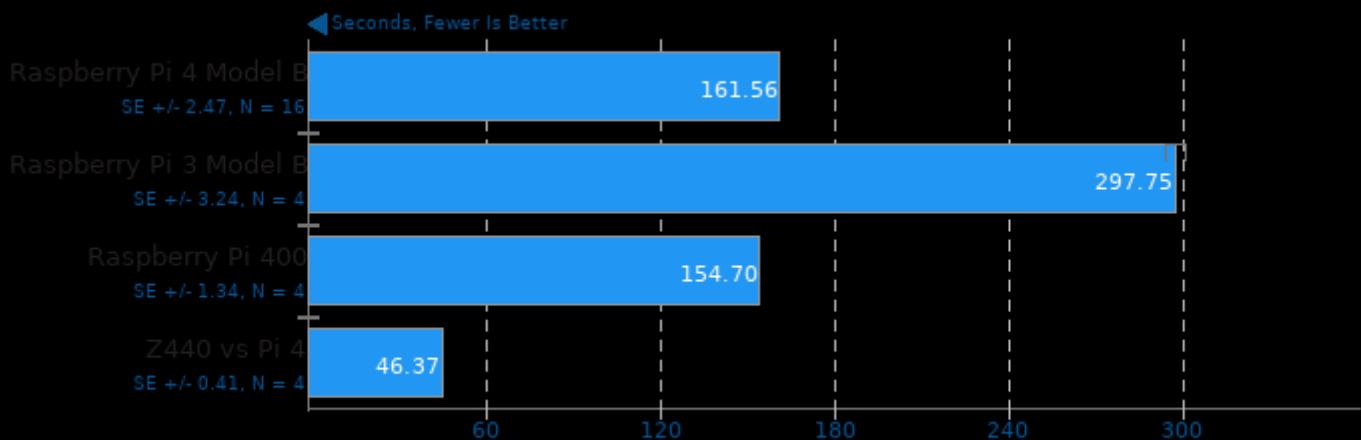
WAV To MP3



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

eSpeak-NG Speech Engine 20200907

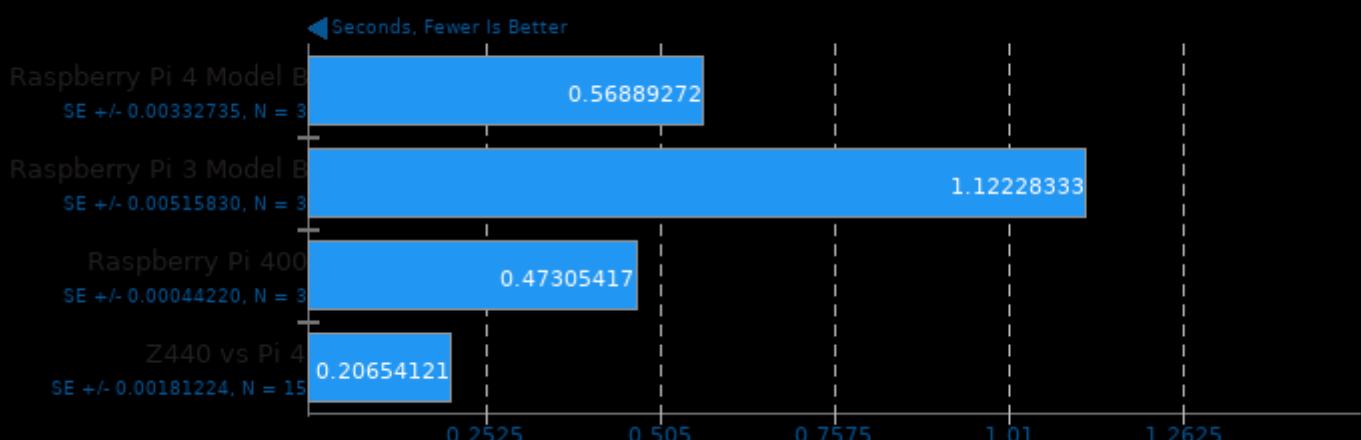
Text-To-Speech Synthesis



1. (CC) gcc options: -O2 -std=c99

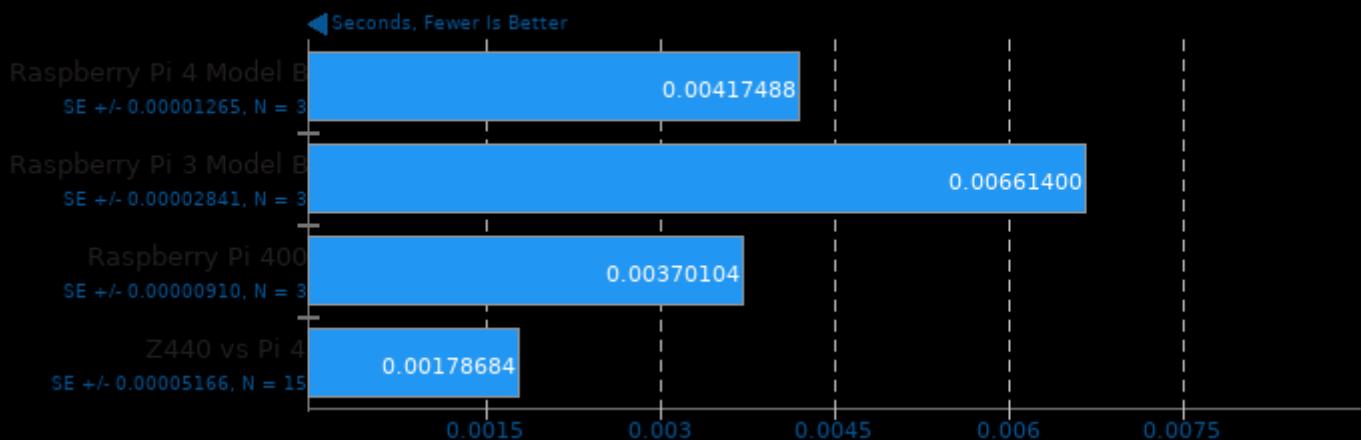
Perl Benchmarks

Test: Pod2html

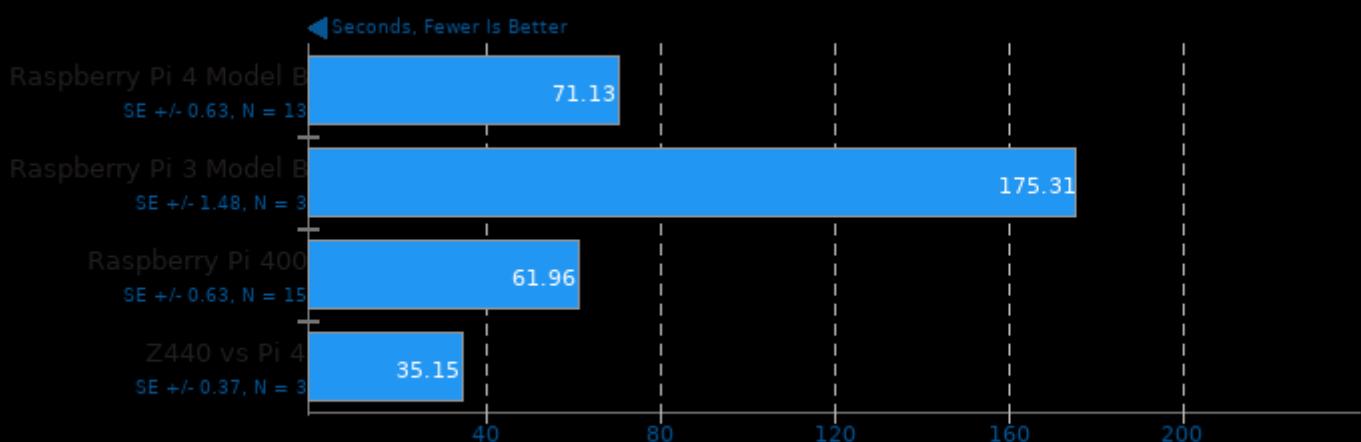


Perl Benchmarks

Test: Interpreter



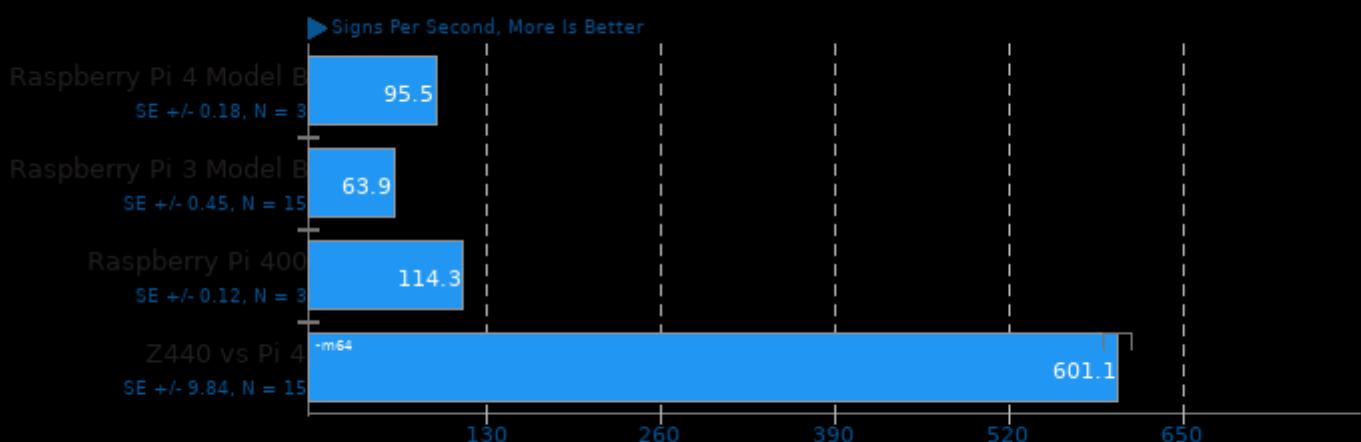
RNNoise 2020-06-28



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

OpenSSL 1.1.1

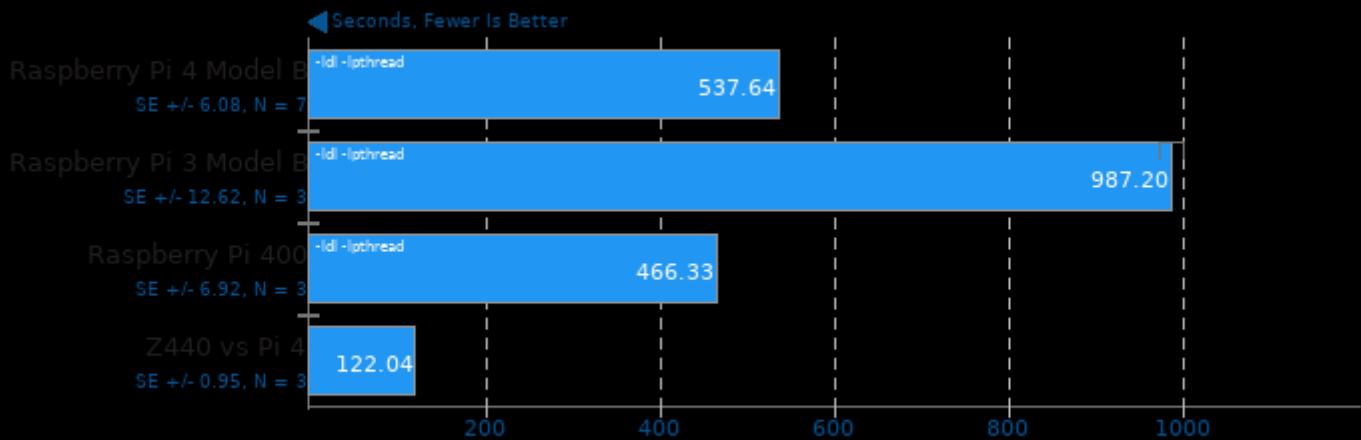
RSA 4096-bit Performance



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

SQLite Speedtest 3.30

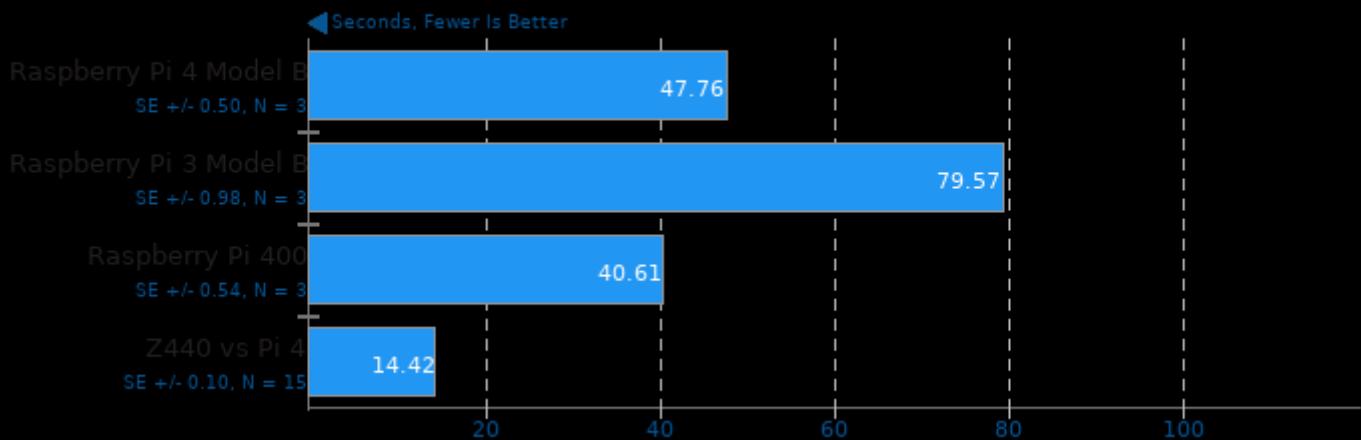
Timed Time - Size 1,000



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

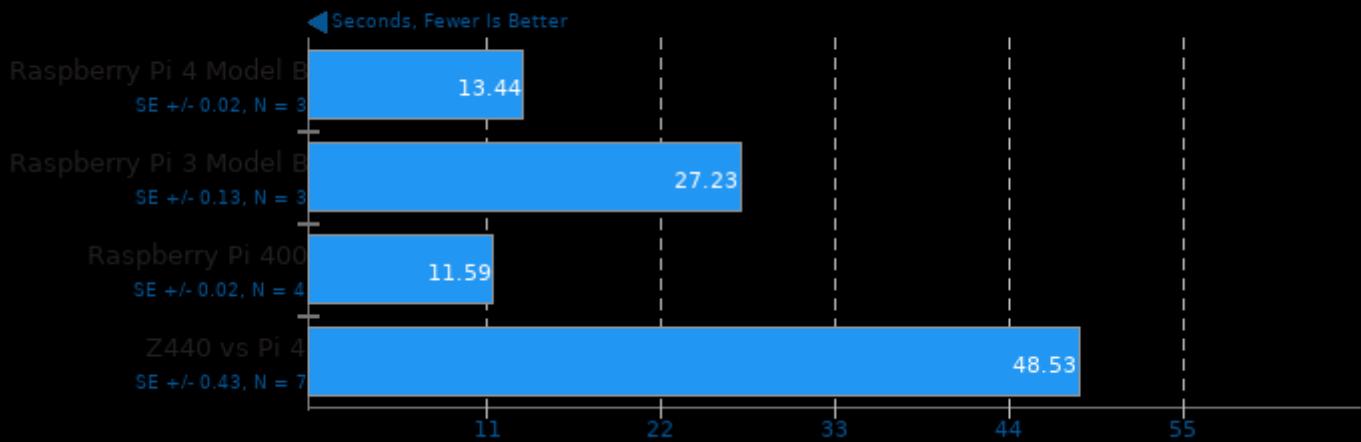
GEGL

Operation: Crop



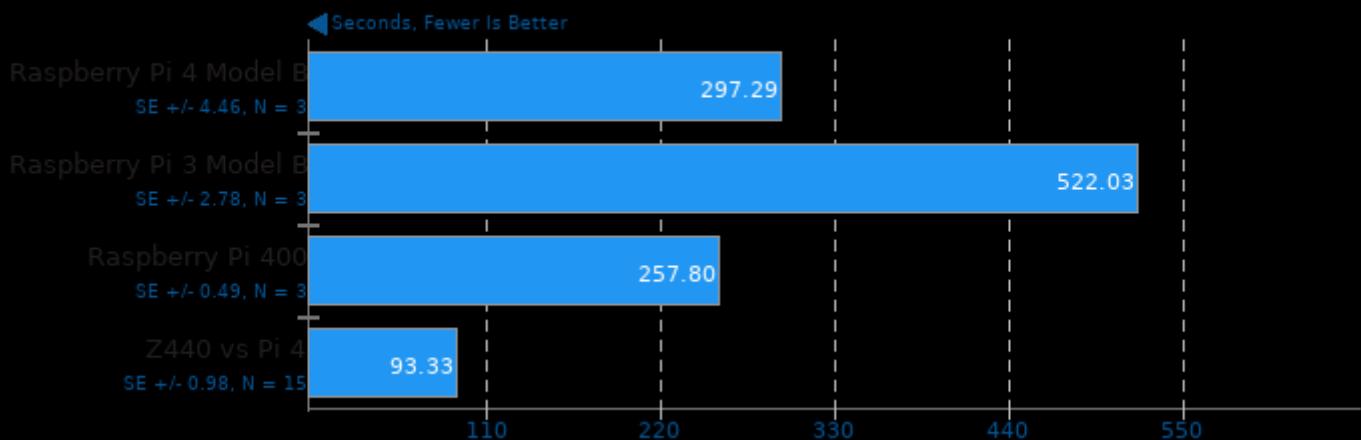
GEGL

Operation: Reflect



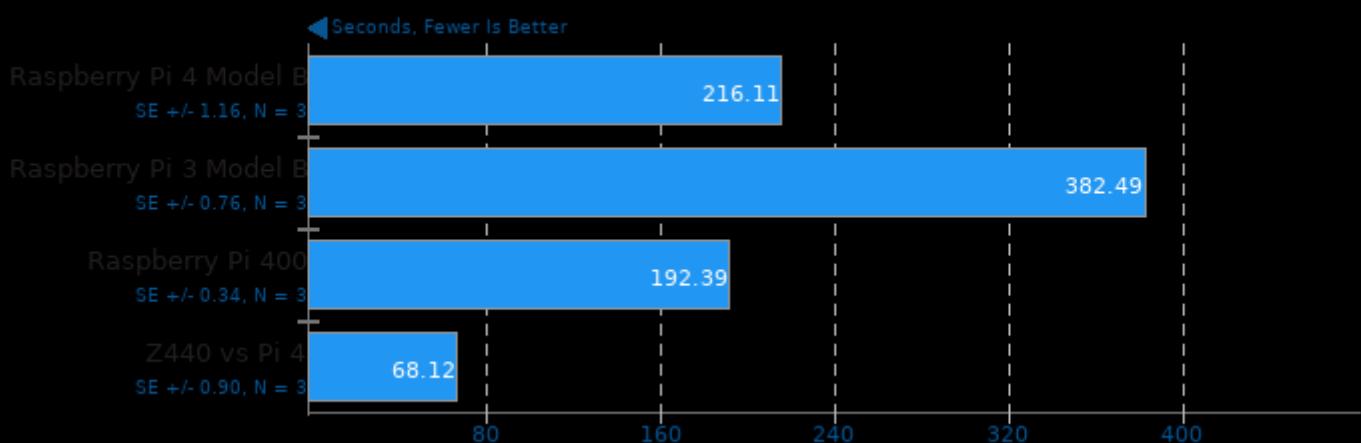
GEGL

Operation: Color Enhance



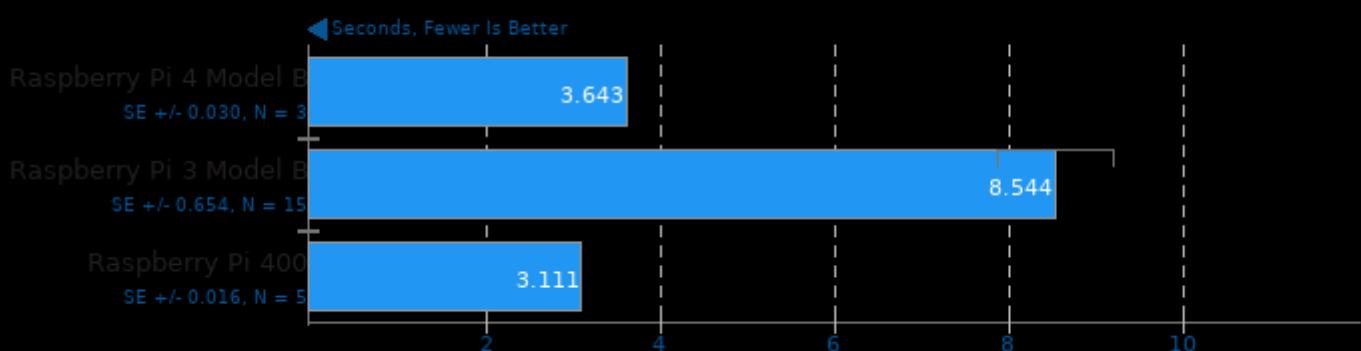
GEGL

Operation: Rotate 90 Degrees



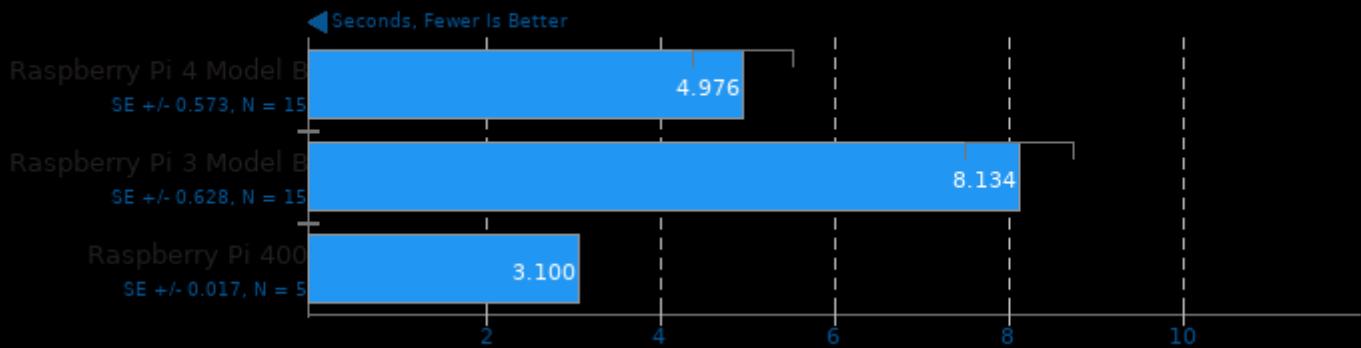
GIMP 2.10.8

Test: rotate

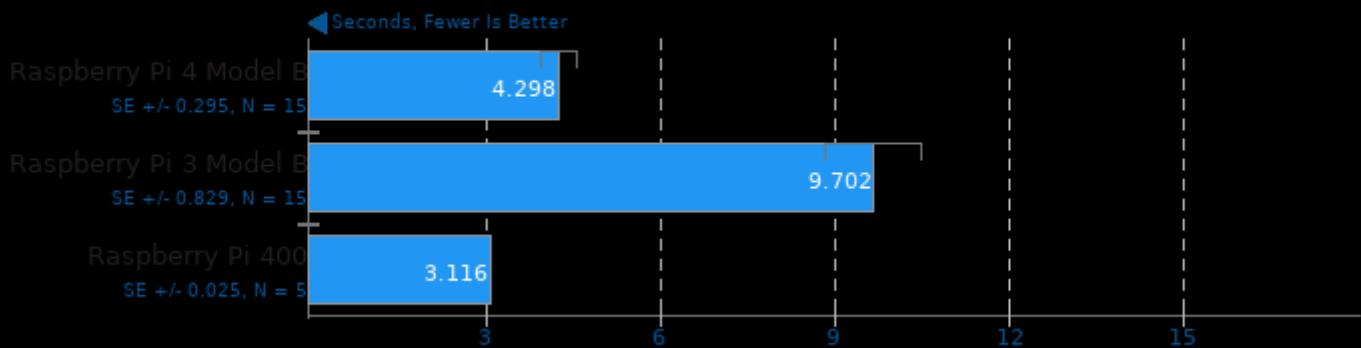


GIMP 2.10.8

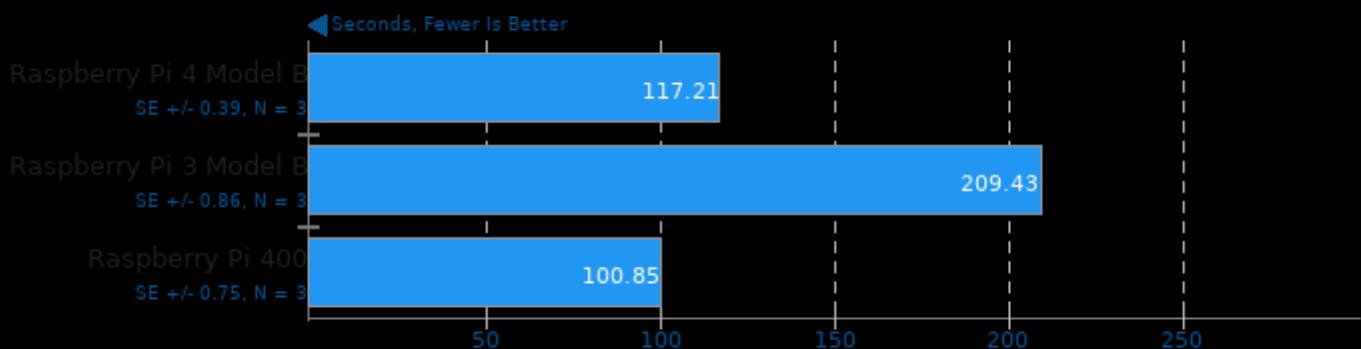
Test: auto-levels

**GIMP 2.10.8**

Test: unsharp-mask

**Inkscape**

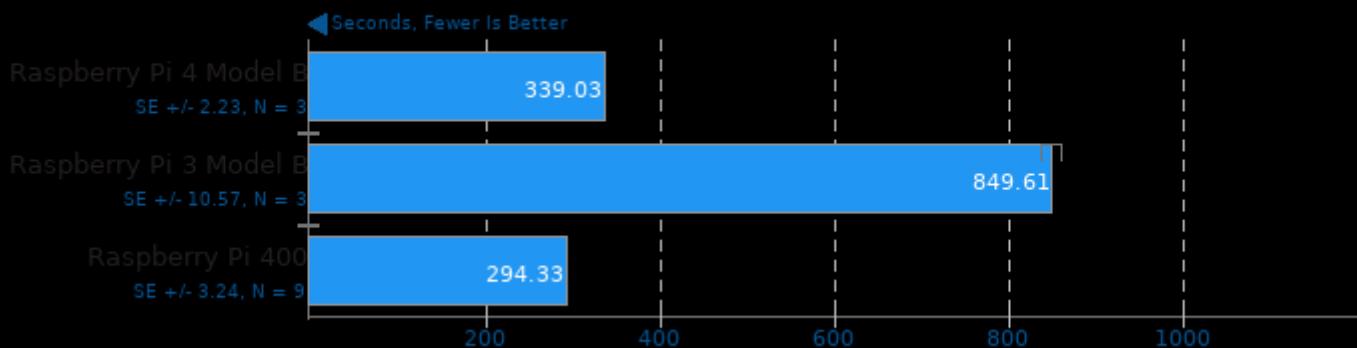
Operation: SVG Files To PNG



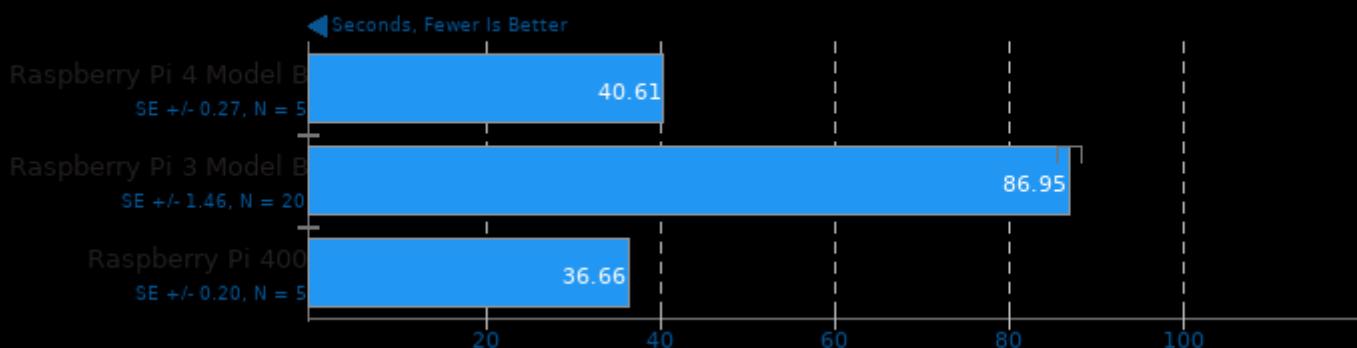
1. Inkscape 0.92.4 (5da689c313, 2019-01-14)

OCRMyPDF 8.0.1+dfsg

Processing 60 Page PDF Document

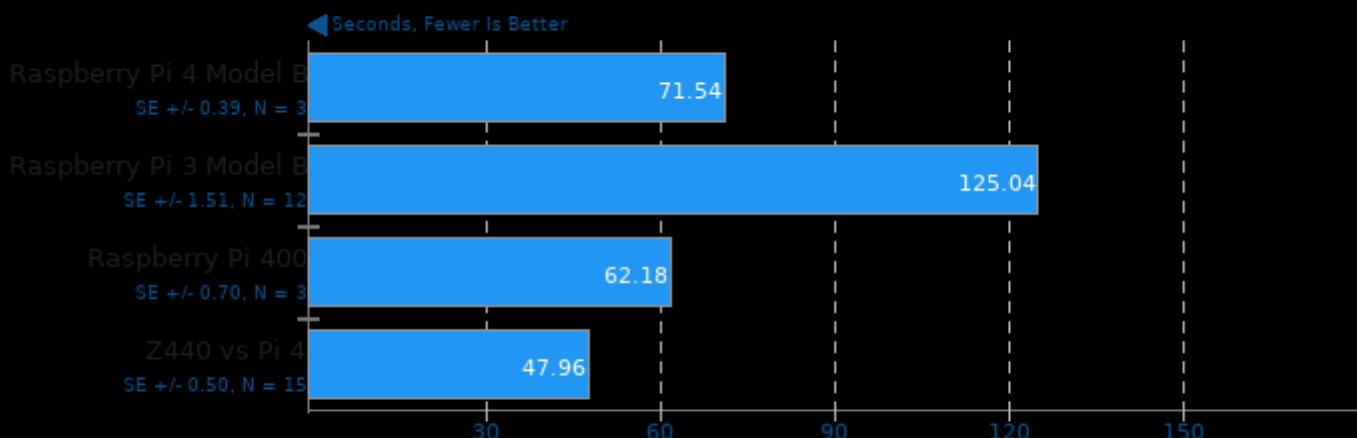


GNU Octave Benchmark 4.4.1



librsvg

Operation: SVG Files To PNG

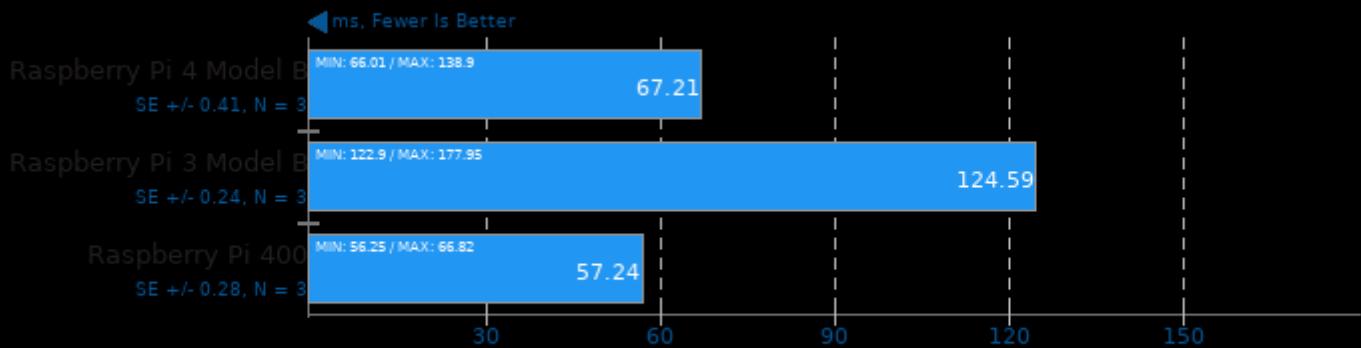


1. Raspberry Pi 4 Model B: rsvg-convert version 2.44.10
2. Raspberry Pi 3 Model B: rsvg-convert version 2.44.10
3. Raspberry Pi 400: rsvg-convert version 2.44.10
4. Z440 vs Pi 4: rsvg-convert version 2.52.5

Raspberry Pi 400

Mobile Neural Network 2020-09-17

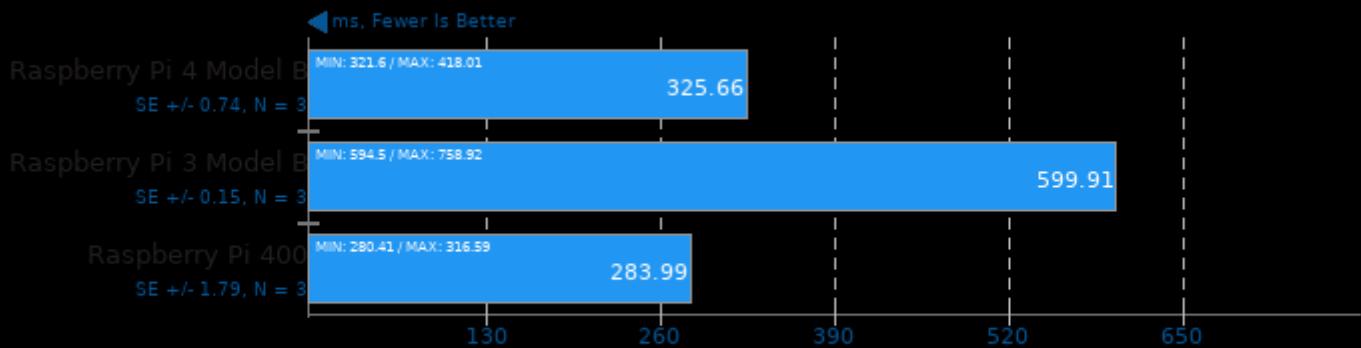
Model: SqueezeNetV1.0



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr

Mobile Neural Network 2020-09-17

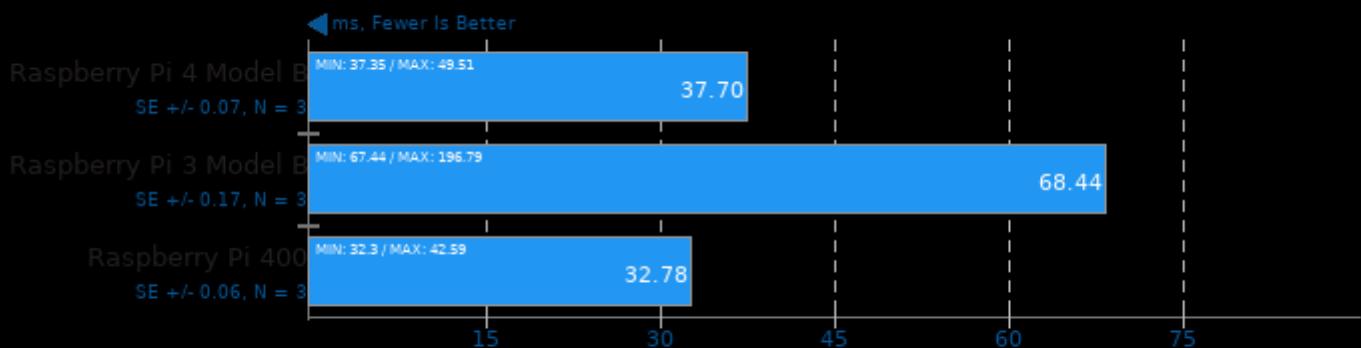
Model: resnet-v2-50



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr

Mobile Neural Network 2020-09-17

Model: MobileNetV2_224

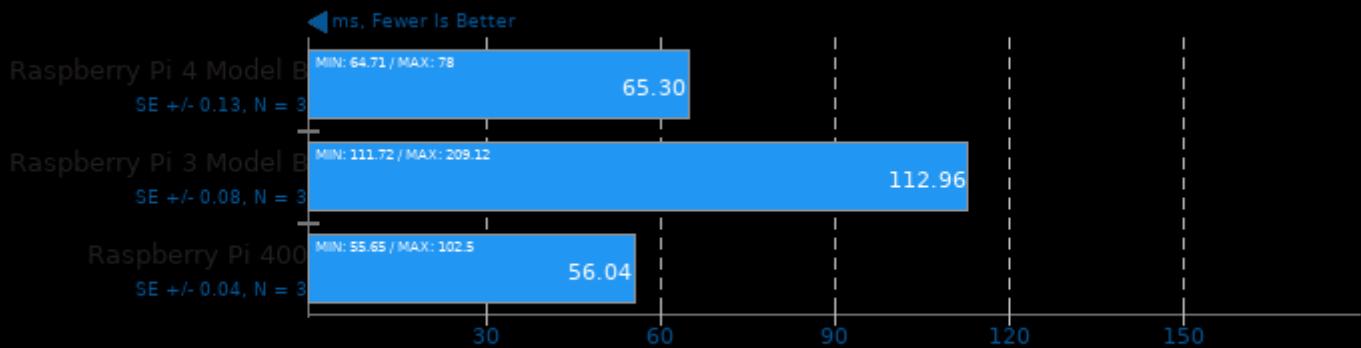


1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr

Raspberry Pi 400

Mobile Neural Network 2020-09-17

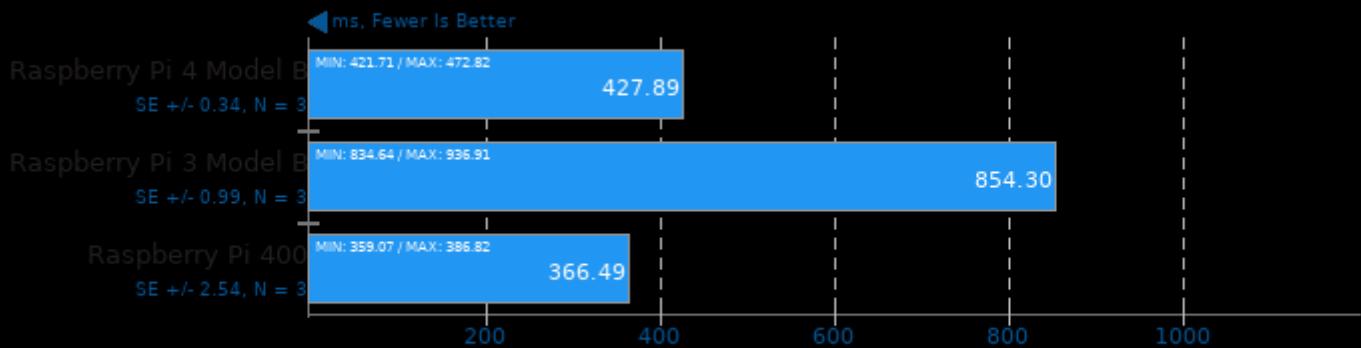
Model: mobilenet-v1-1.0



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr

Mobile Neural Network 2020-09-17

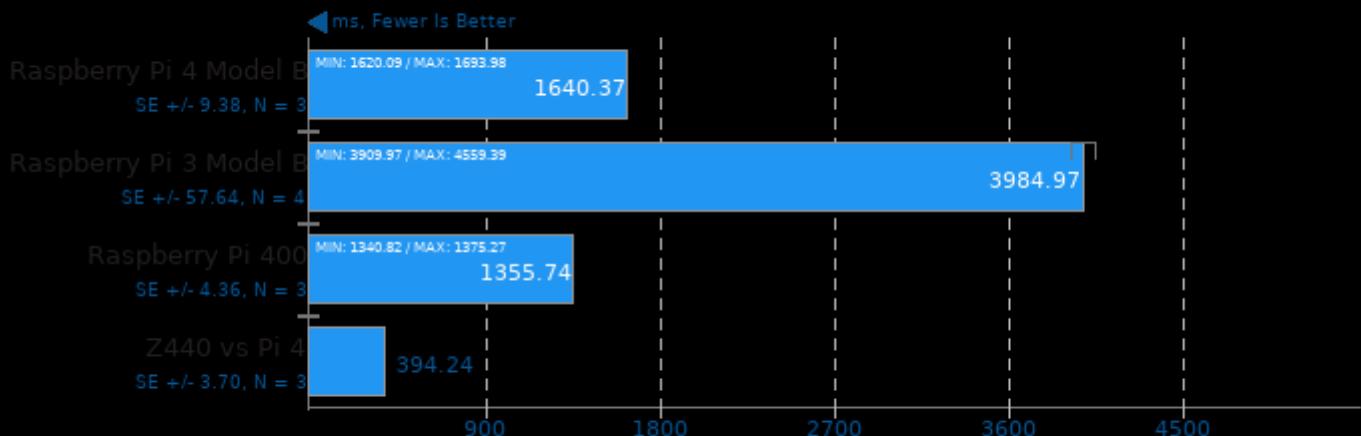
Model: inception-v3



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr

TNN 0.2.3

Target: CPU - Model: MobileNet v2

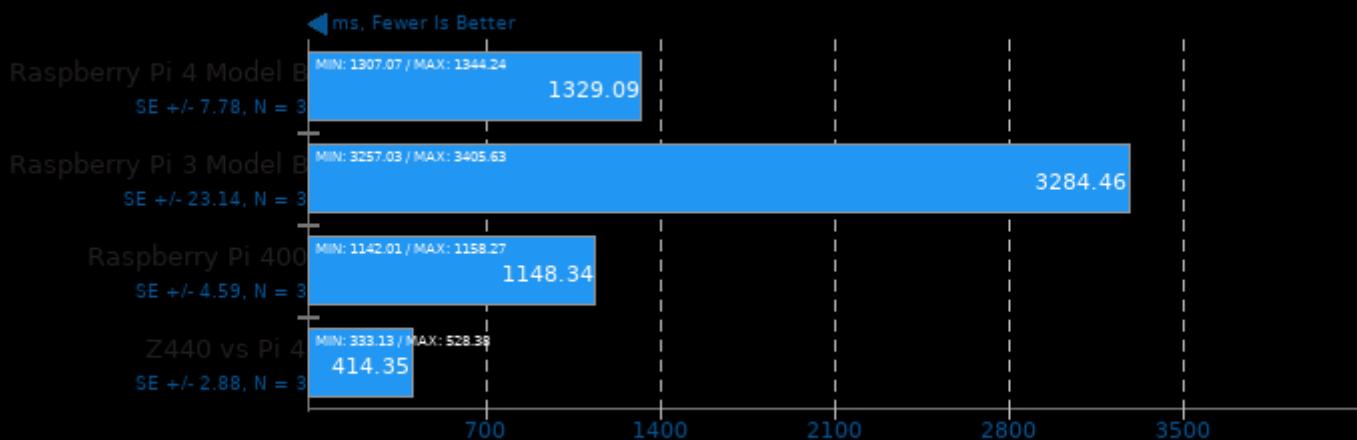


1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl

Raspberry Pi 400

TNN 0.2.3

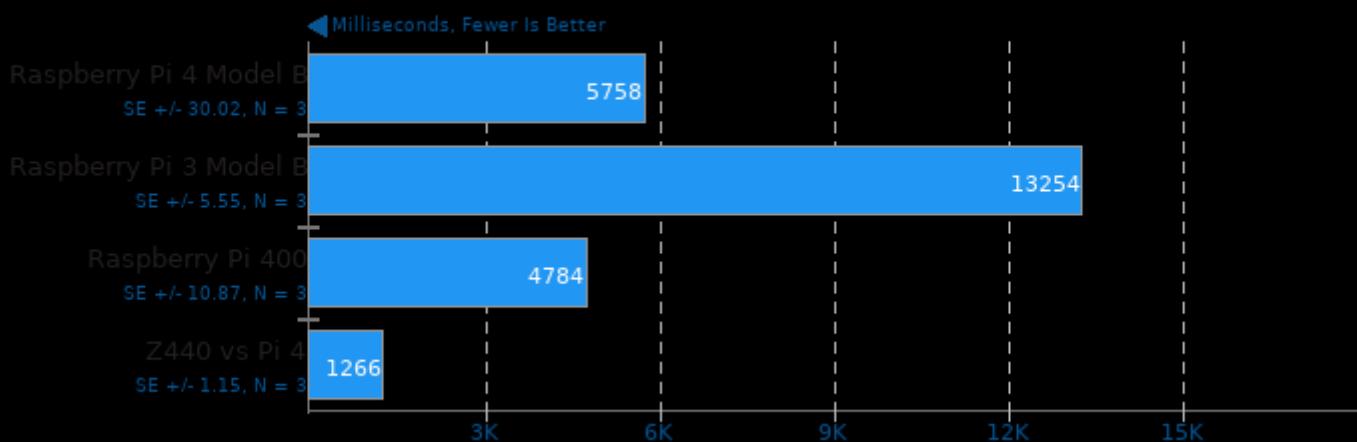
Target: CPU - Model: SqueezeNet v1.1



1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl

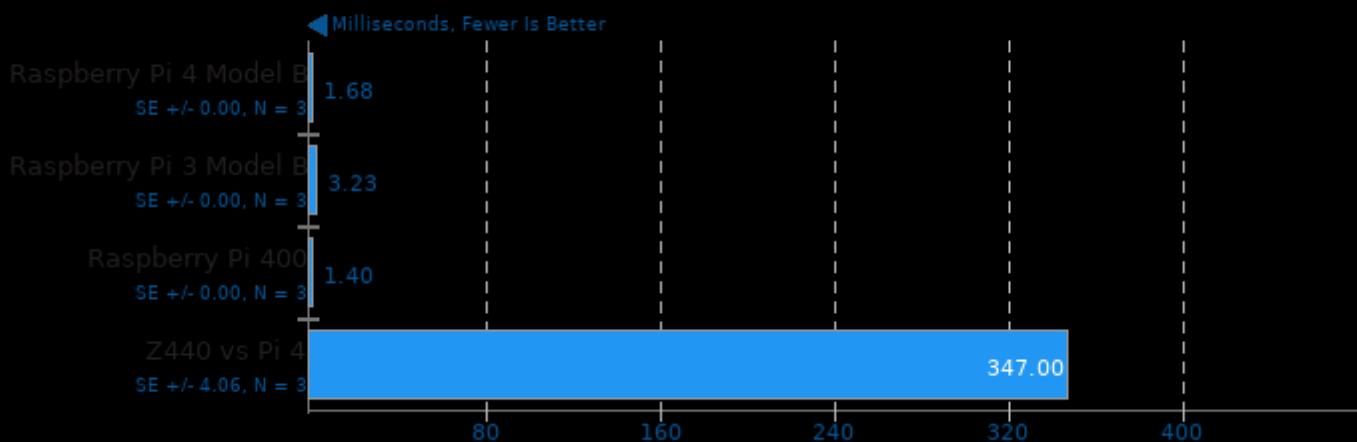
PyBench 2018-02-16

Total For Average Test Times



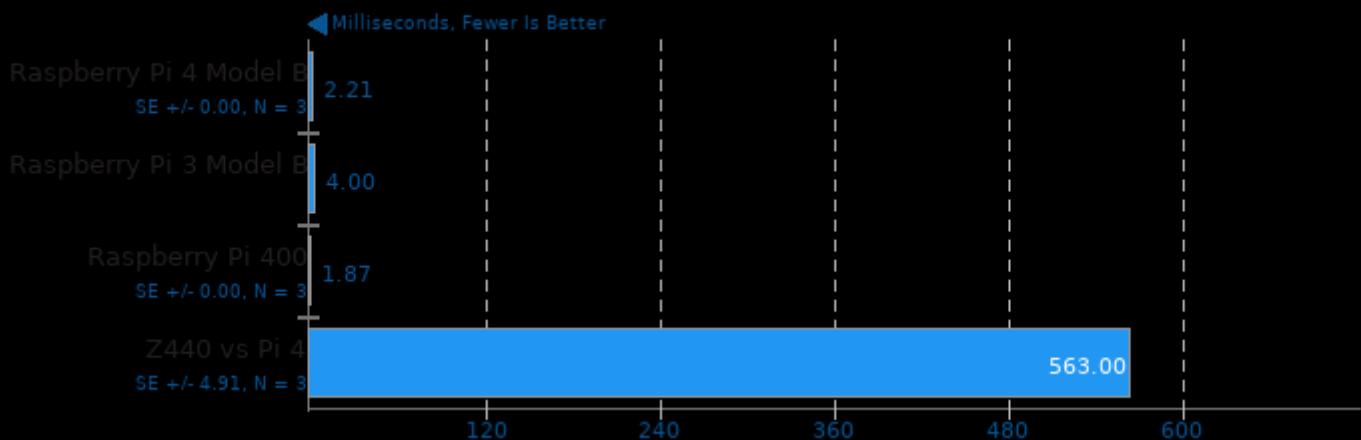
PyPerformance 1.0.0

Benchmark: go



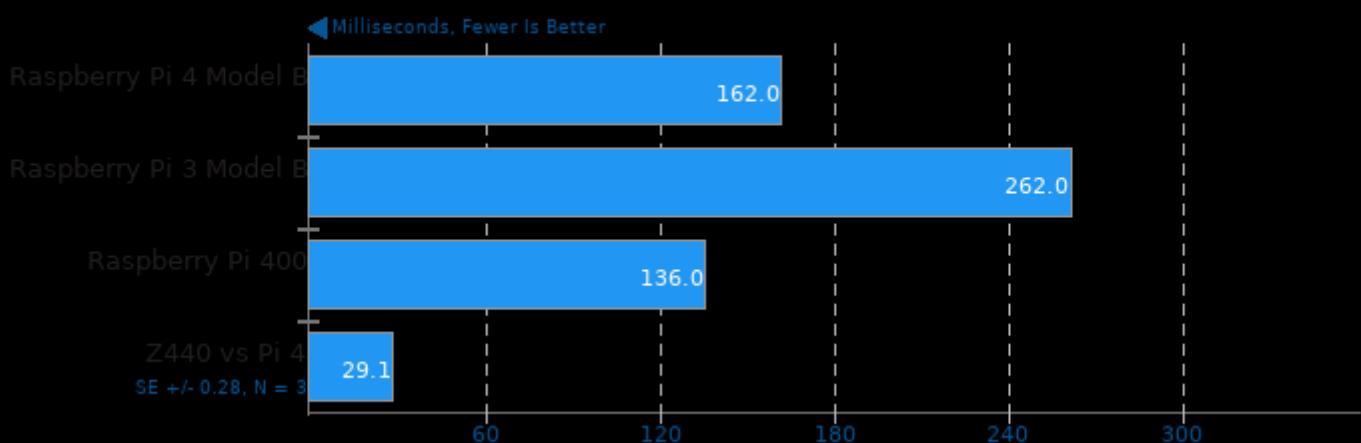
PyPerformance 1.0.0

Benchmark: 2to3



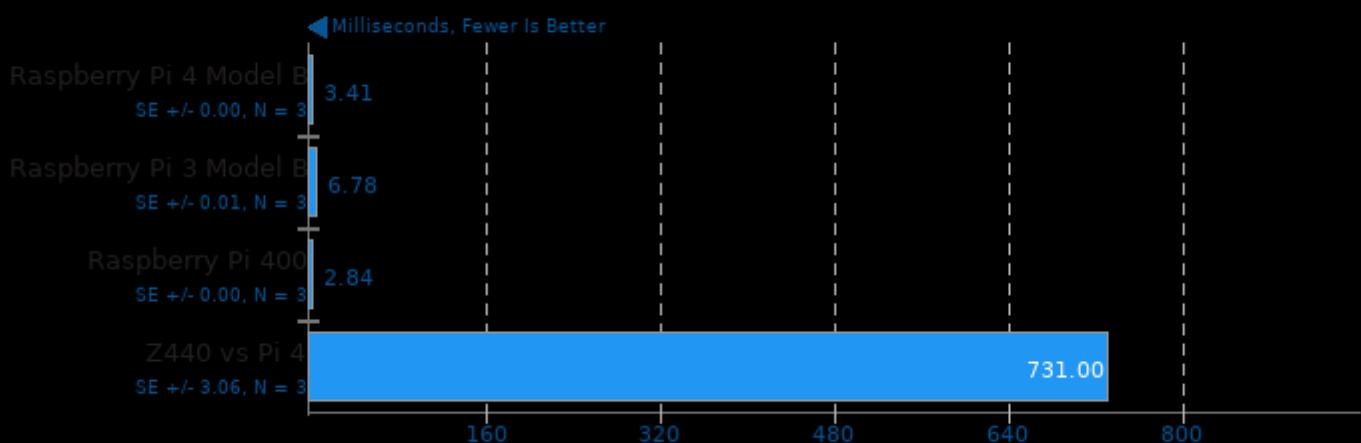
PyPerformance 1.0.0

Benchmark: pathlib



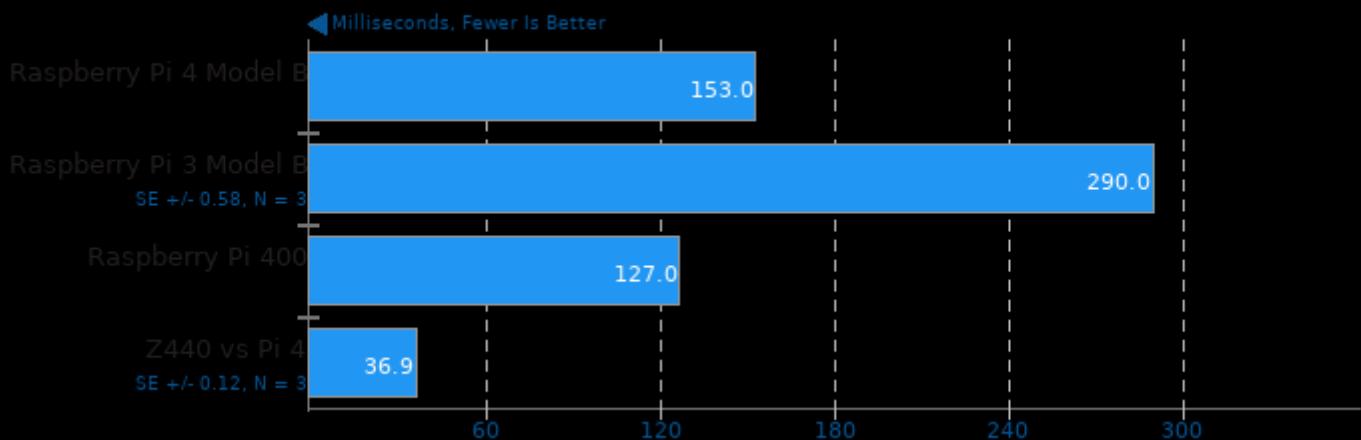
PyPerformance 1.0.0

Benchmark: raytrace



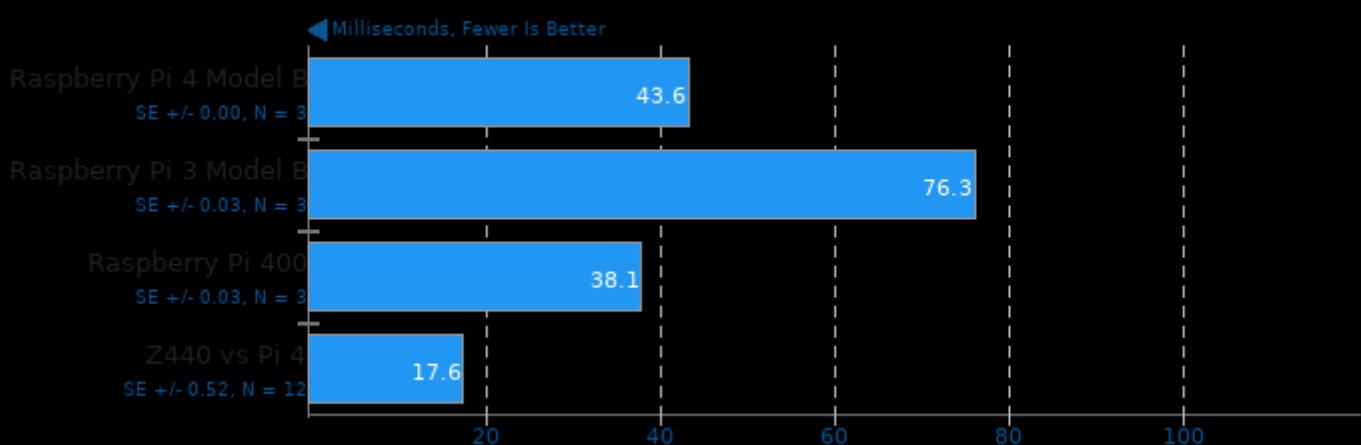
PyPerformance 1.0.0

Benchmark: json.loads



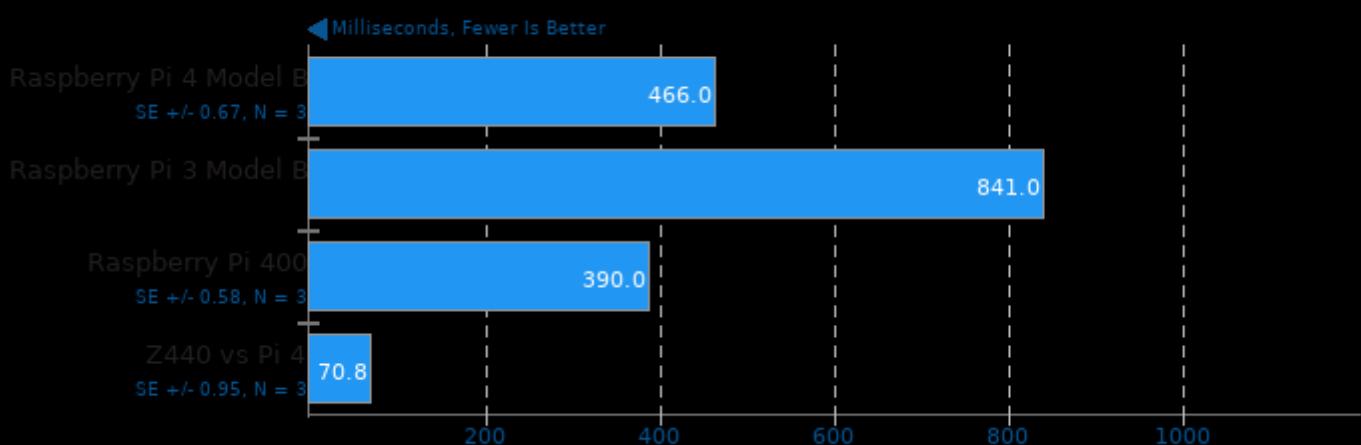
PyPerformance 1.0.0

Benchmark: python_startup



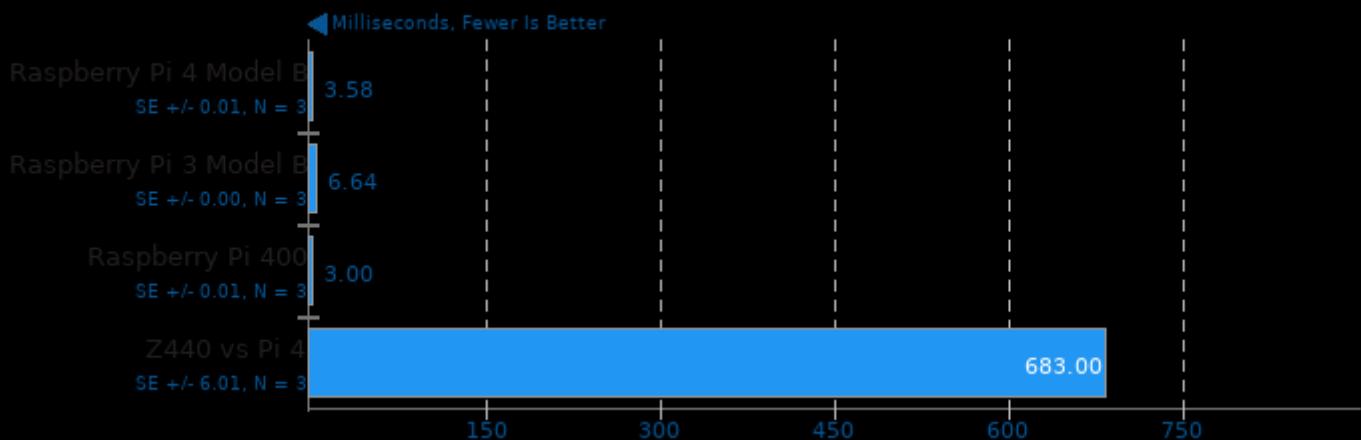
PyPerformance 1.0.0

Benchmark: django_template



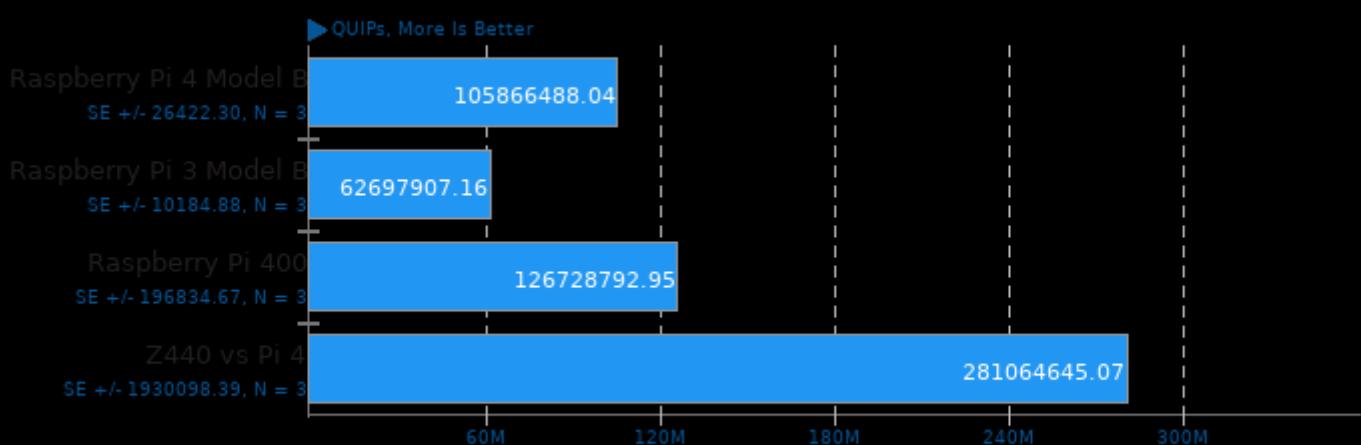
PyPerformance 1.0.0

Benchmark: pickle_pure_python



Hierarchical INTegration 1.0

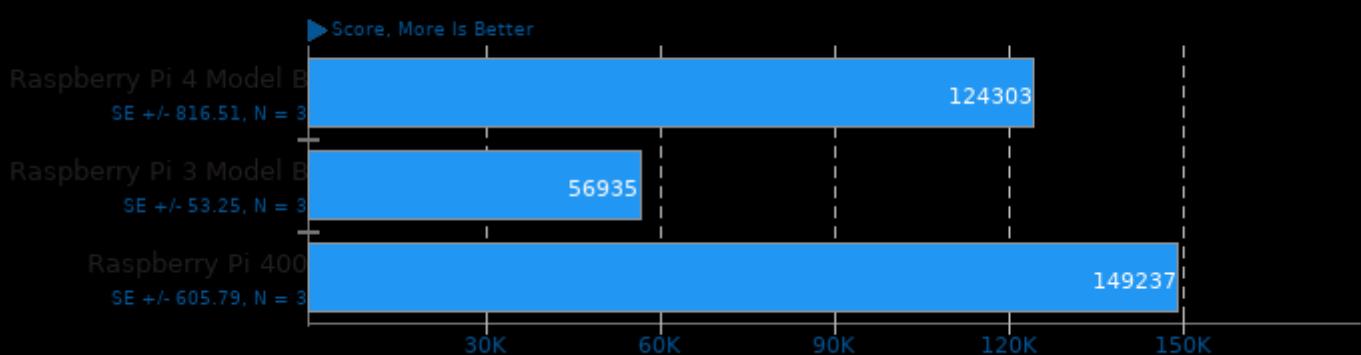
Test: FLOAT



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

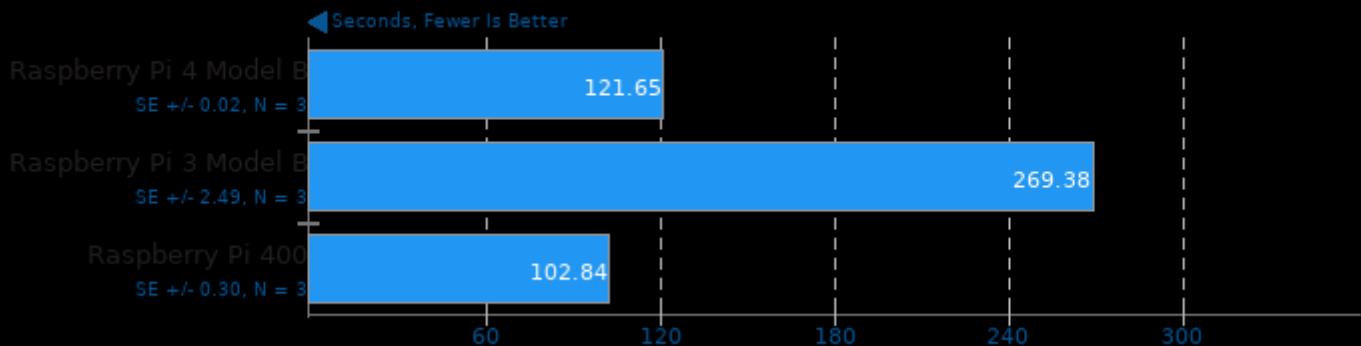
PHPBench 0.8.1

PHP Benchmark Suite



Tesseract OCR 4.0.0

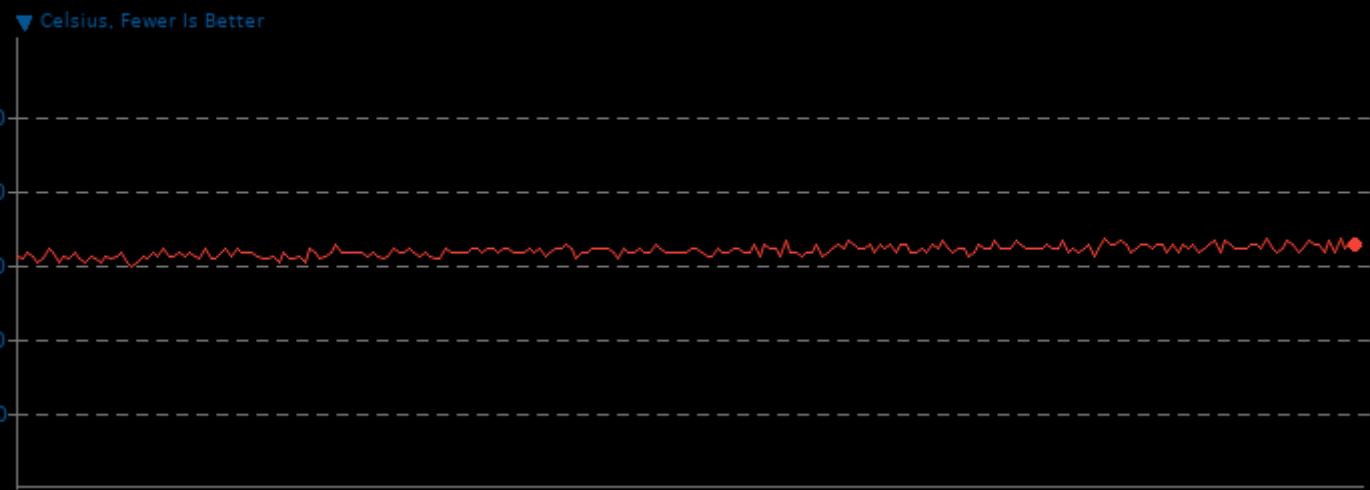
Time To OCR 7 Images



IOR 3.2.1

System Temperature Monitor

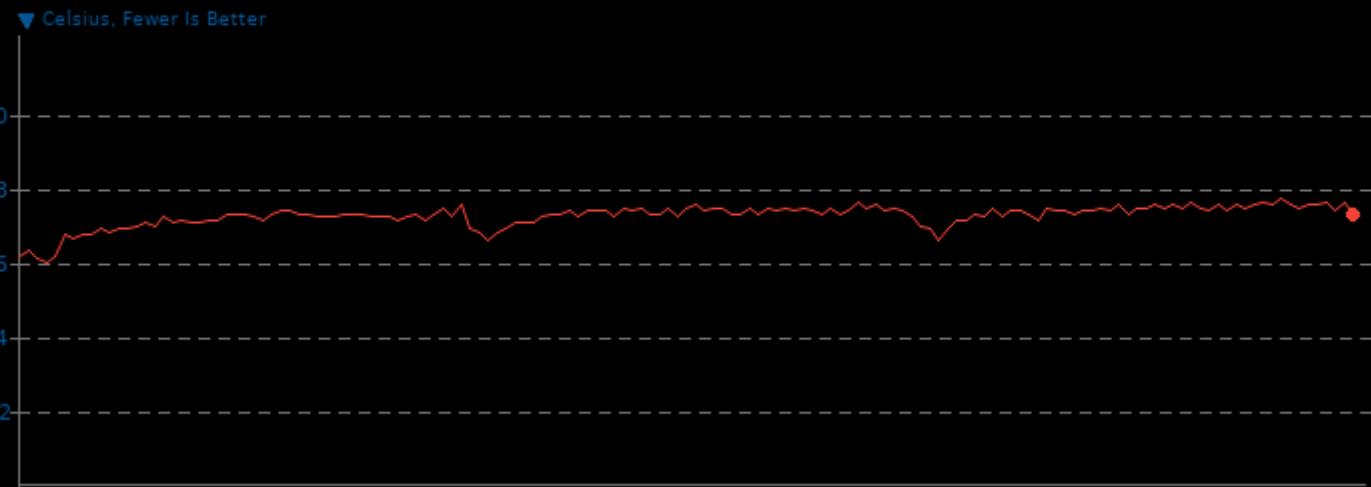
Min Avg Max
Raspberry Pi 400 29.7 31.8 33.6



CloverLeaf

System Temperature Monitor

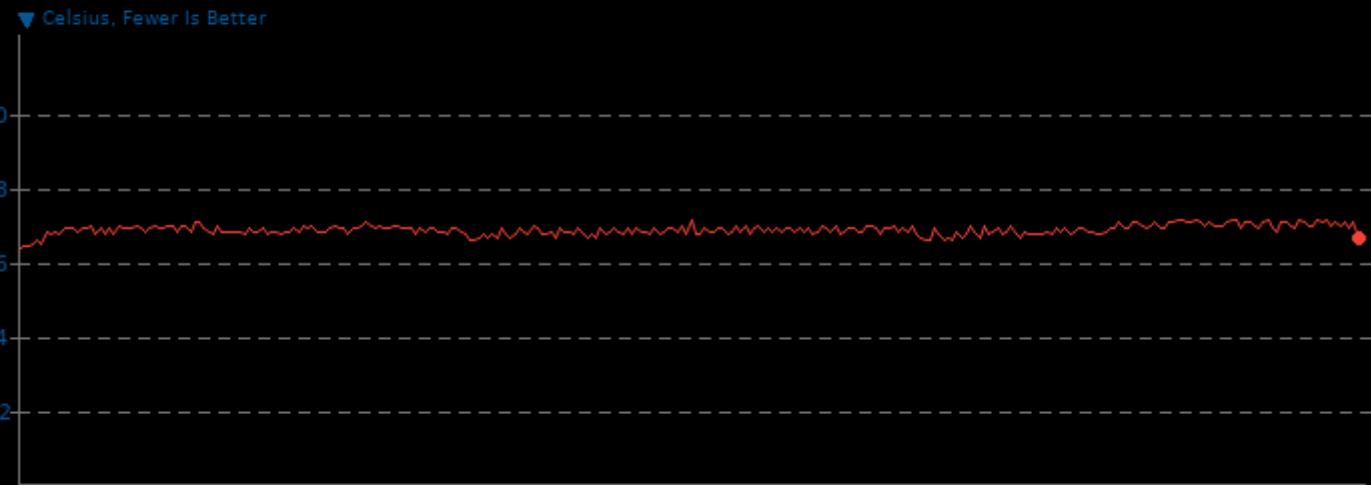
Raspberry Pi 400	Min	Avg	Max
	36.0	43.5	46.3



Dolfyn 0.527

System Temperature Monitor

Raspberry Pi 400	Min	Avg	Max
	38.0	41.2	42.8

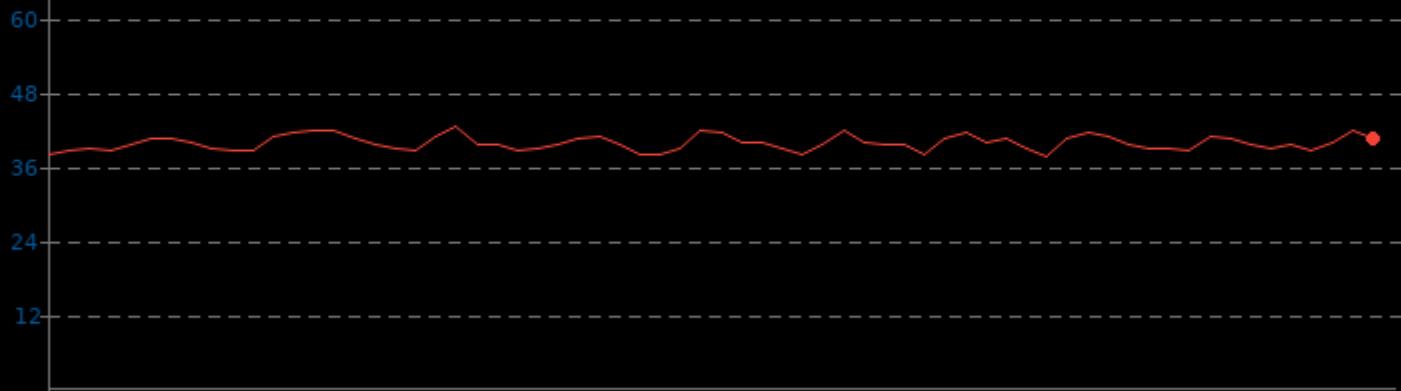


FFTE 7.0

System Temperature Monitor

Raspberry Pi 400	Min	37.5
Raspberry Pi 400	Avg	39.7
Raspberry Pi 400	Max	42.4

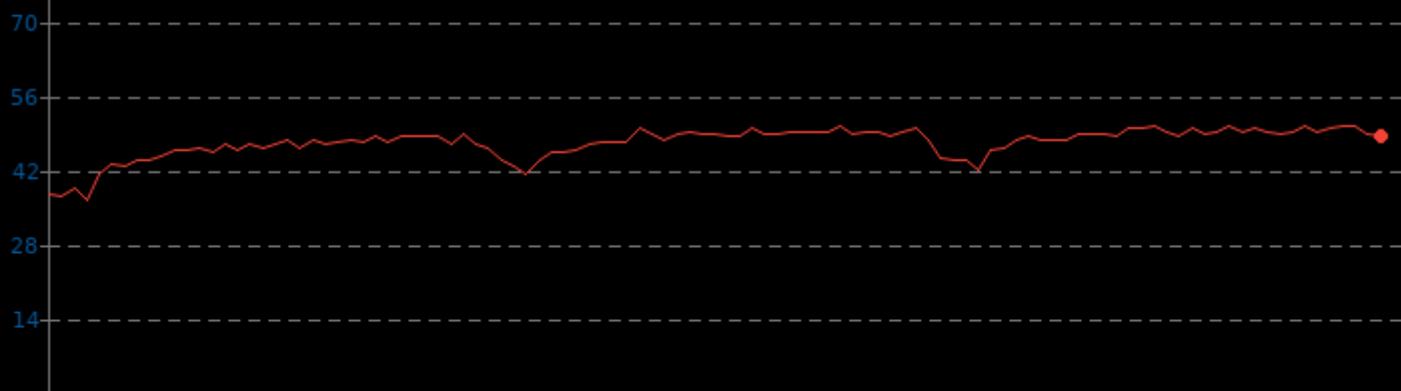
▼ Celsius, Fewer Is Better

**LAMMPS Molecular Dynamics Simulator 24Aug2020**

System Temperature Monitor

Raspberry Pi 400	Min	36.5
Raspberry Pi 400	Avg	47.1
Raspberry Pi 400	Max	50.1

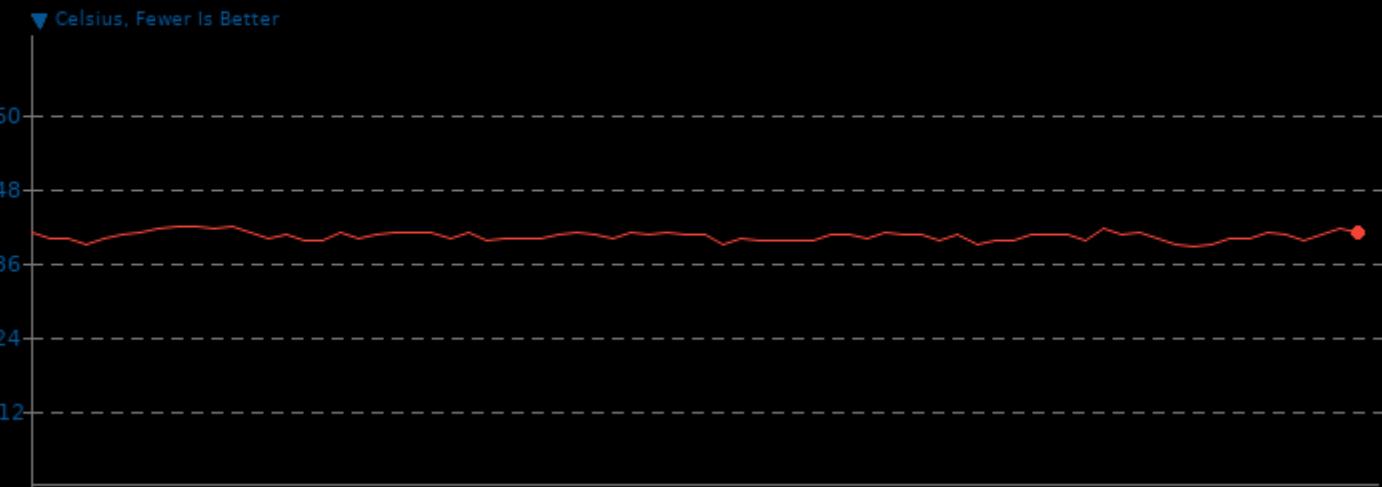
▼ Celsius, Fewer Is Better



WebP Image Encode 1.1

System Temperature Monitor

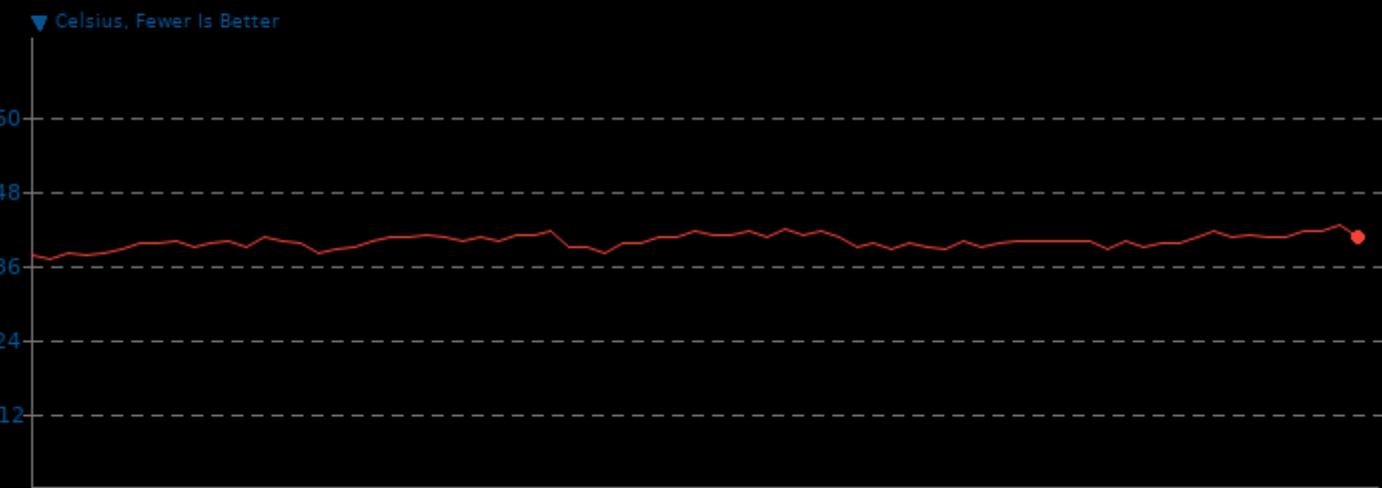
Raspberry Pi 400	Min	38.5	Avg	40.2	Max	41.9
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WebP Image Encode 1.1

System Temperature Monitor

Raspberry Pi 400	Min	37.0	Avg	39.8	Max	42.4
------------------	-----	------	-----	------	-----	------



WebP Image Encode 1.1

System Temperature Monitor

Raspberry Pi 400
Min: 37 / Avg: 39.43 / Max: 41.9

◀ Celsius, Fewer Is Better

9

18

27

36

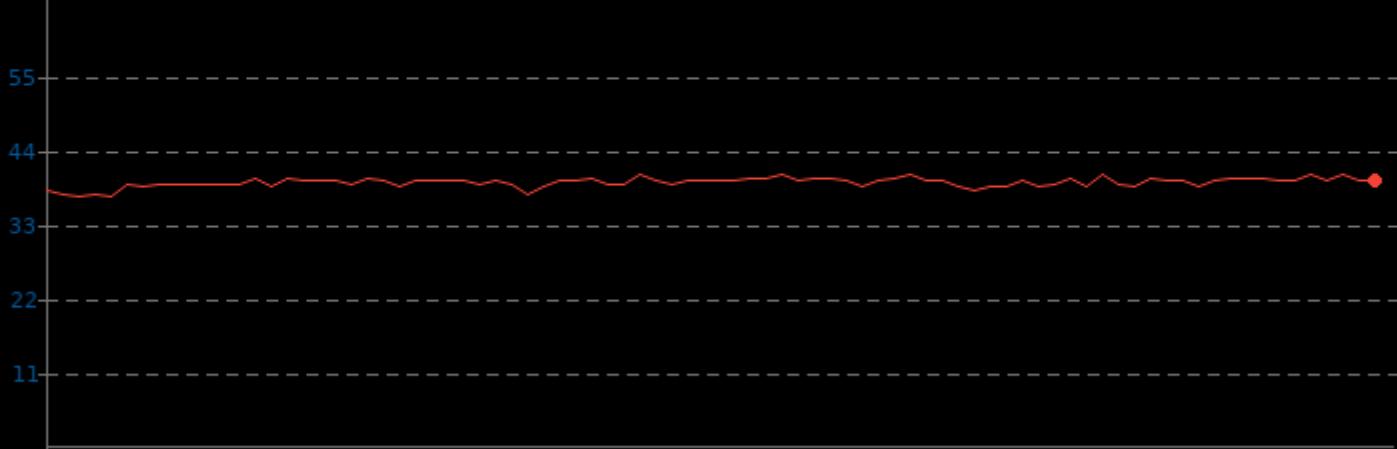
45

WebP Image Encode 1.1

System Temperature Monitor

Raspberry Pi 400 Min: 37.0 Avg: 39.2 Max: 40.4

▼ Celsius, Fewer Is Better

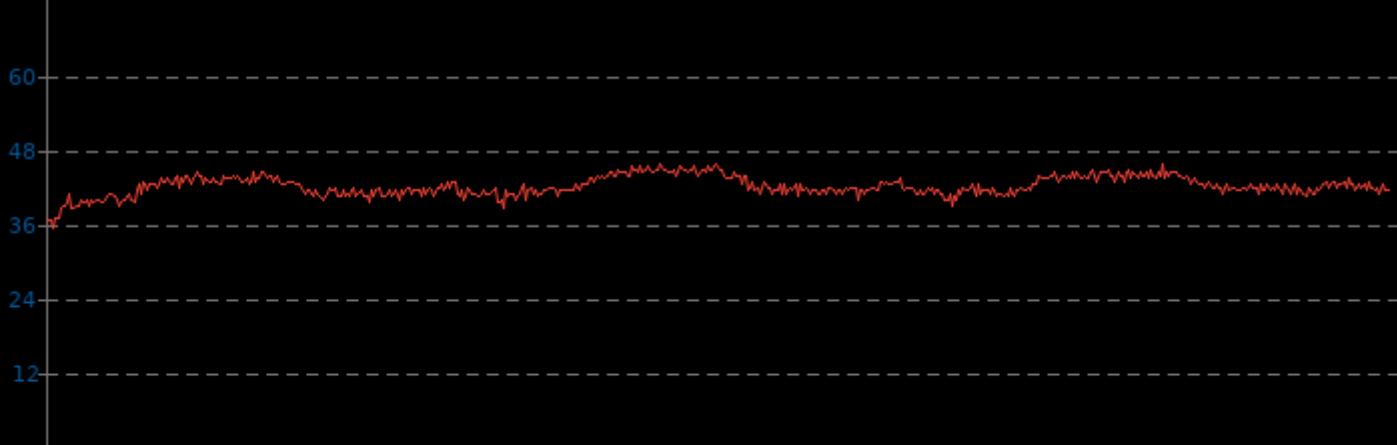


WebP Image Encode 1.1

System Temperature Monitor

Raspberry Pi 400 Min: 35.5 Avg: 42.1 Max: 45.8

▼ Celsius, Fewer Is Better

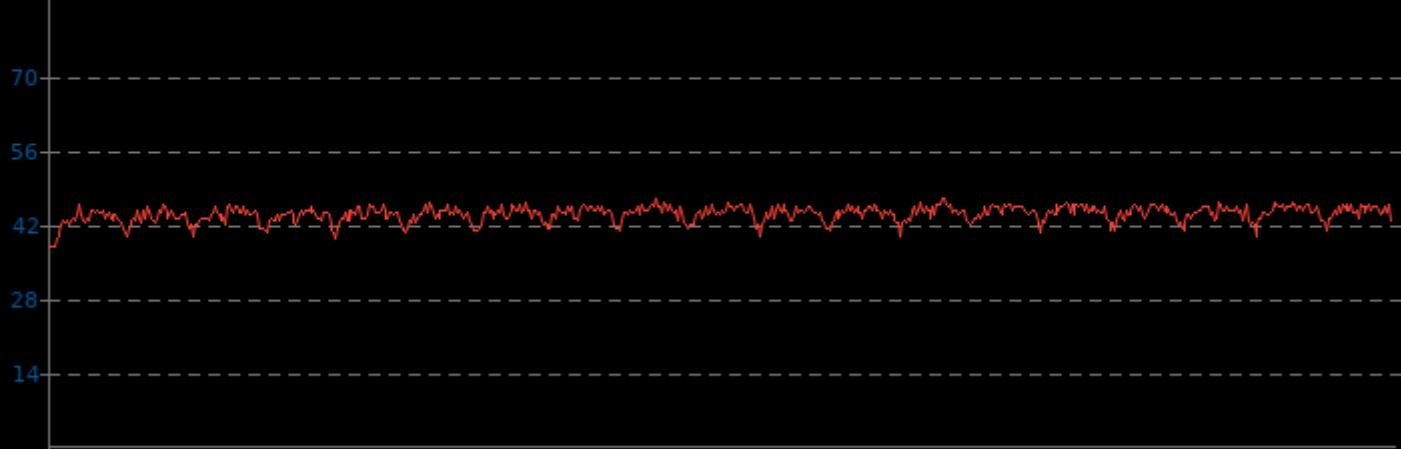


DaCapo Benchmark 9.12-MR1

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	38.0	44.0	46.7

▼ Celsius, Fewer Is Better

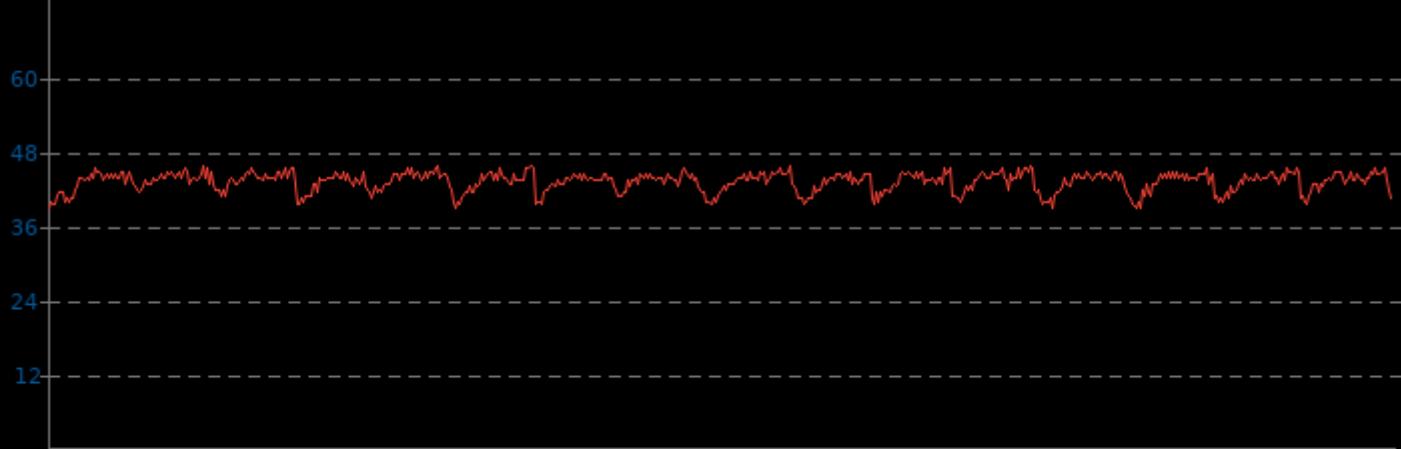


DaCapo Benchmark 9.12-MR1

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	38.9	43.1	45.8

▼ Celsius, Fewer Is Better



DaCapo Benchmark 9.12-MR1

System Temperature Monitor

◀ Celsius, Fewer Is Better

Raspberry Pi 400
Min: 38 / Avg: 44.02 / Max: 46.7

10

20

30

40

50

Zstd Compression 1.4.5

System Temperature Monitor

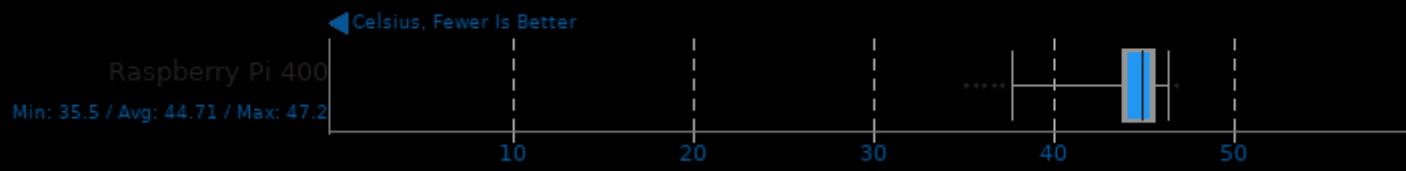
	Min	Avg	Max
■ Raspberry Pi 400	36.0	39.0	43.8

▼ Celsius, Fewer Is Better



Zstd Compression 1.4.5

System Temperature Monitor

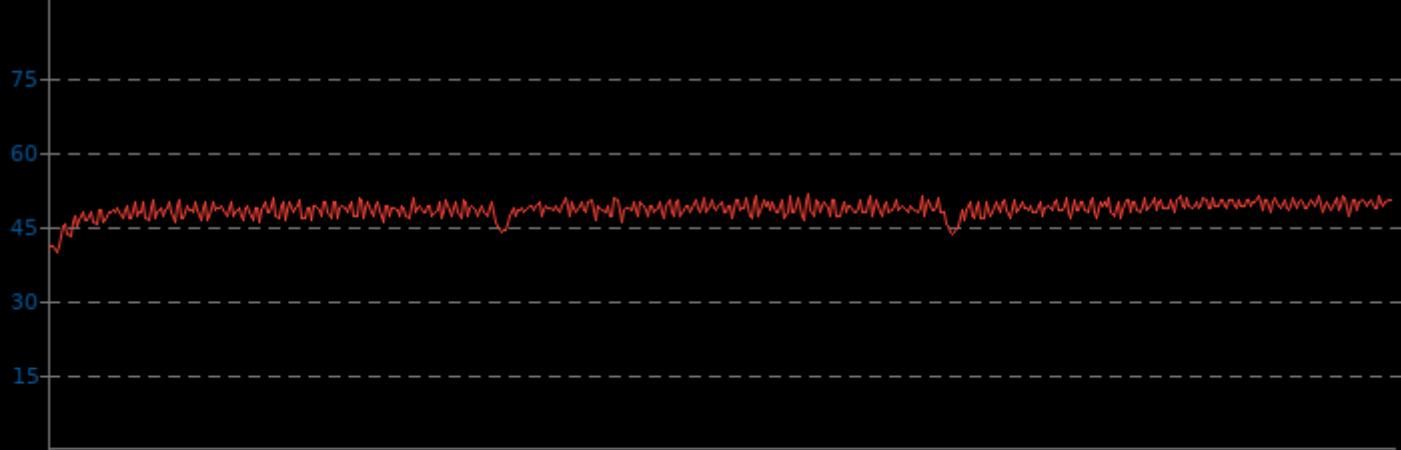


LibRaw 0.20

System Temperature Monitor

	Min	Avg	Max
■ Raspberry Pi 400	39.9	48.4	51.6

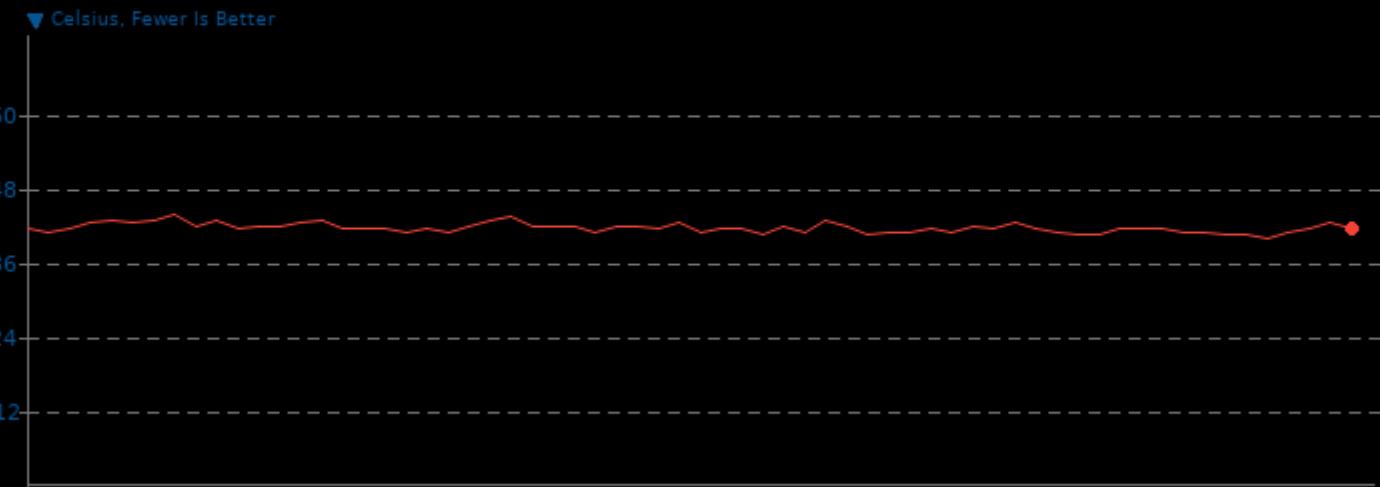
▼ Celsius, Fewer Is Better



TSCP 1.81

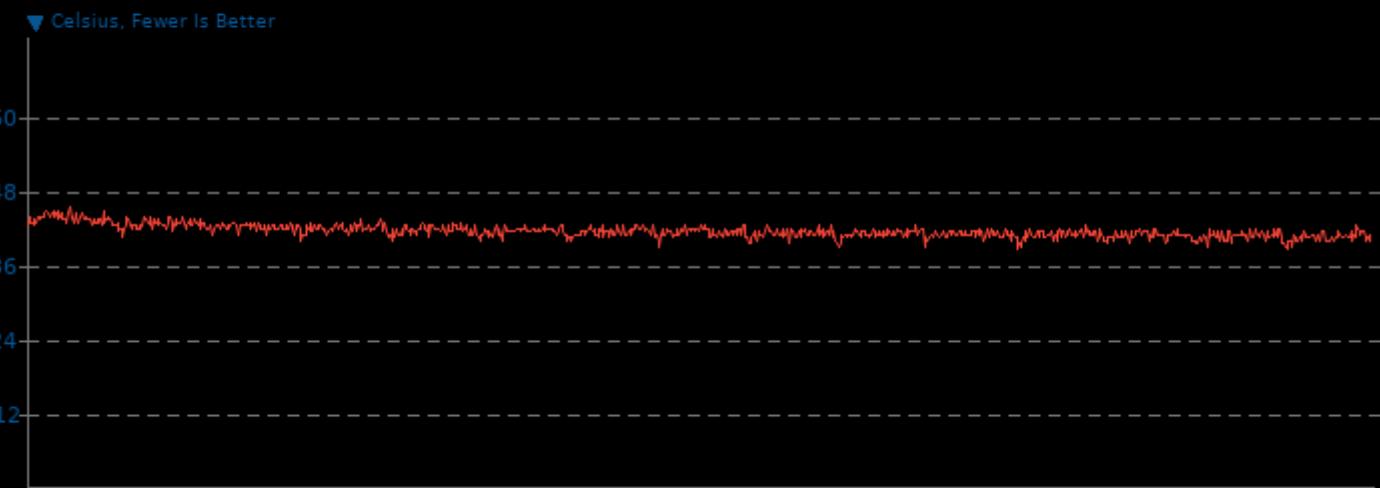
System Temperature Monitor

	Min	Avg	Max
█ Raspberry Pi 400	39.9	41.6	43.8

**GraphicsMagick 1.3.33**

System Temperature Monitor

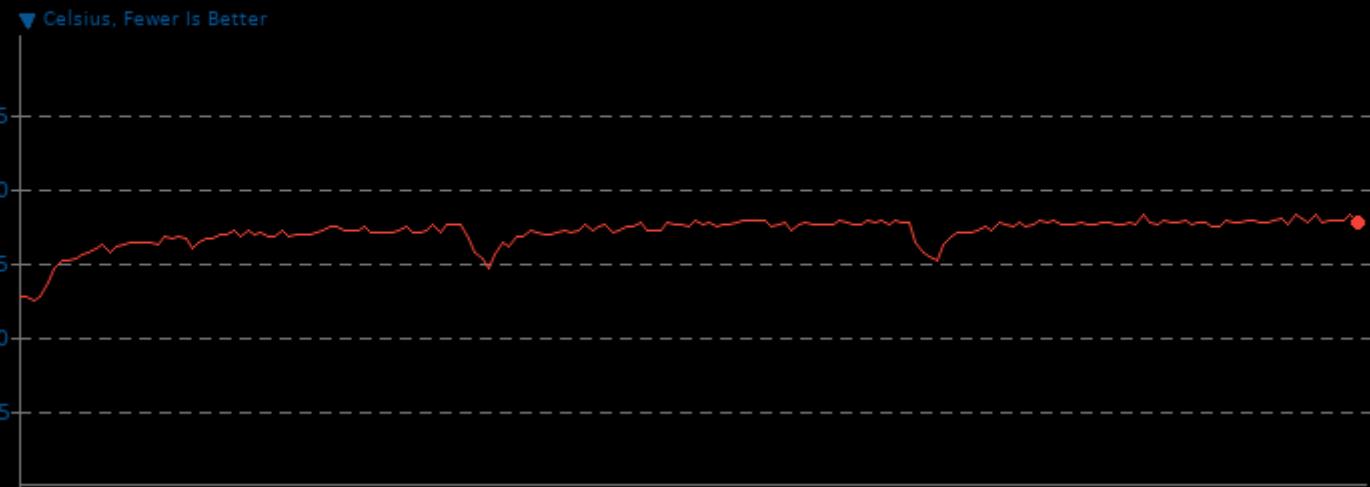
	Min	Avg	Max
█ Raspberry Pi 400	38.5	41.5	45.3



GraphicsMagick 1.3.33

System Temperature Monitor

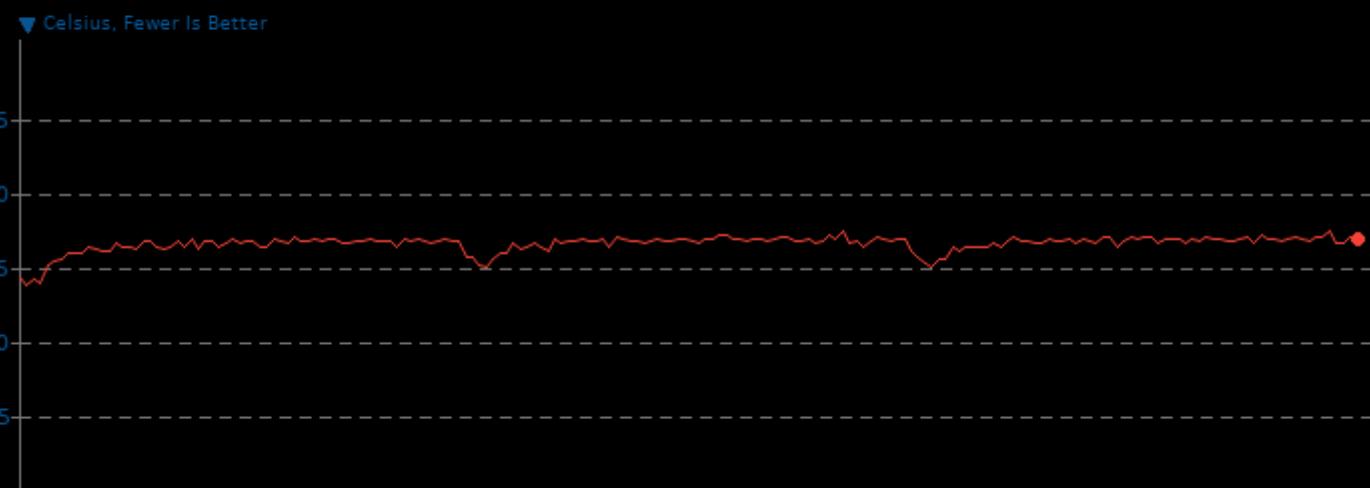
Raspberry Pi 400	Min	37.5
Raspberry Pi 400	Avg	51.2
Raspberry Pi 400	Max	54.5



GraphicsMagick 1.3.33

System Temperature Monitor

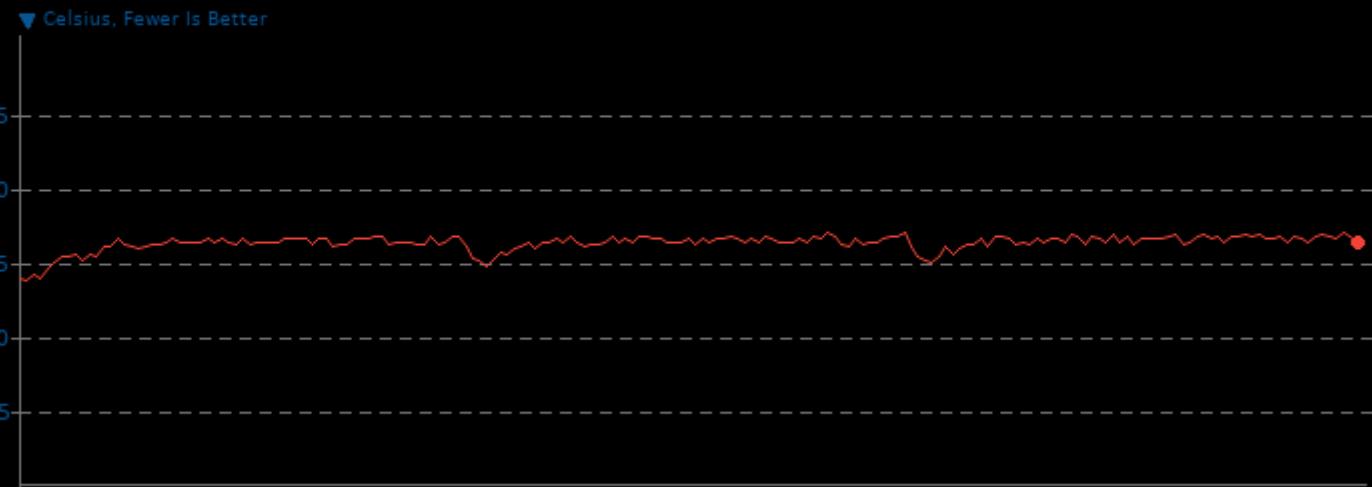
Raspberry Pi 400	Min	41.4
Raspberry Pi 400	Avg	49.6
Raspberry Pi 400	Max	52.1



GraphicsMagick 1.3.33

System Temperature Monitor

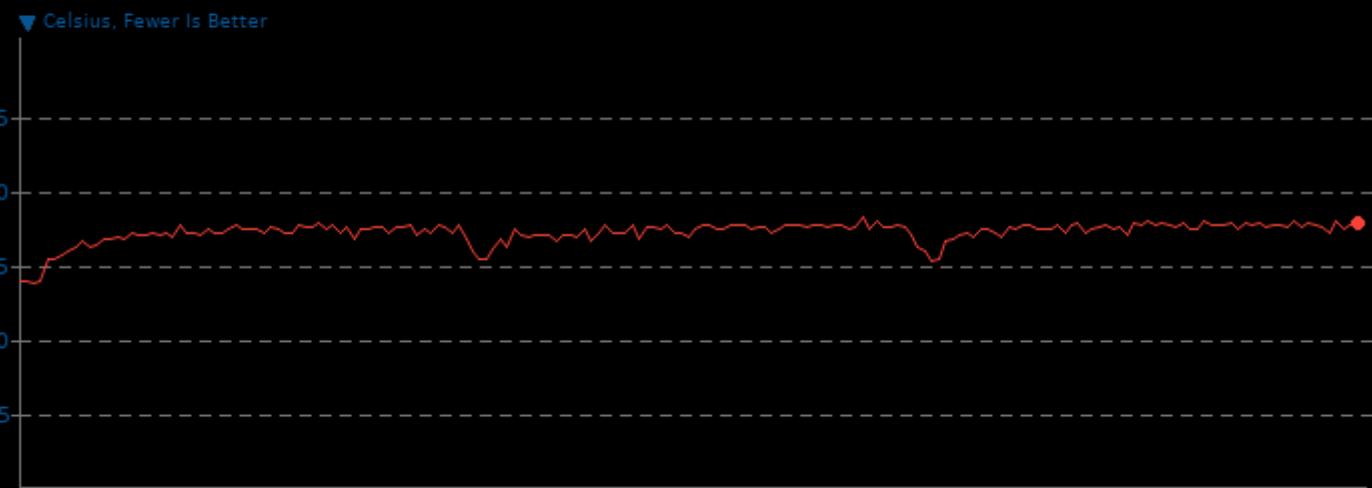
Raspberry Pi 400	Min	Avg	Max
	41.4	48.9	51.1



GraphicsMagick 1.3.33

System Temperature Monitor

Raspberry Pi 400	Min	Avg	Max
	41.4	51.6	54.5



GraphicsMagick 1.3.33

System Temperature Monitor

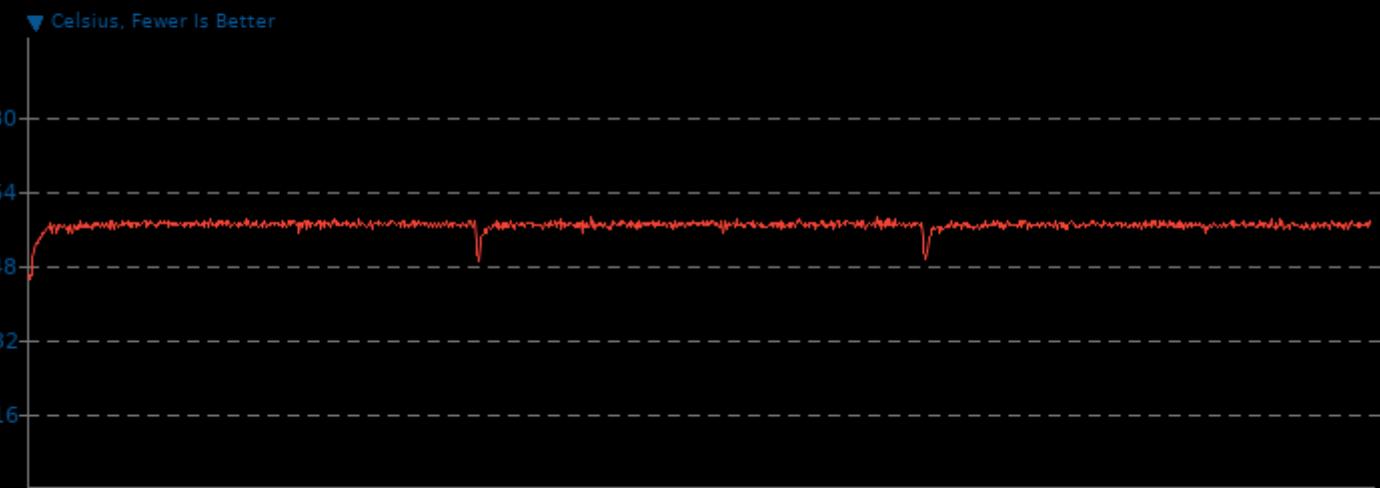
Raspberry Pi 400	Min	Avg	Max
	42.4	49.8	52.1



Kvazaar 2.0

System Temperature Monitor

Raspberry Pi 400	Min	Avg	Max
	44.8	56.5	58.4

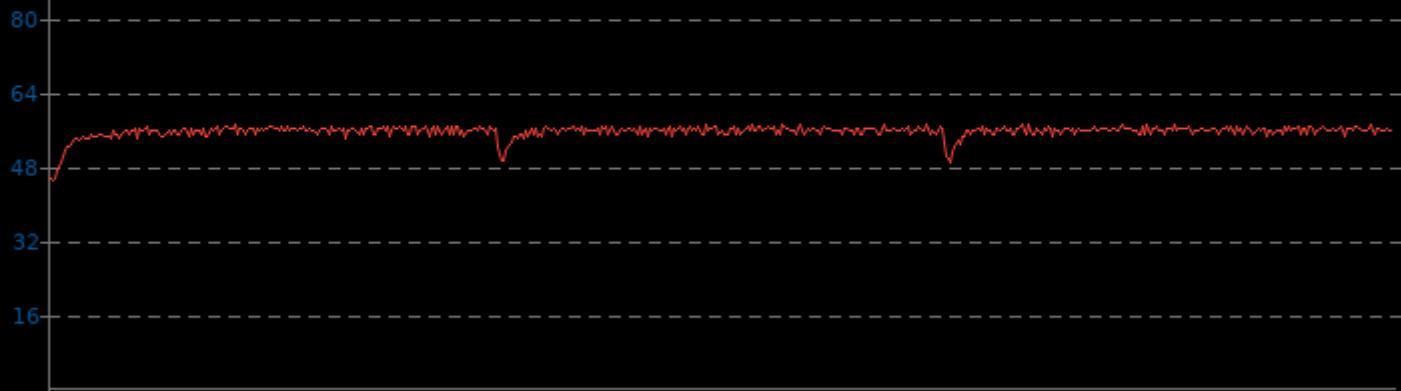


Kvazaar 2.0

System Temperature Monitor

Raspberry Pi 400 Min: 44.8 Avg: 55.4 Max: 57.0

▼ Celsius, Fewer Is Better

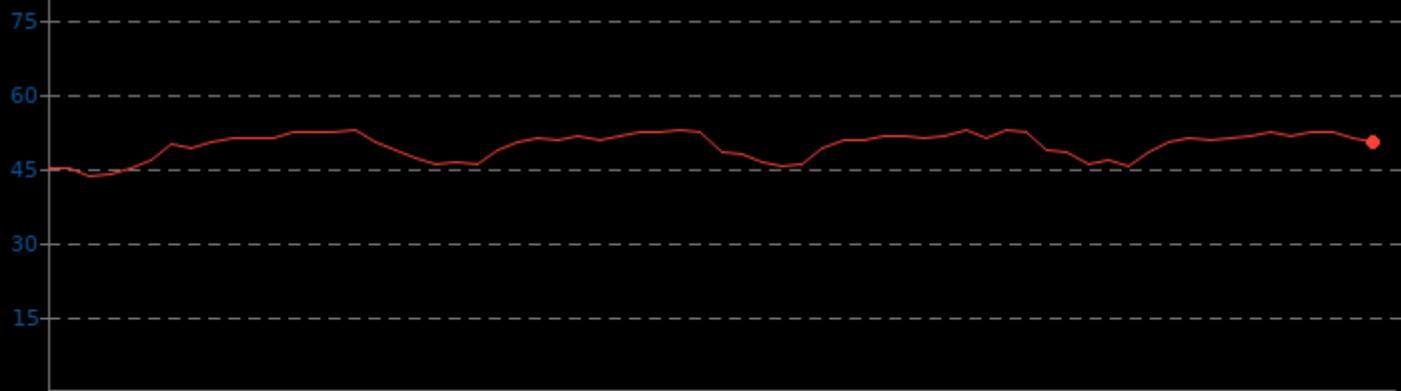


Coremark 1.0

System Temperature Monitor

Raspberry Pi 400 Min: 43.3 Avg: 49.6 Max: 52.6

▼ Celsius, Fewer Is Better

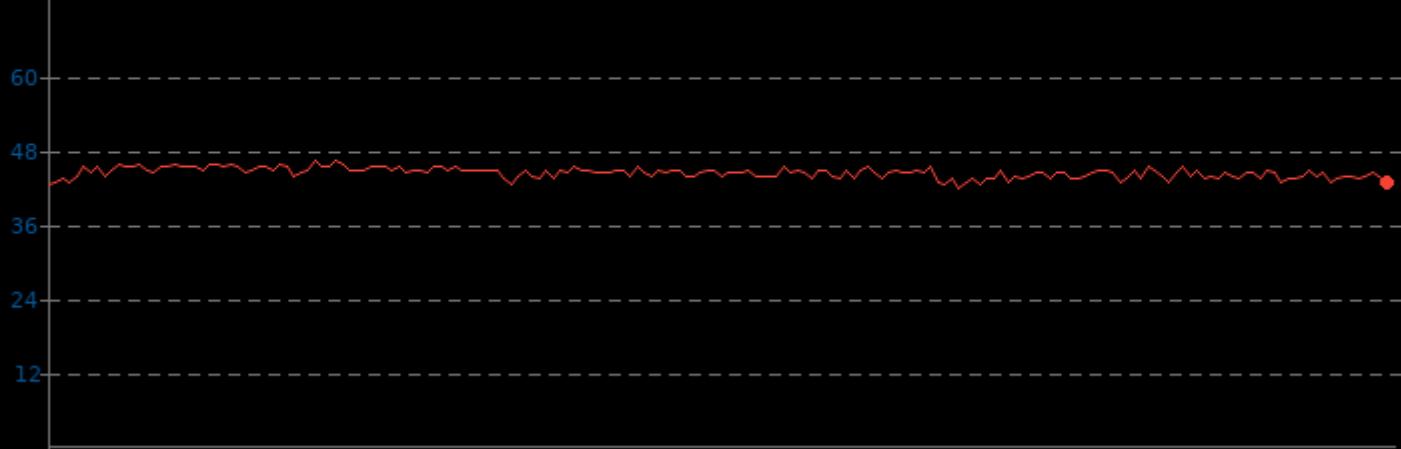


Himeno Benchmark 3.0

System Temperature Monitor

Raspberry Pi 400	Min	41.9	Avg	44.3	Max	46.3
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▼ Celsius, Fewer Is Better



asmFish 2018-07-23

System Temperature Monitor

Raspberry Pi 400
Min: 39.4 / Avg: 52.09 / Max: 54

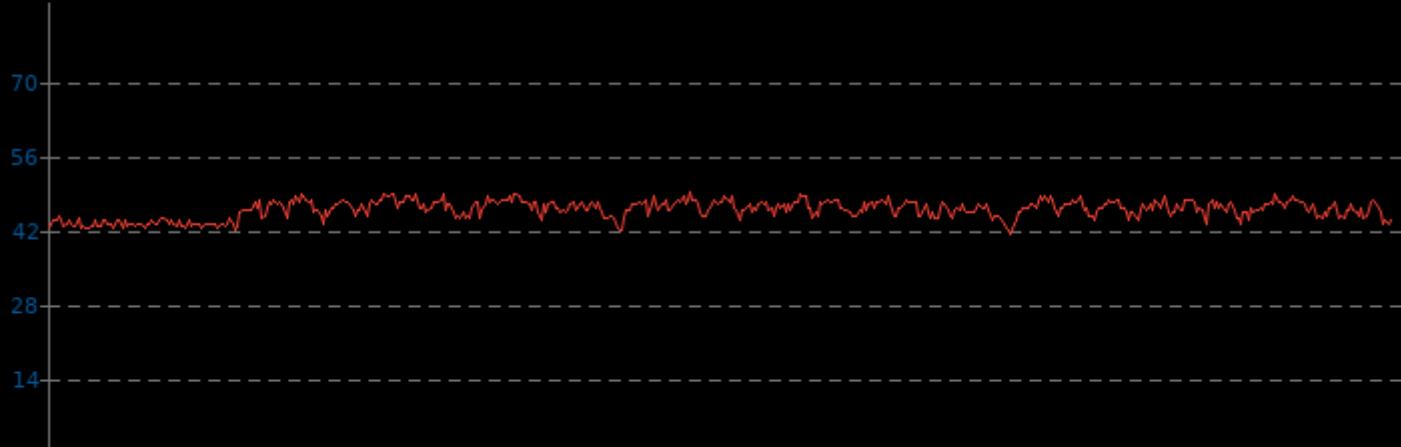
◀ Celsius, Fewer Is Better

Timed Apache Compilation 2.4.41

System Temperature Monitor

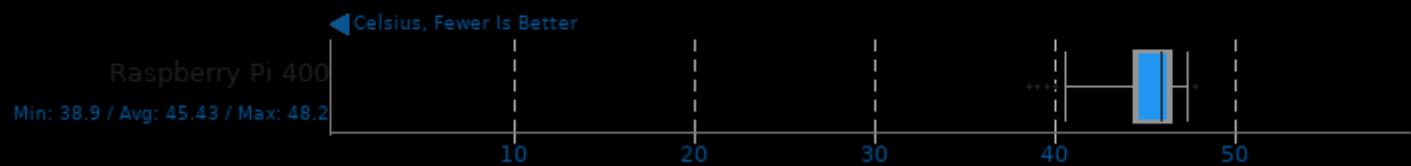
Raspberry Pi 400	Min	41.4	Avg	45.8	Max	49.2
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▼ Celsius, Fewer Is Better



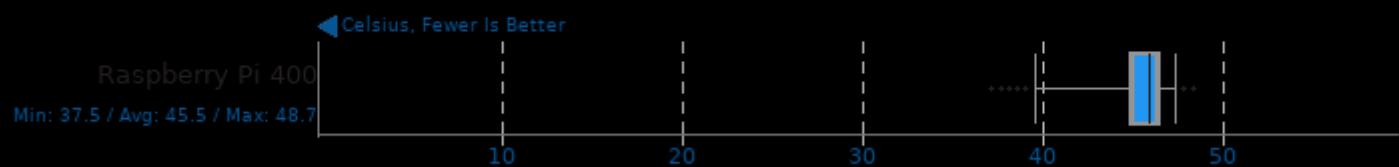
Timed GDB GNU Debugger Compilation 9.1

System Temperature Monitor



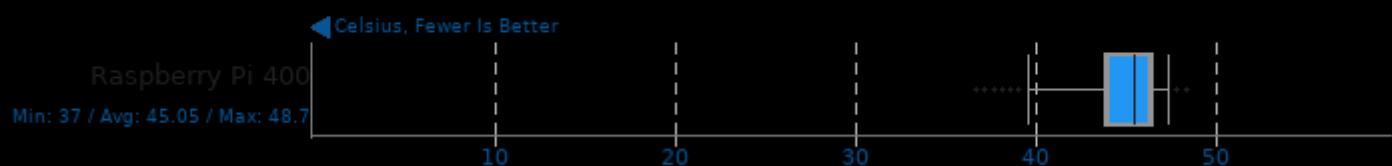
Timed ImageMagick Compilation 6.9.0

System Temperature Monitor



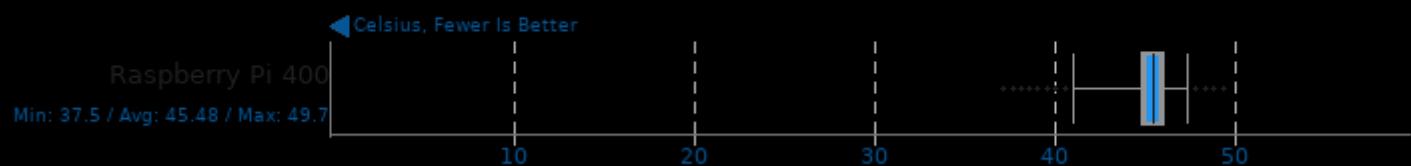
Timed PHP Compilation 7.4.2

System Temperature Monitor



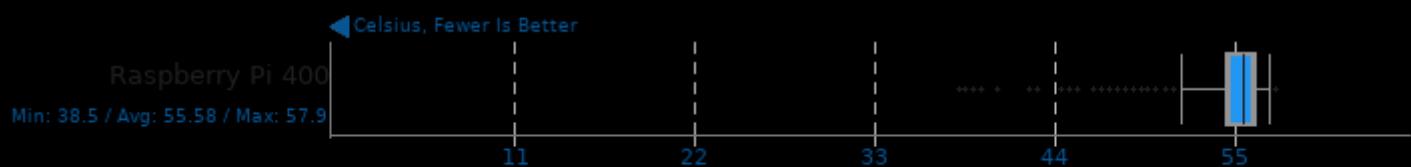
Build2 0.12

System Temperature Monitor



C-Ray 1.1

System Temperature Monitor



Smallpt 1.0

System Temperature Monitor

Raspberry Pi 400 Min: 43.8 Avg: 52.3 Max: 54.0

▼ Celsius, Fewer Is Better



Numpy Benchmark

System Temperature Monitor

Raspberry Pi 400
Min: 37 / Avg: 39.74 / Max: 45.8

◀ Celsius, Fewer Is Better

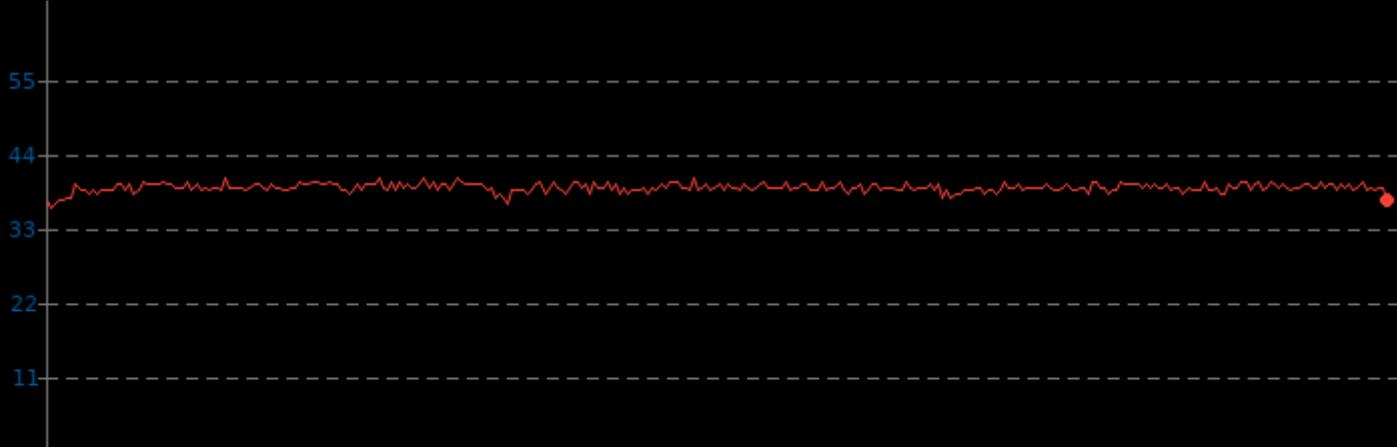
9 18 27 36 45

AOBench

System Temperature Monitor

Raspberry Pi 400 Min: 36.0 Avg: 38.9 Max: 40.4

▼ Celsius, Fewer Is Better



FLAC Audio Encoding 1.3.2

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	36.0	39.0	41.4

▼ Celsius, Fewer Is Better

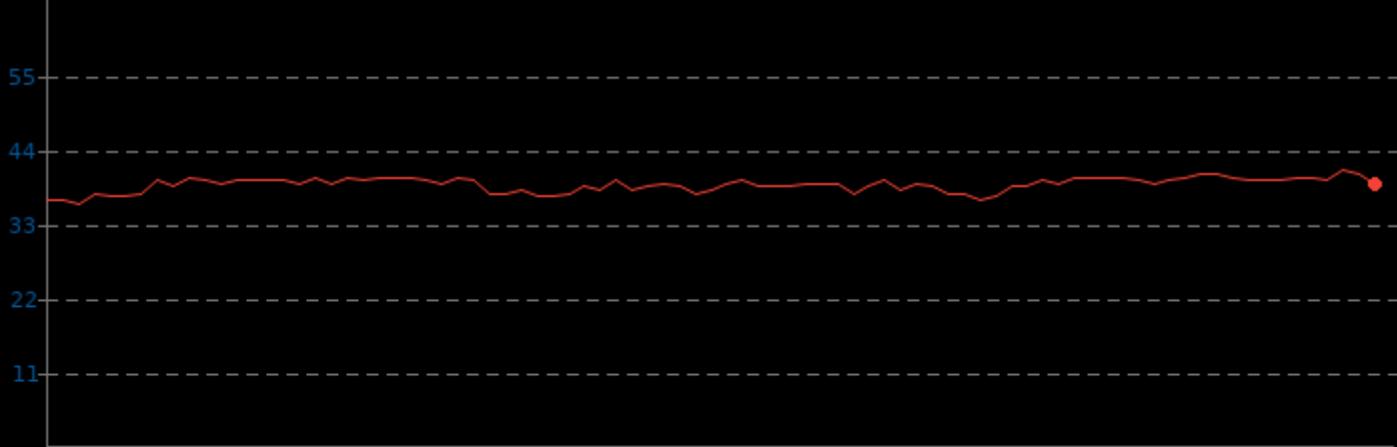


LAME MP3 Encoding 3.100

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	36.0	38.8	40.9

▼ Celsius, Fewer Is Better



eSpeak-NG Speech Engine 20200907

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	35.5	38.0	40.4

▼ Celsius, Fewer Is Better

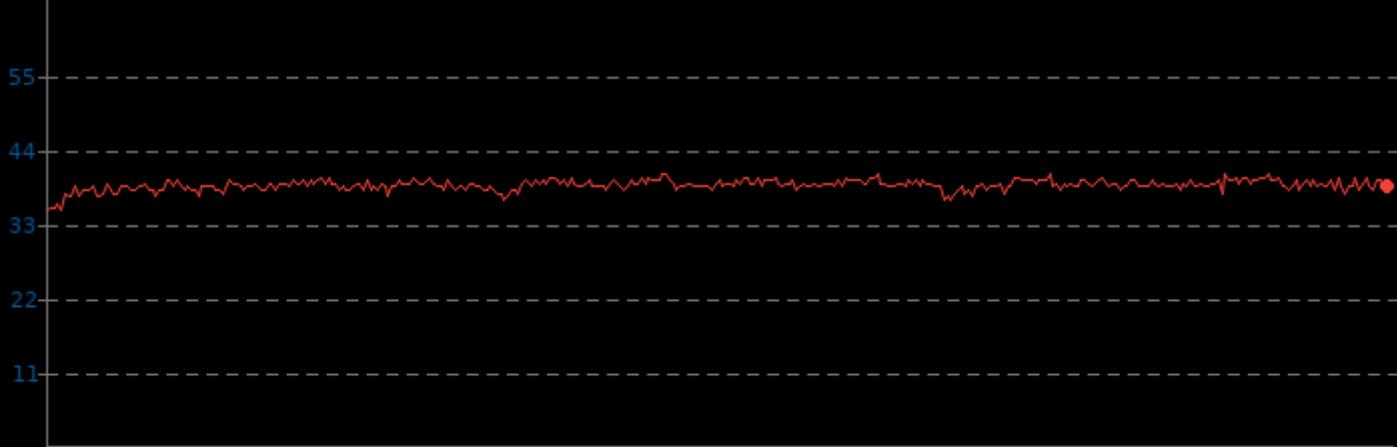


Perl Benchmarks

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	35.1	38.7	40.4

▼ Celsius, Fewer Is Better

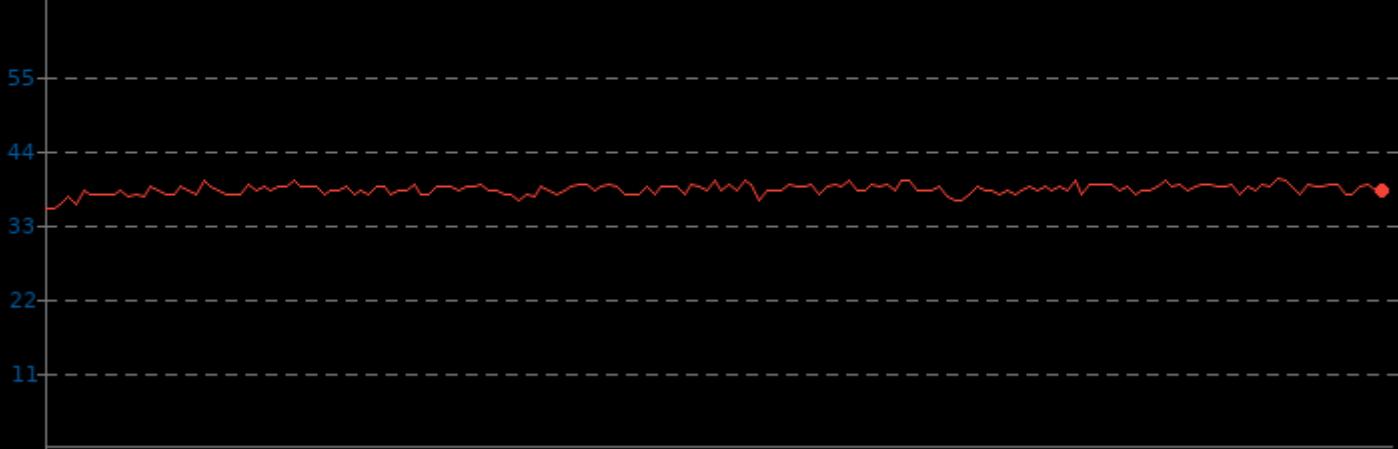


Perl Benchmarks

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	35.5	38.1	39.9

▼ Celsius, Fewer Is Better

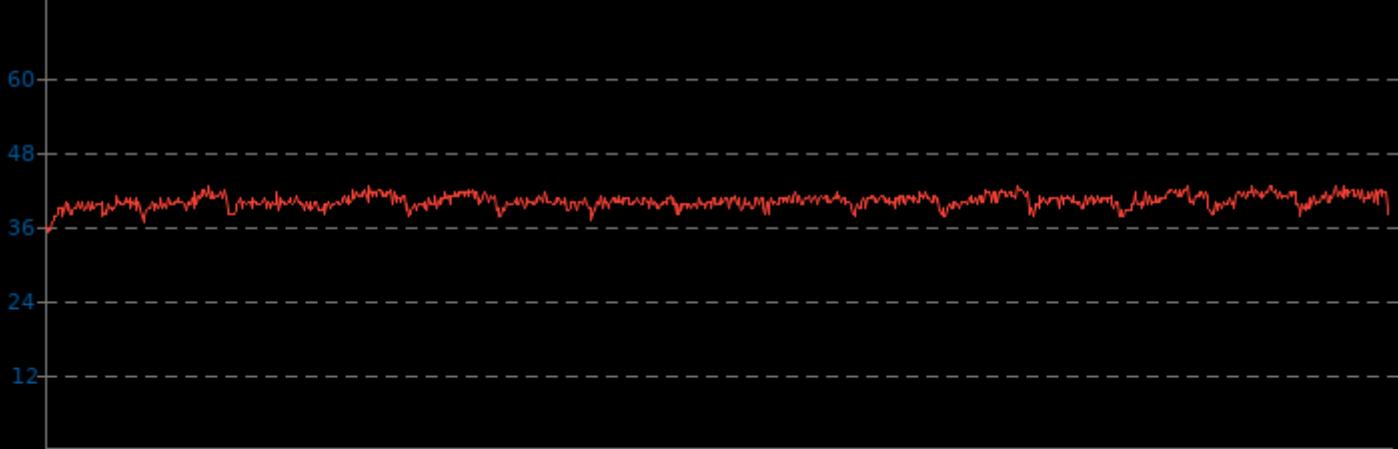


RNNoise 2020-06-28

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	35.1	40.0	42.4

▼ Celsius, Fewer Is Better

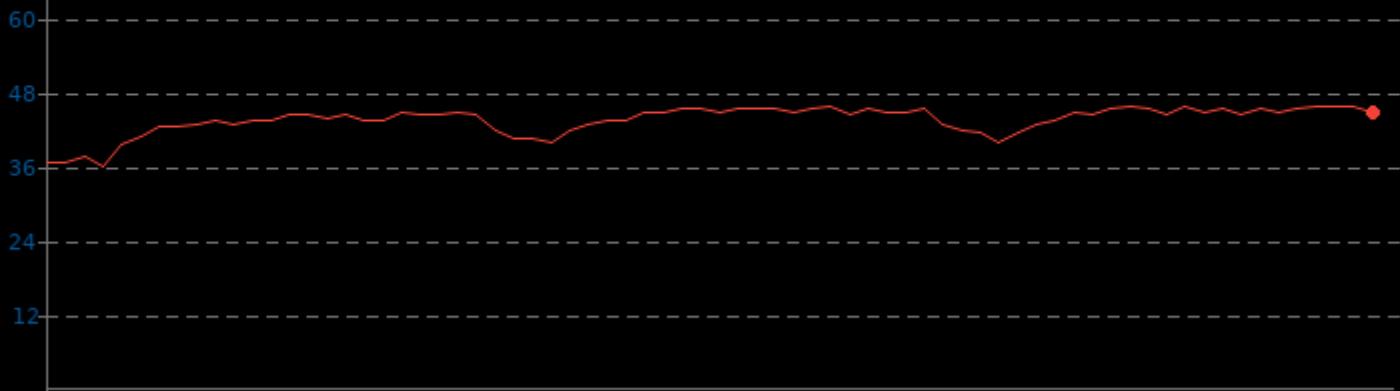


OpenSSL 1.1.1

System Temperature Monitor

Raspberry Pi 400 Min: 36.0 Avg: 43.5 Max: 45.8

▼ Celsius, Fewer Is Better

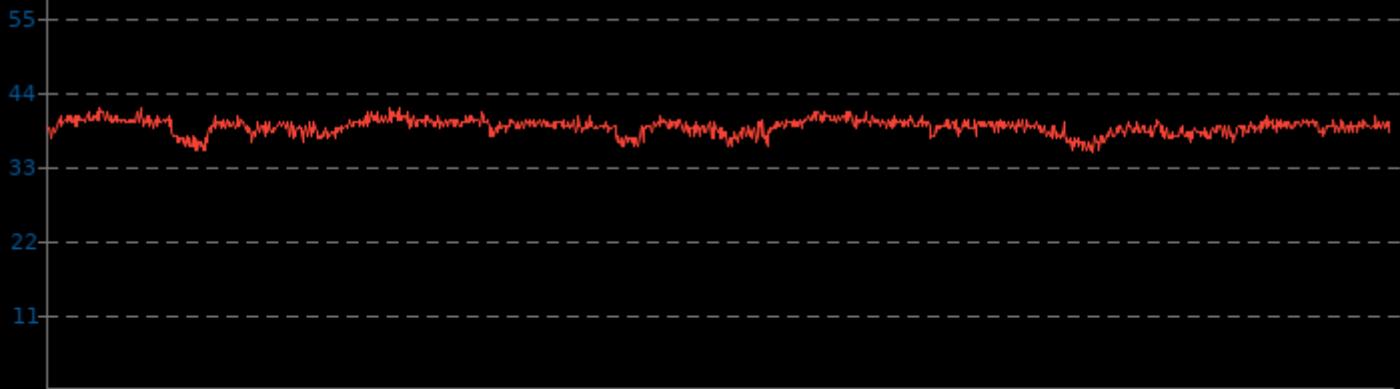


SQLite Speedtest 3.30

System Temperature Monitor

Raspberry Pi 400 Min: 35.1 Avg: 38.8 Max: 41.4

▼ Celsius, Fewer Is Better

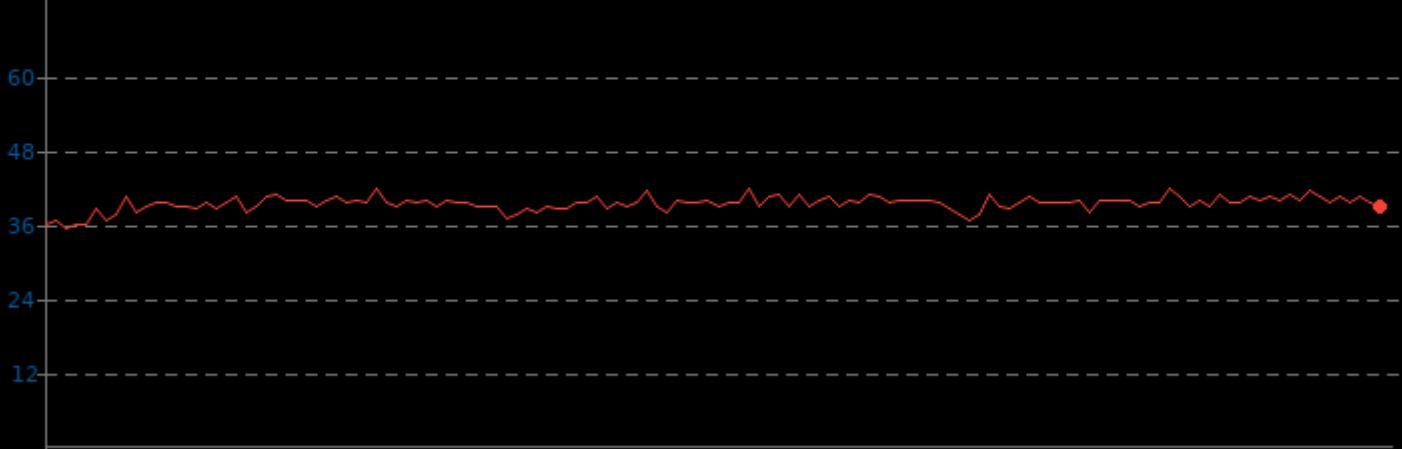


GEGL

System Temperature Monitor

Raspberry Pi 400	Min	Avg	Max
	35.5	39.3	41.9

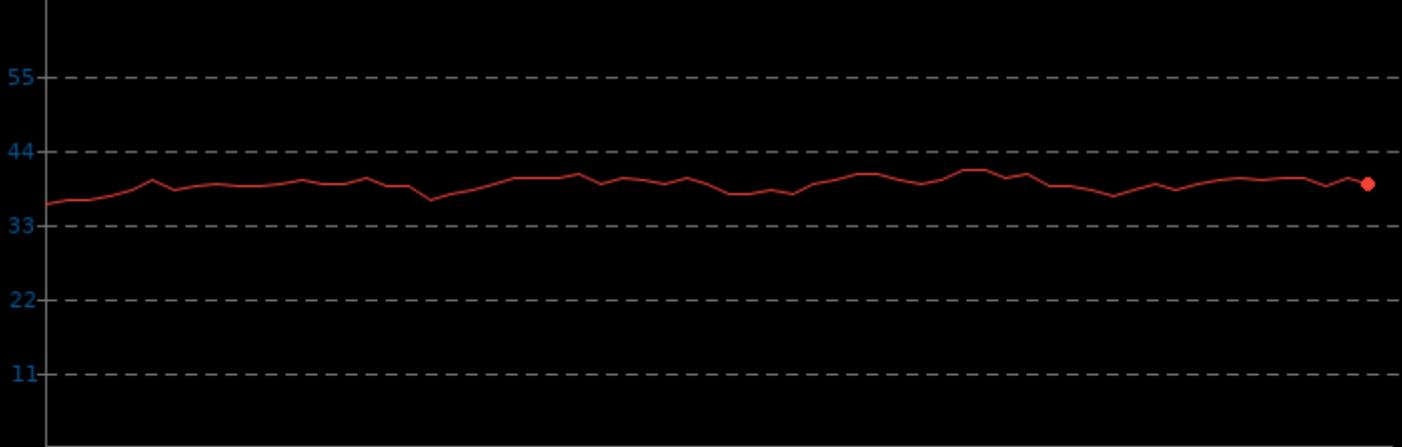
▼ Celsius, Fewer Is Better

**GEGL**

System Temperature Monitor

Raspberry Pi 400	Min	Avg	Max
	36.0	38.8	40.9

▼ Celsius, Fewer Is Better

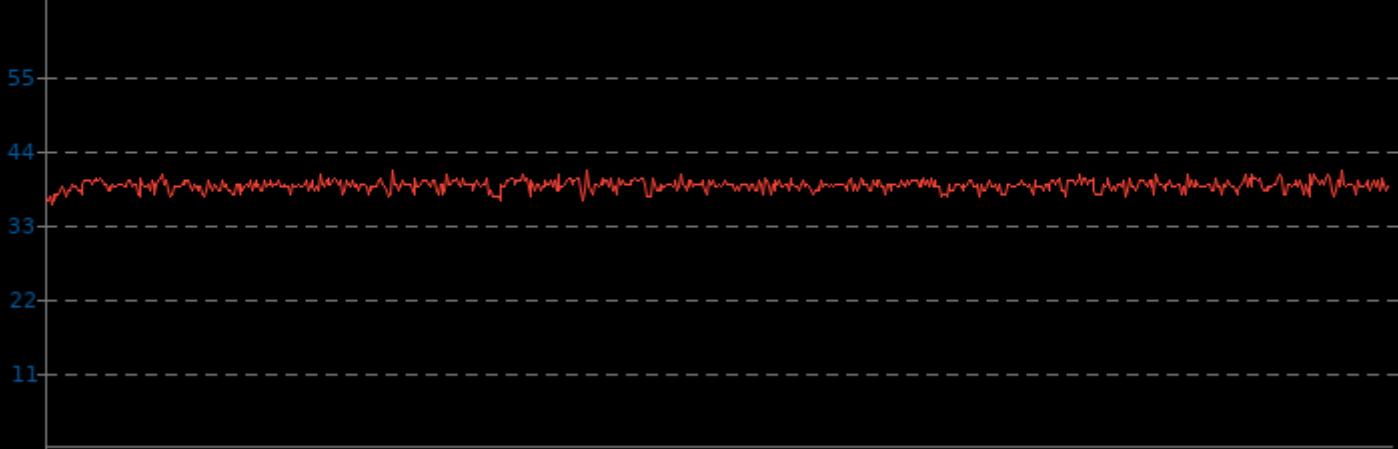


GEGL

System Temperature Monitor

	Min	Avg	Max
■ Raspberry Pi 400	36.0	38.7	40.9

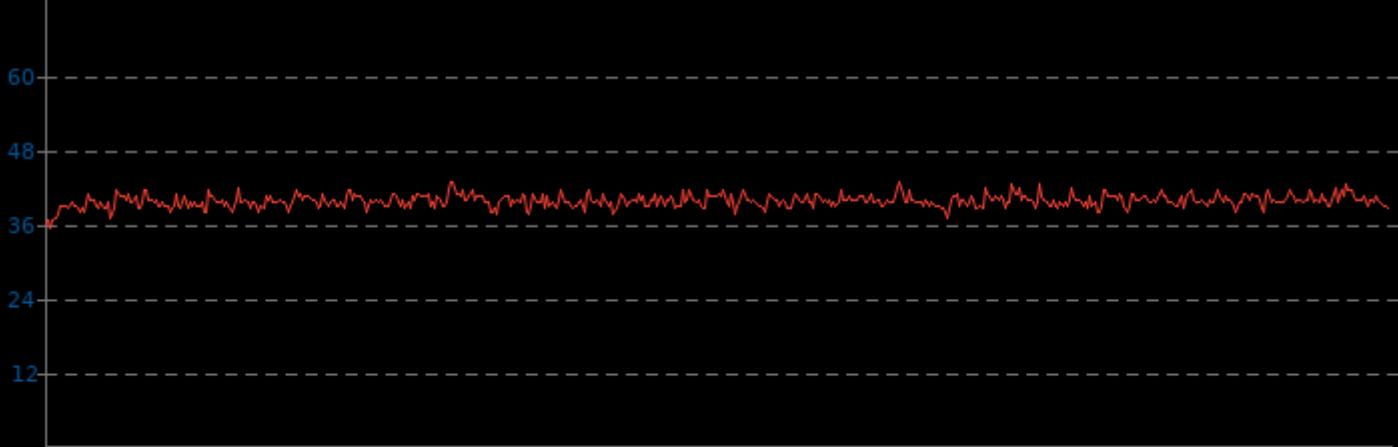
▼ Celsius, Fewer Is Better

**GEGL**

System Temperature Monitor

	Min	Avg	Max
■ Raspberry Pi 400	35.5	39.7	42.8

▼ Celsius, Fewer Is Better

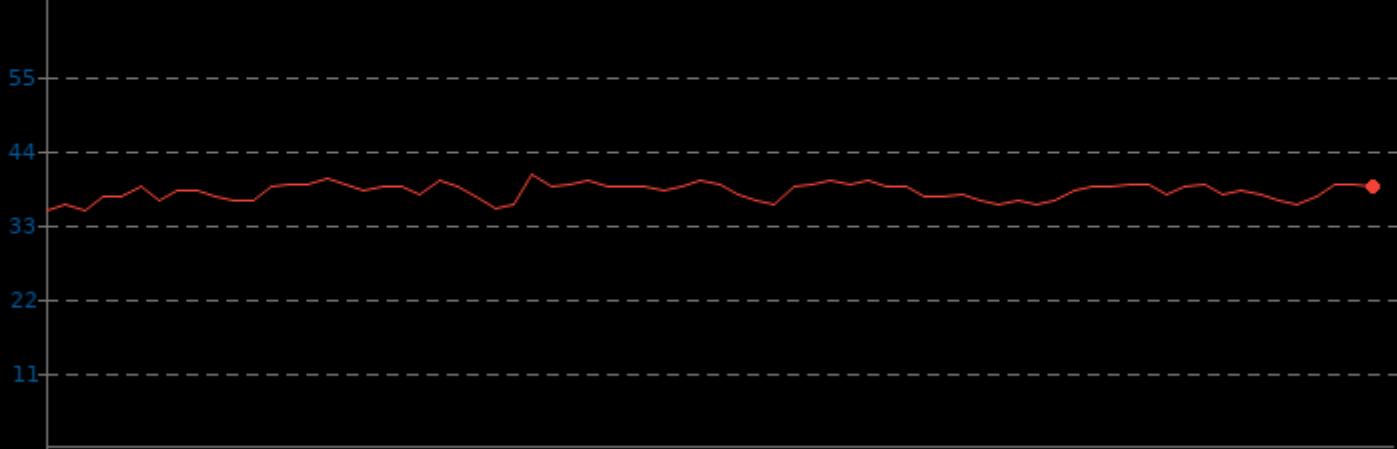


GIMP 2.10.8

System Temperature Monitor

Raspberry Pi 400 Min: 35.1 Avg: 37.8 Max: 40.4

▼ Celsius, Fewer Is Better

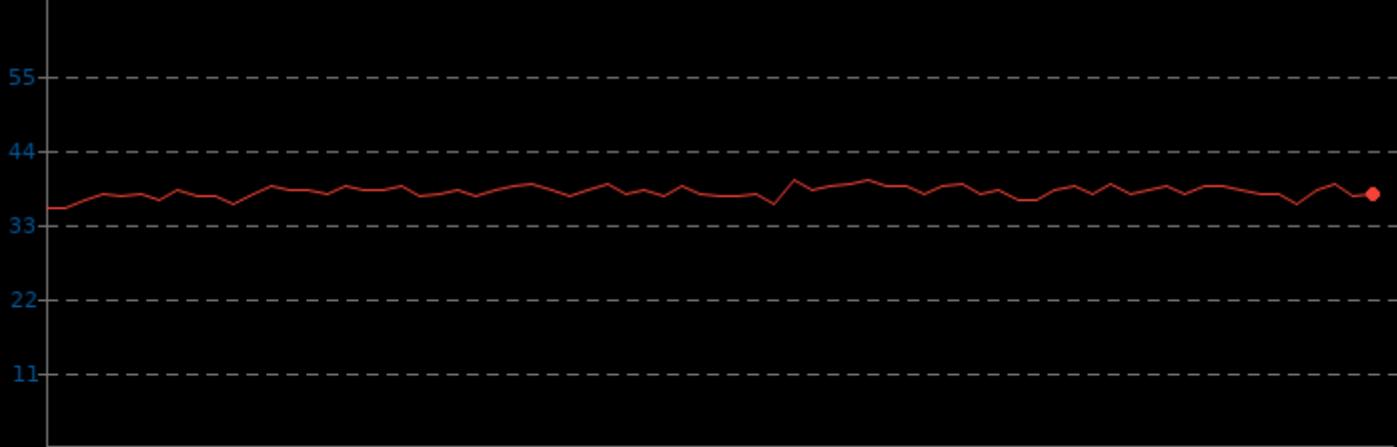


GIMP 2.10.8

System Temperature Monitor

Raspberry Pi 400 Min: 35.5 Avg: 37.7 Max: 39.4

▼ Celsius, Fewer Is Better

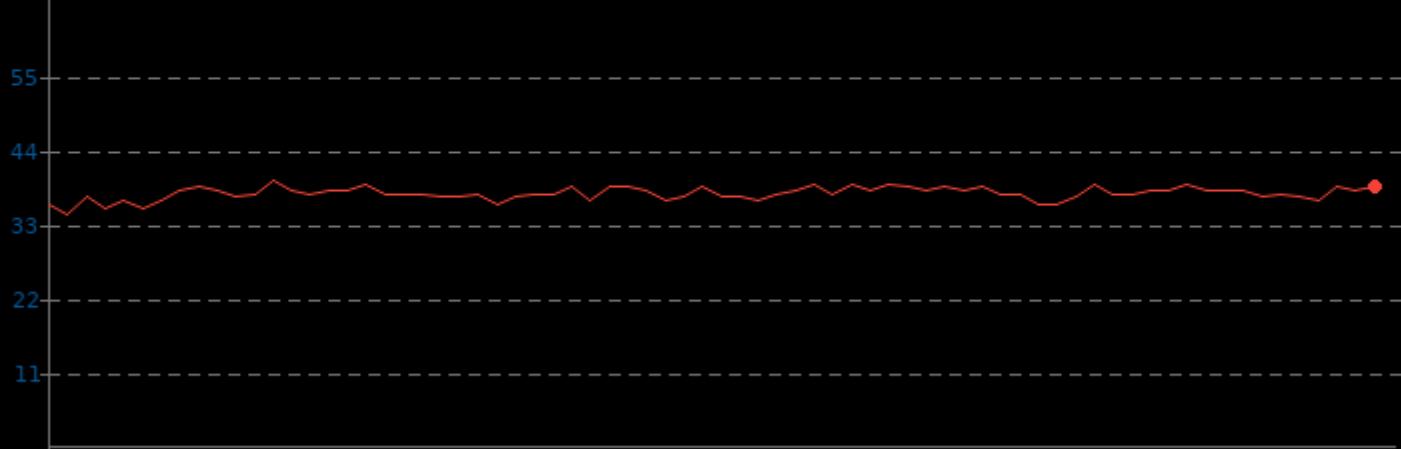


GIMP 2.10.8

System Temperature Monitor

Raspberry Pi 400 Min: 34.6 Avg: 37.6 Max: 39.4

▼ Celsius, Fewer Is Better

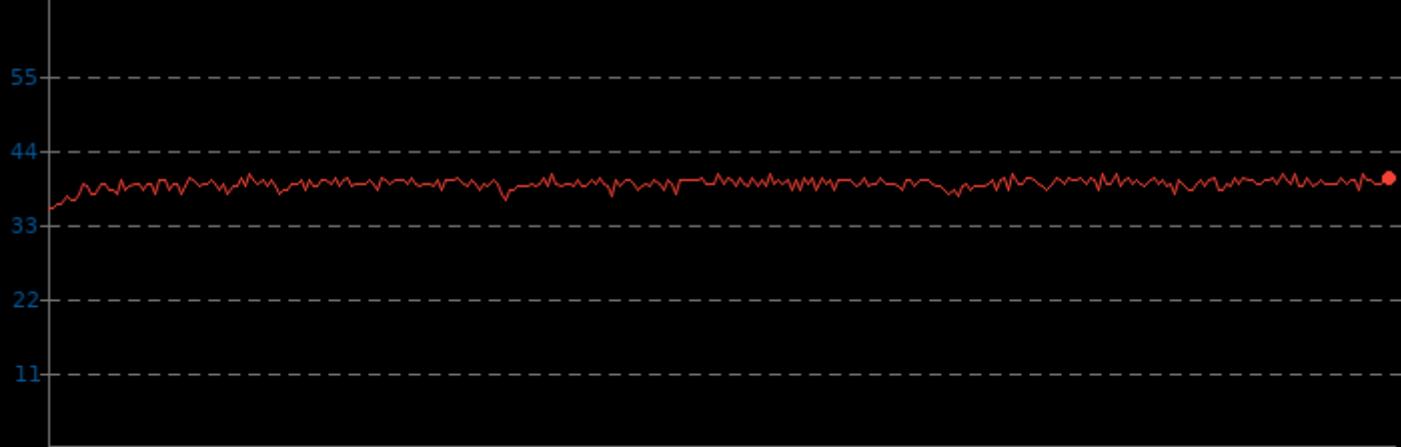


Inkscape

System Temperature Monitor

Raspberry Pi 400 Min: 35.5 Avg: 38.9 Max: 40.4

▼ Celsius, Fewer Is Better



OCRMypdf 8.0.1+dfsg

System Temperature Monitor

Raspberry Pi 400
Min: 35.5 / Avg: 51.62 / Max: 59.4

◀ Celsius, Fewer Is Better

12 24

36

48

60

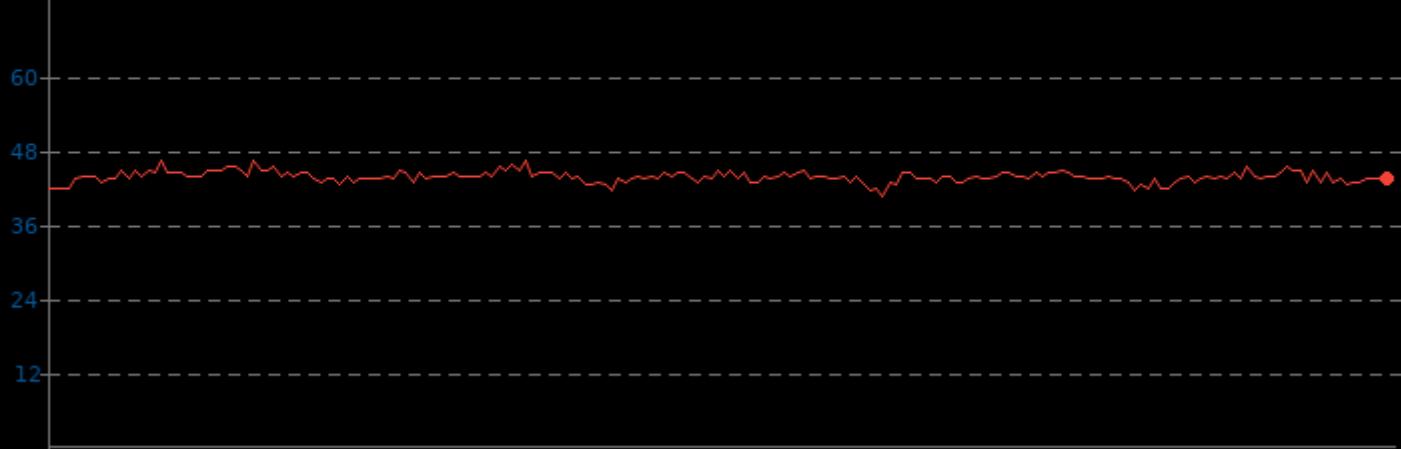


GNU Octave Benchmark 4.4.1

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	40.4	43.6	46.3

▼ Celsius, Fewer Is Better

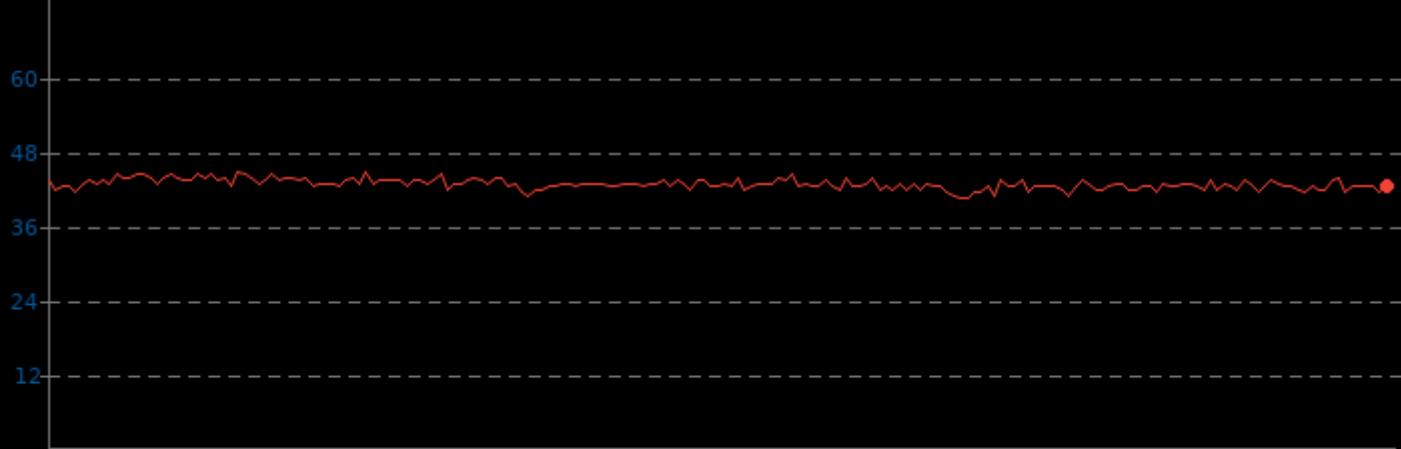


librsvg

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	40.4	42.7	44.8

▼ Celsius, Fewer Is Better



Mobile Neural Network 2020-09-17

System Temperature Monitor

Raspberry Pi 400
Min: 38.5 / Avg: 50.9 / Max: 53.1

◀ Celsius, Fewer Is Better

11

22

33

44

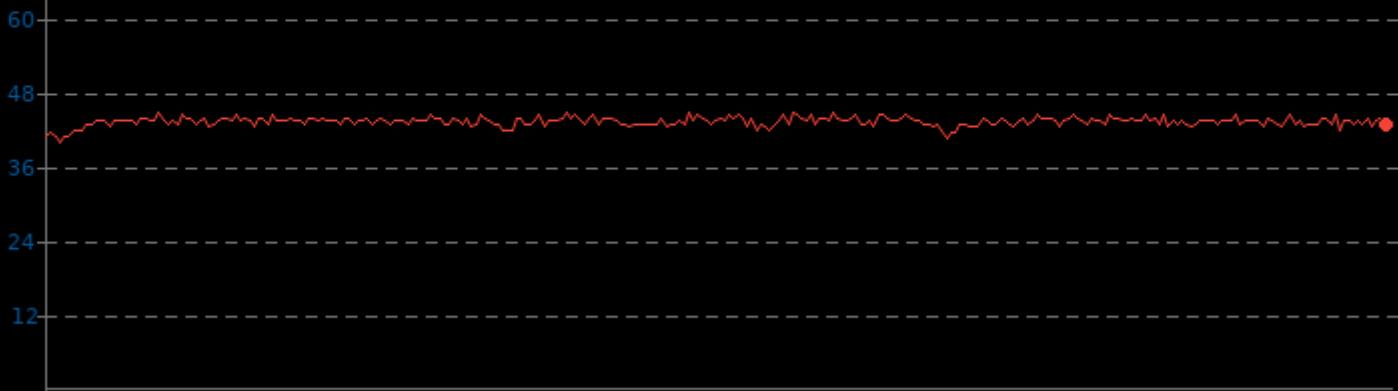
55

TNN 0.2.3

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	39.9	43.2	44.8

▼ Celsius, Fewer Is Better

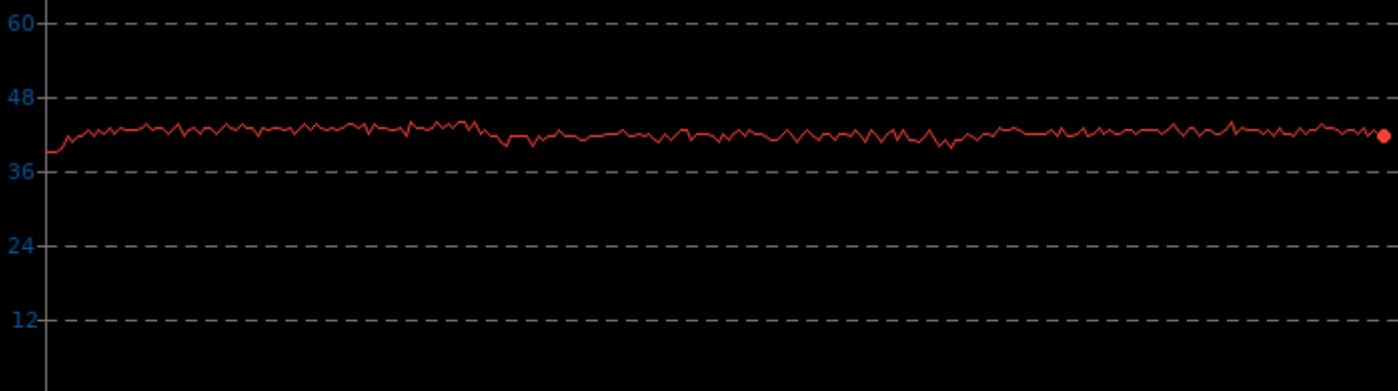


TNN 0.2.3

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	38.9	42.0	43.8

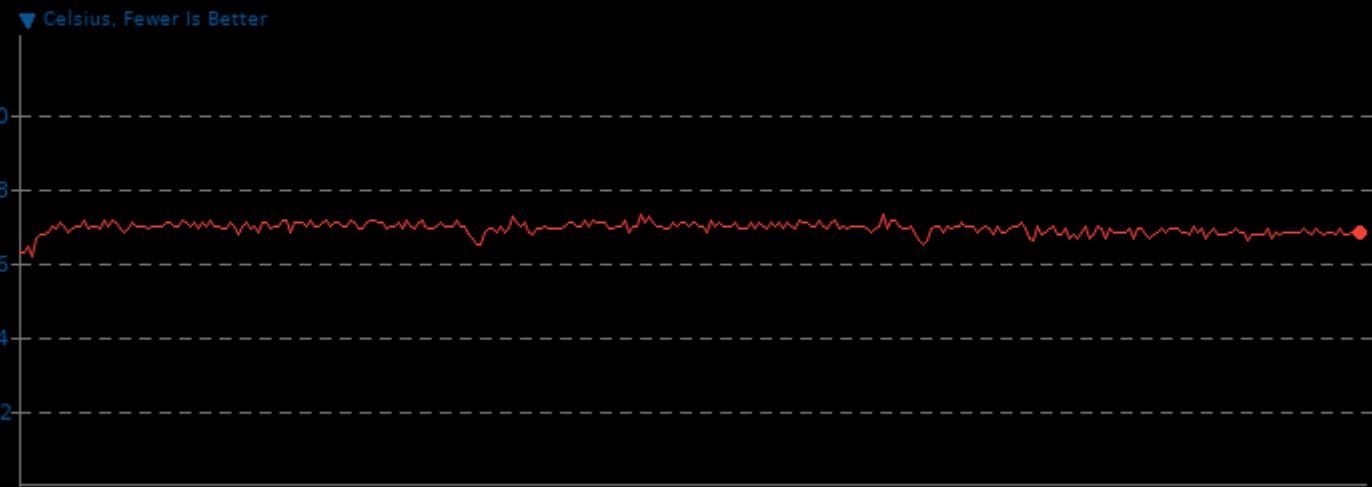
▼ Celsius, Fewer Is Better



PyBench 2018-02-16

System Temperature Monitor

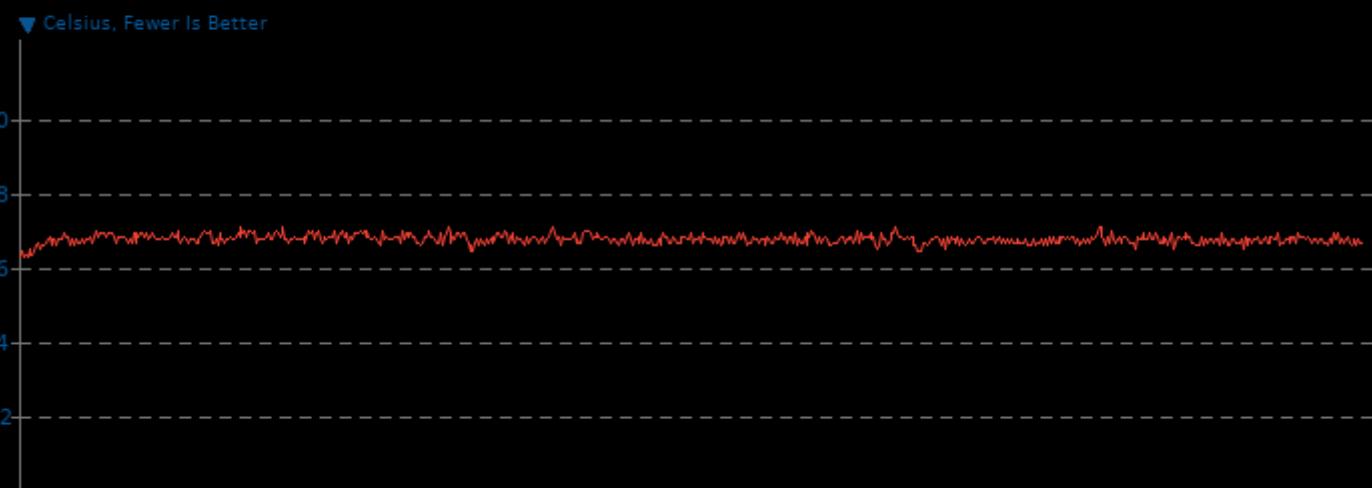
	Min	Avg	Max
Raspberry Pi 400	37.0	41.5	43.8



PyPerformance 1.0.0

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	37.5	40.5	42.4

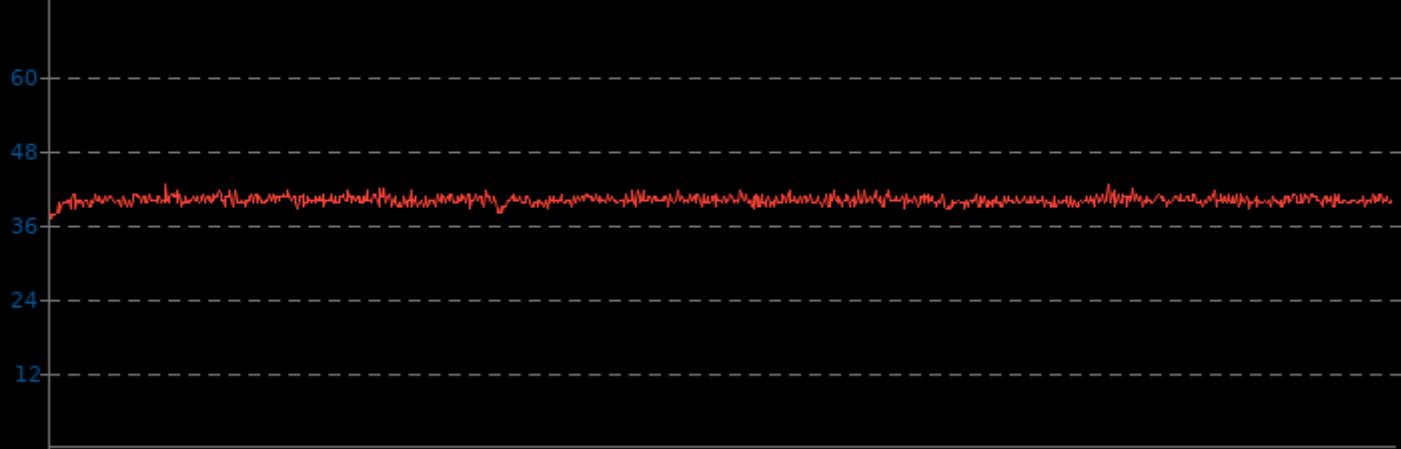


PyPerformance 1.0.0

System Temperature Monitor

Raspberry Pi 400 Min: 37.0 Avg: 39.9 Max: 42.4

▼ Celsius, Fewer Is Better

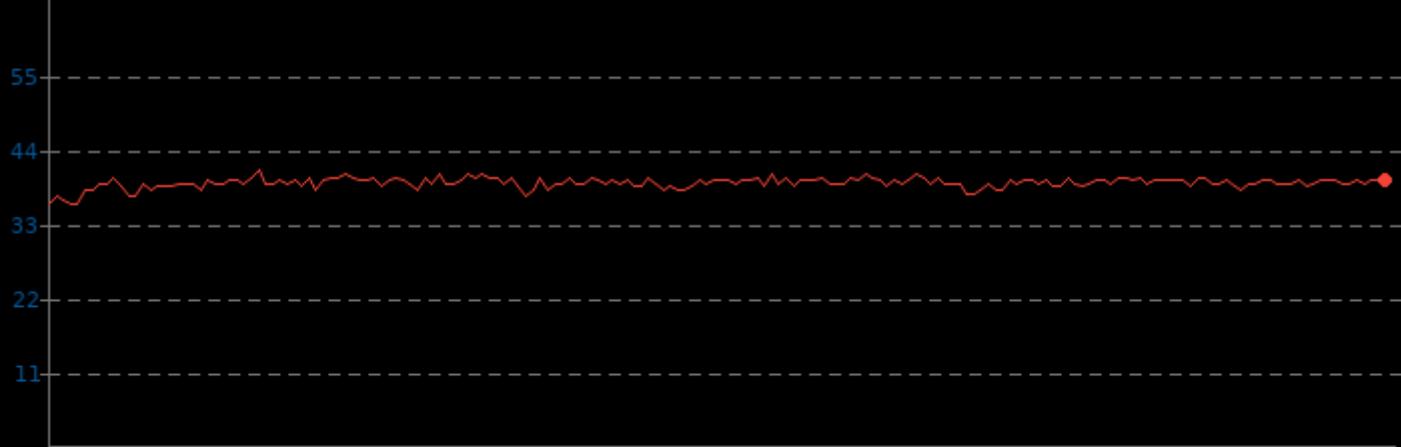


PyPerformance 1.0.0

System Temperature Monitor

Raspberry Pi 400 Min: 36.0 Avg: 39.0 Max: 40.9

▼ Celsius, Fewer Is Better



PyPerformance 1.0.0

System Temperature Monitor

Raspberry Pi 400
Min: 35.5 / Avg: 40.26 / Max: 42.4

◀ Celsius, Fewer Is Better

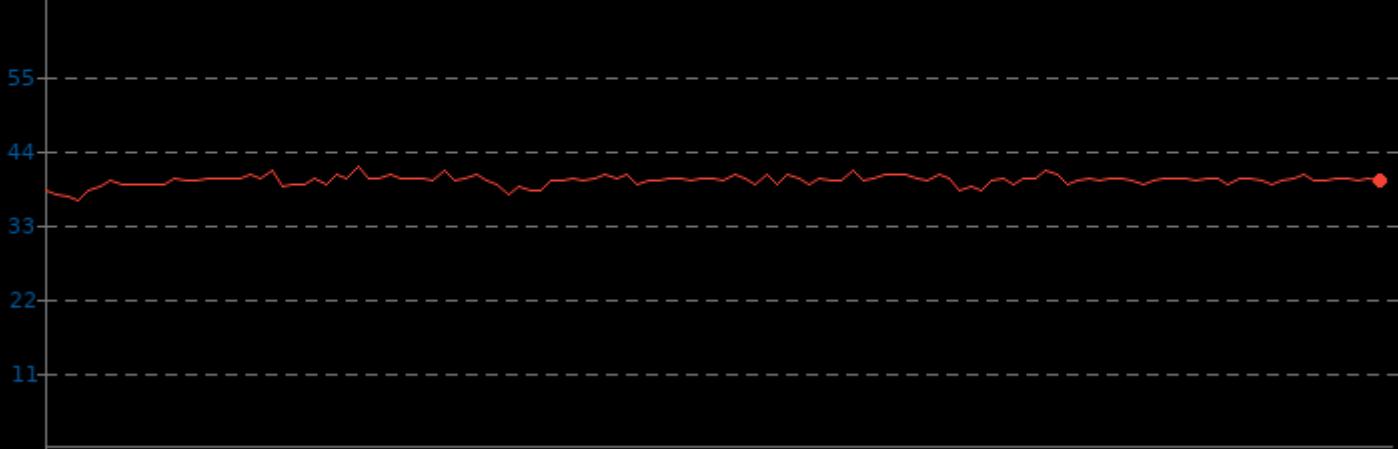
9 18 27 36 45

PyPerformance 1.0.0

System Temperature Monitor

Min 36.5 Avg 39.5 Max 41.4

▼ Celsius, Fewer Is Better

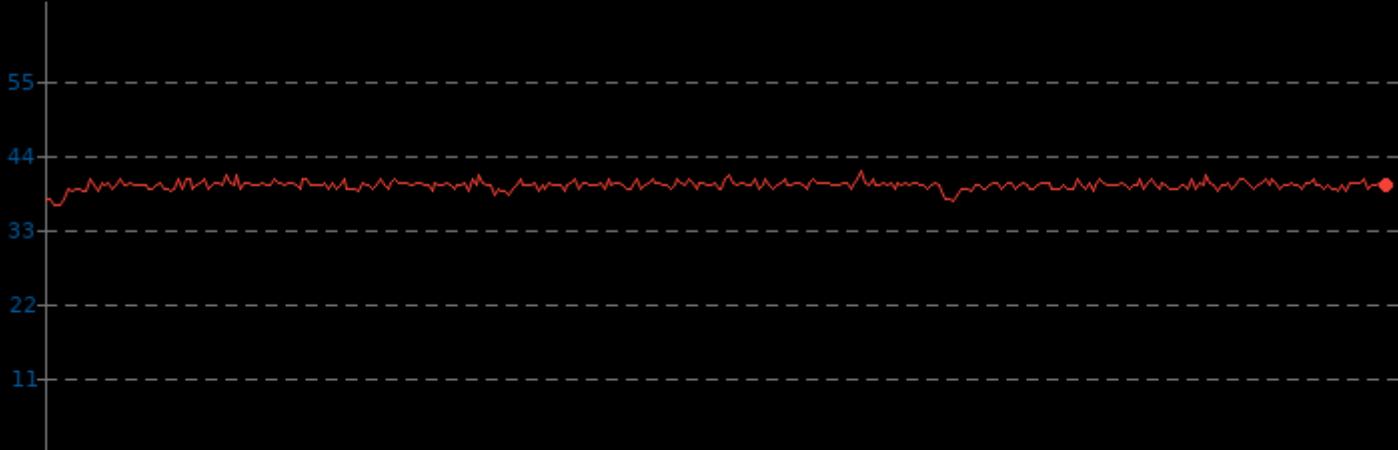


PyPerformance 1.0.0

System Temperature Monitor

Min 36.5 Avg 39.4 Max 41.4

▼ Celsius, Fewer Is Better



PyPerformance 1.0.0

System Temperature Monitor

Raspberry Pi 400	Min	36.5
Raspberry Pi 400	Avg	39.7
Raspberry Pi 400	Max	41.9

▼ Celsius, Fewer Is Better

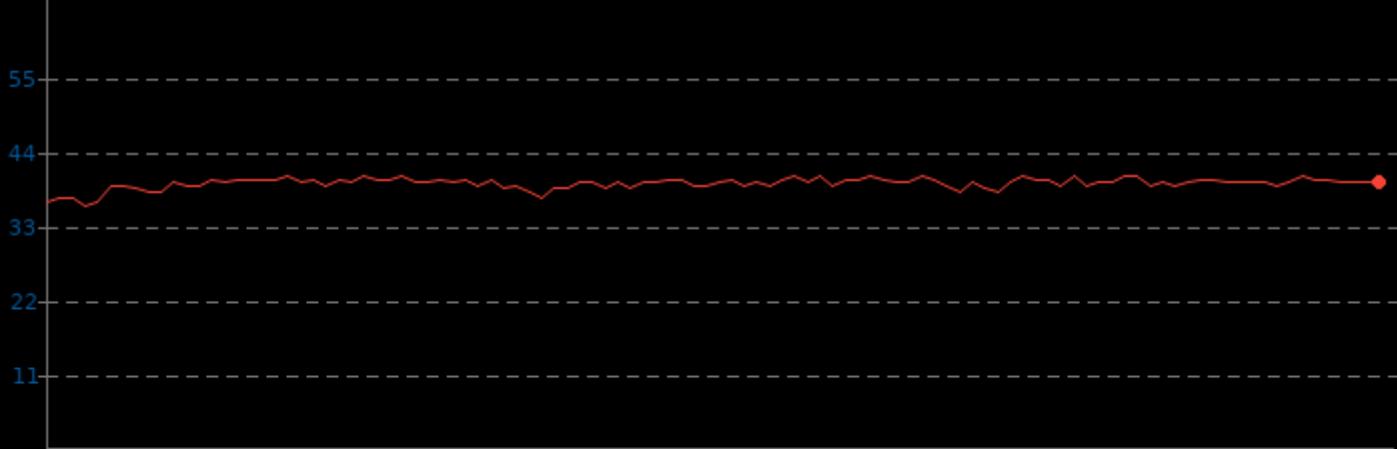


PyPerformance 1.0.0

System Temperature Monitor

Raspberry Pi 400	Min	36.0
Raspberry Pi 400	Avg	39.3
Raspberry Pi 400	Max	40.4

▼ Celsius, Fewer Is Better

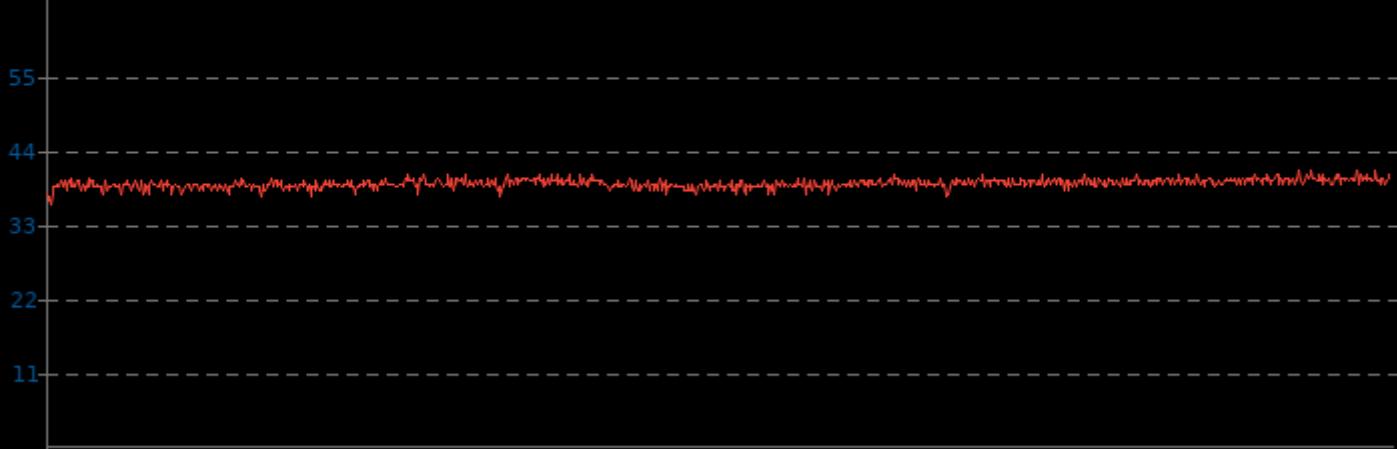


Hierarchical INTegration 1.0

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	36.0	39.0	40.9

▼ Celsius, Fewer Is Better

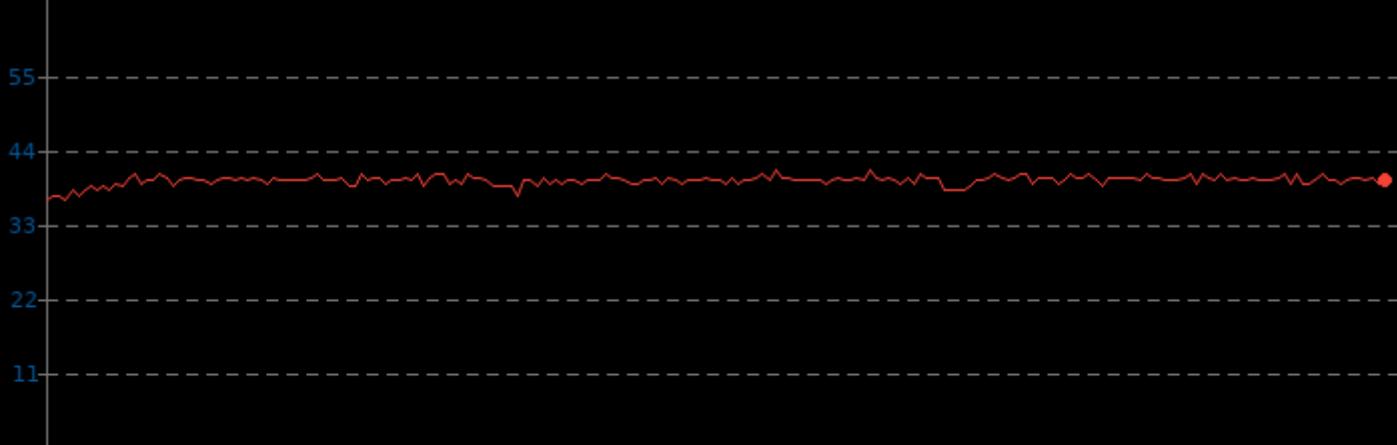


PHPBench 0.8.1

System Temperature Monitor

	Min	Avg	Max
Raspberry Pi 400	36.5	39.4	40.9

▼ Celsius, Fewer Is Better

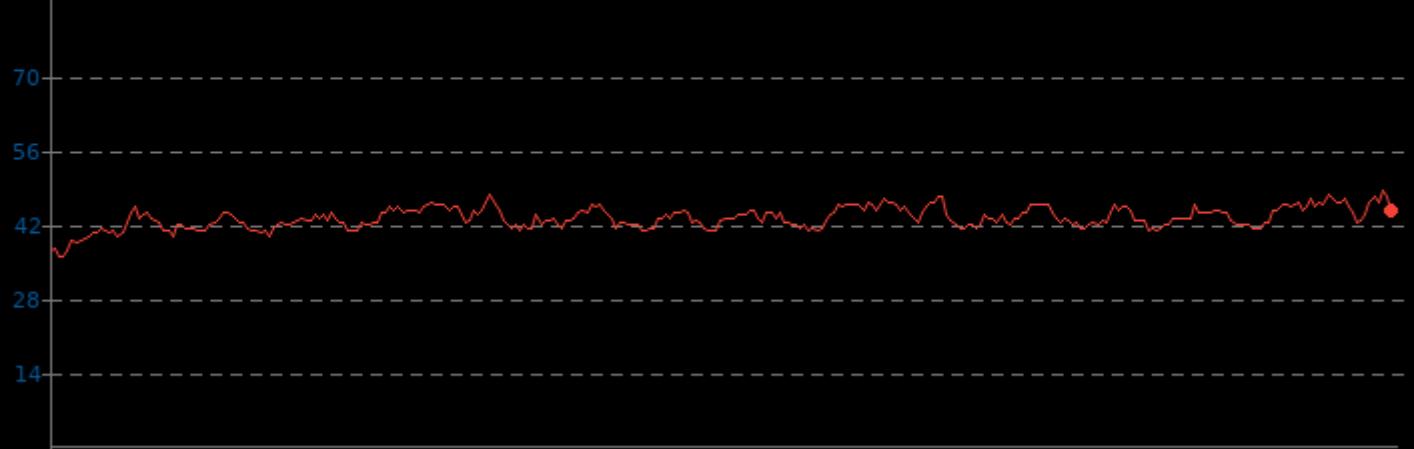


Tesseract OCR 4.0.0

System Temperature Monitor

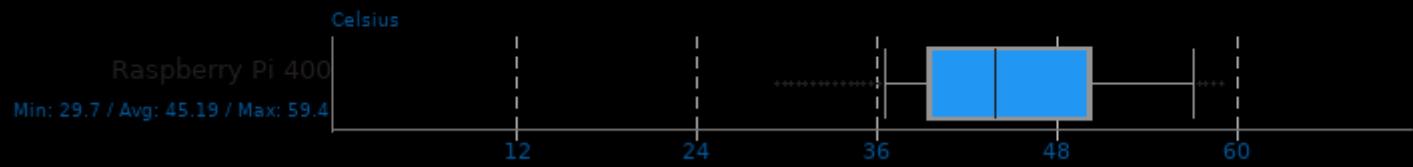
Raspberry Pi 400 Min: 36.0 Avg: 43.3 Max: 48.2

▼ Celsius, Fewer Is Better



System Temperature Monitor

Phoronix Test Suite System Monitoring



GIMP 2.10.30

Test: rotate



GIMP 2.10.30

Test: auto-levels



GIMP 2.10.30

Test: unsharp-mask



OCRMyPDF 13.4.0+dfsg

Processing 60 Page PDF Document



GNU Octave Benchmark 6.4.0

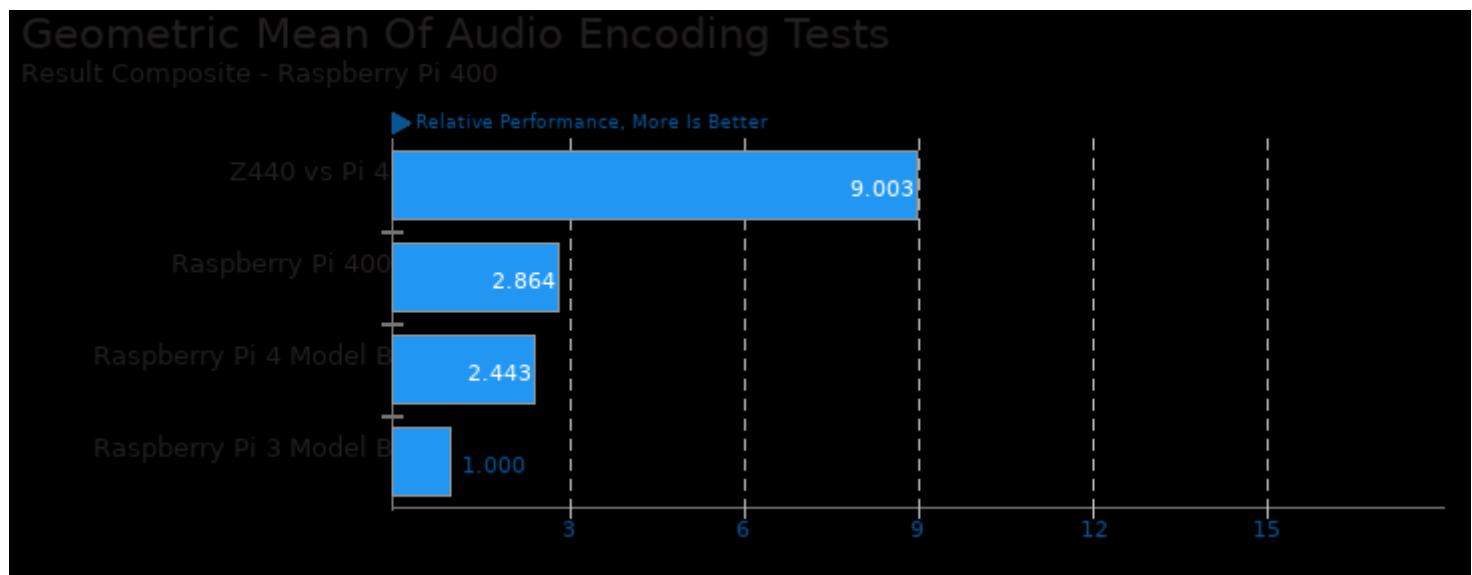


Tesseract OCR 4.1.1

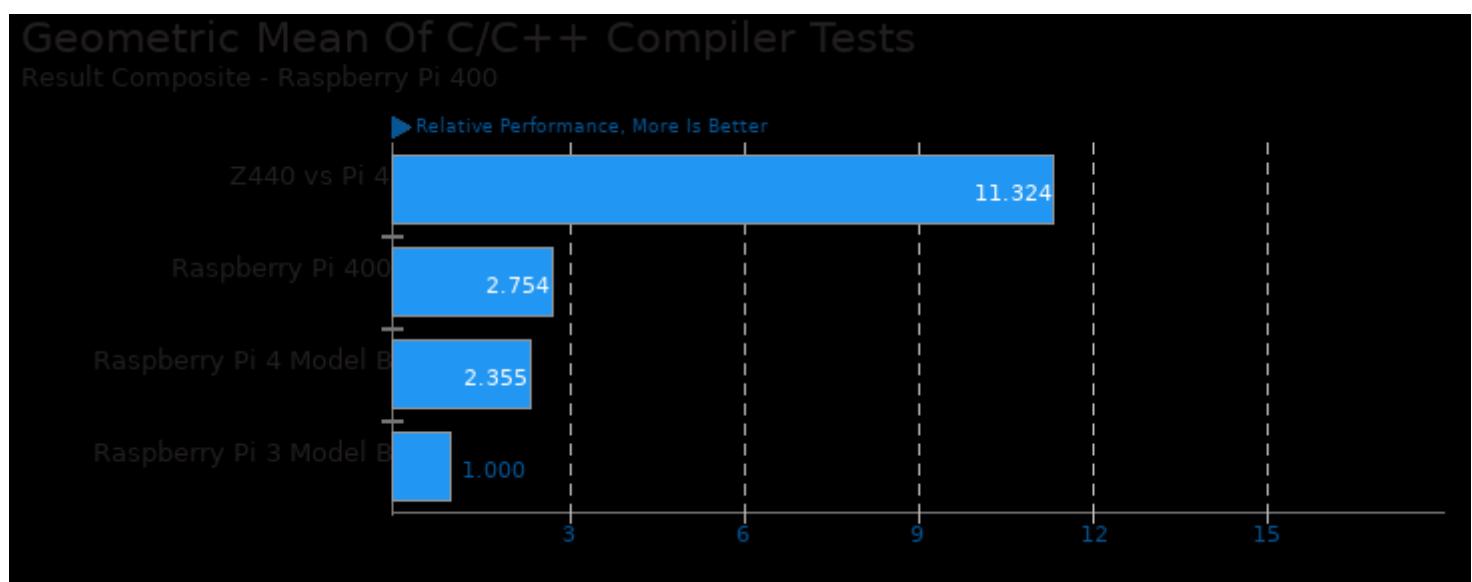
Time To OCR 7 Images



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



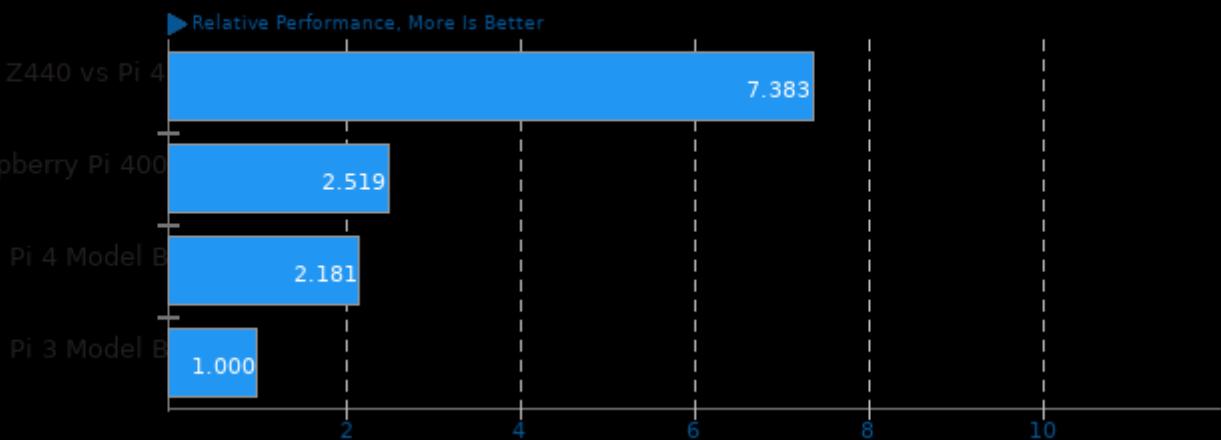
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



Geometric mean based upon tests: pts/aobench, pts/tscp, pts/graphics-magick, pts/himeno, pts/build-php, pts/build-imagemagick, pts/c-ray, pts/encode-mp3, pts/encode-flac, pts/sqlite-speedtest, pts/kvazaar, pts/compress-zstd, pts/openssl, pts/lammps, pts/build-gdb and pts/build-apache

Geometric Mean Of Creator Workloads Tests

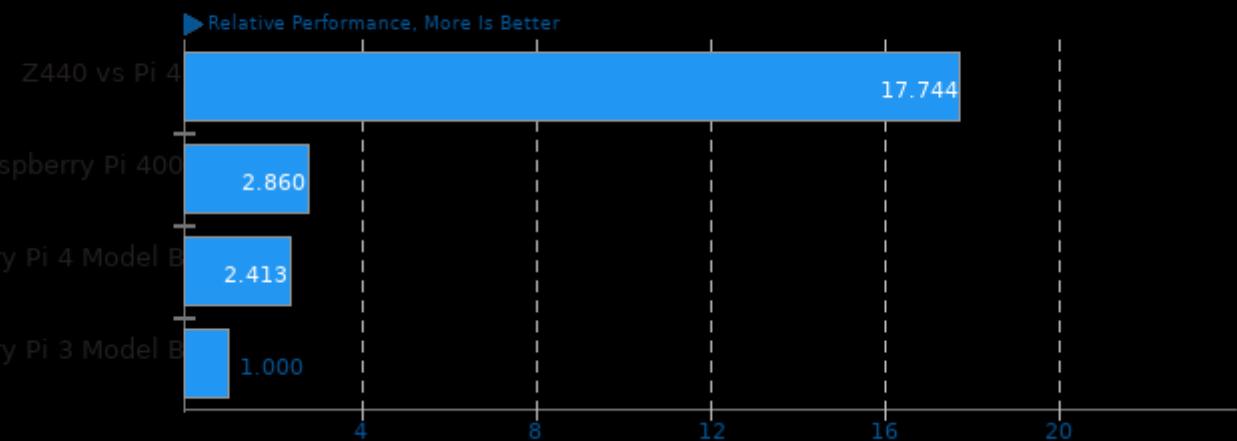
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/c-ray, pts/aobench, pts/smallpt, system/tesseract-ocr, system/ocrmypdf, pts/kvazaar, pts/encode-mp3, pts/encode-flac, pts/graphics-magick, system/inkscape, pts/libraw, pts/webp, system/gimp, system/rsvg, system/gegl, pts/espeak and pts/rnnoise

Geometric Mean Of Encoding Tests

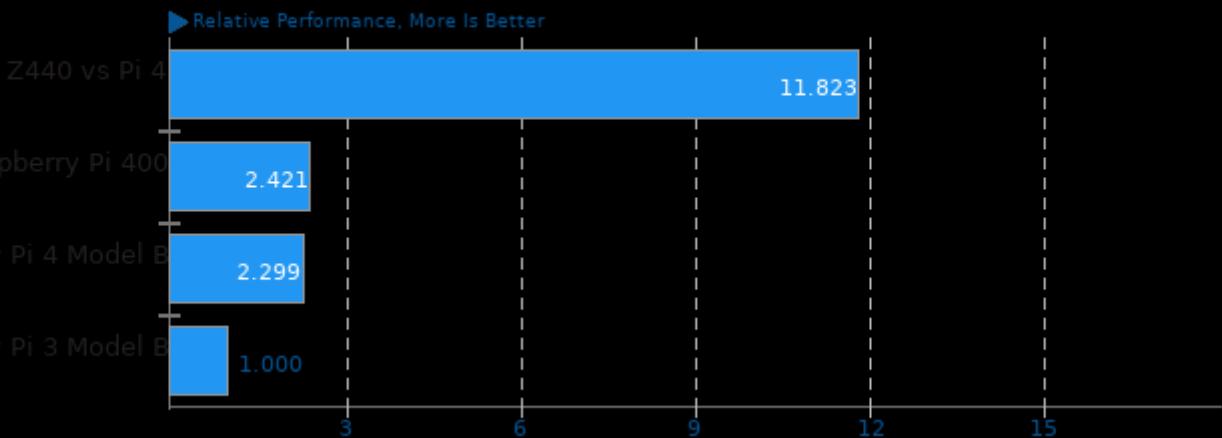
Result Composite - Raspberry Pi 400



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

Geometric Mean Of Fortran Tests

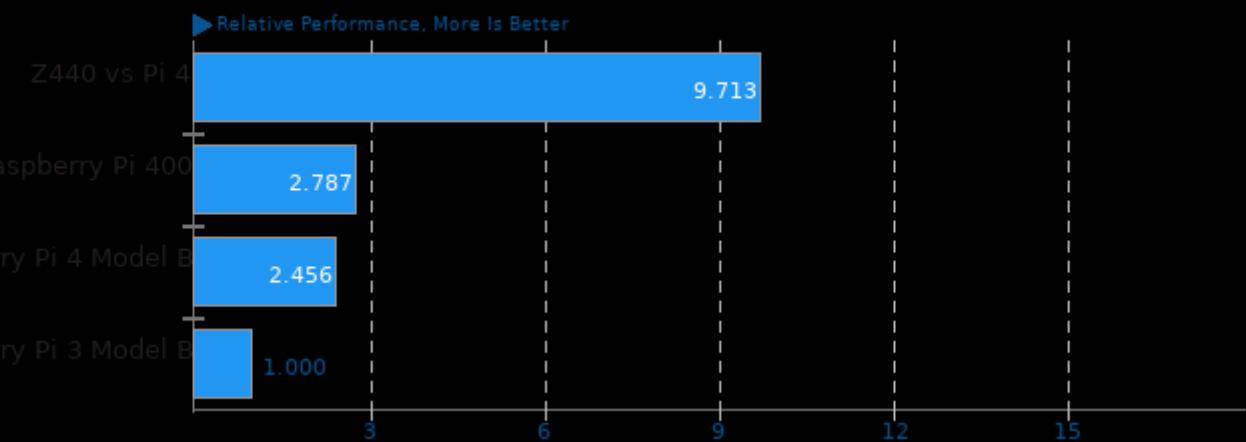
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/cloverleaf, pts/dolfin, pts/ffte and pts/lammps

Geometric Mean Of HPC - High Performance Computing Tests

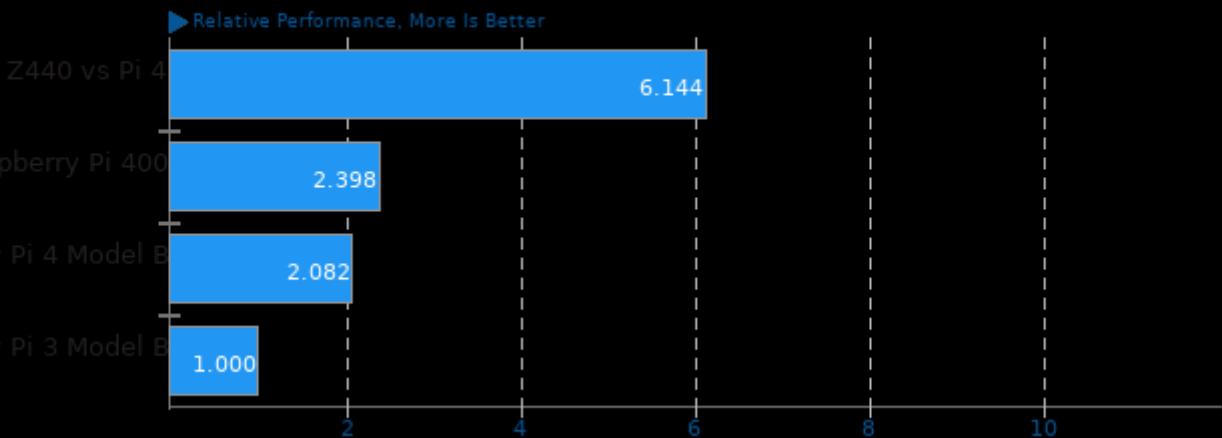
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/ffte, system/octave-benchmark, pts/dolfin, pts/cloverleaf, pts/lammps, pts/himeno, pts/mnn, pts/tnn, pts/numpy and pts/rnnoise

Geometric Mean Of Imaging Tests

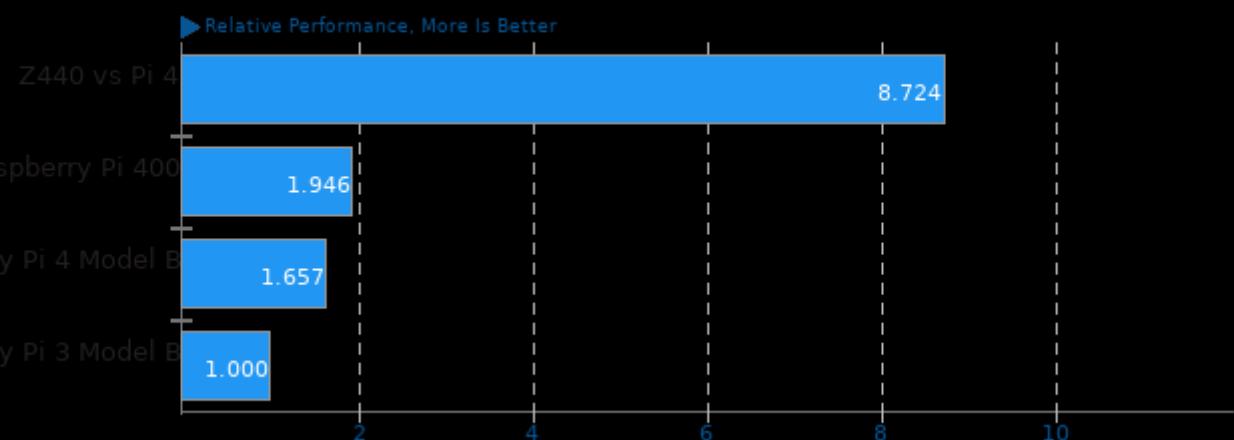
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/graphics-magick, system/inkscape, pts/libraw, pts/webp, system/gimp, system/rsvg and system/gegl

Geometric Mean Of Common Kernel Benchmarks Tests

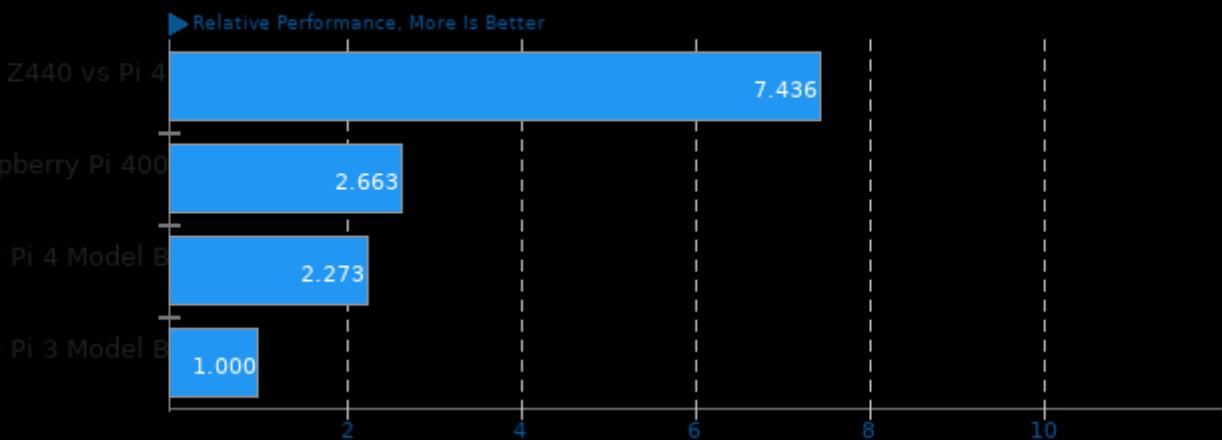
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/sqlite-speedtest and pts/openssl

Geometric Mean Of Machine Learning Tests

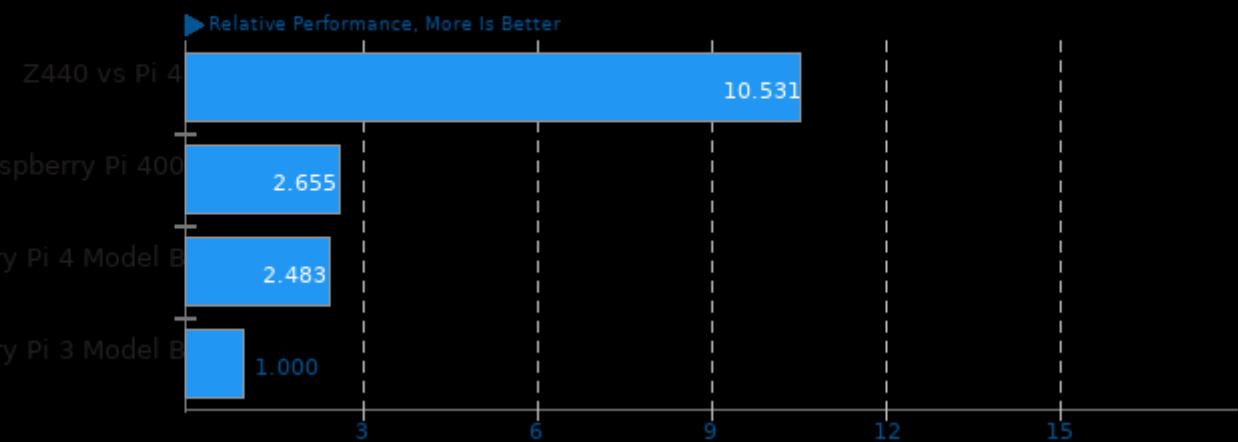
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/mnn, pts/tnn, pts/numpy and pts/rnnoise

Geometric Mean Of Molecular Dynamics Tests

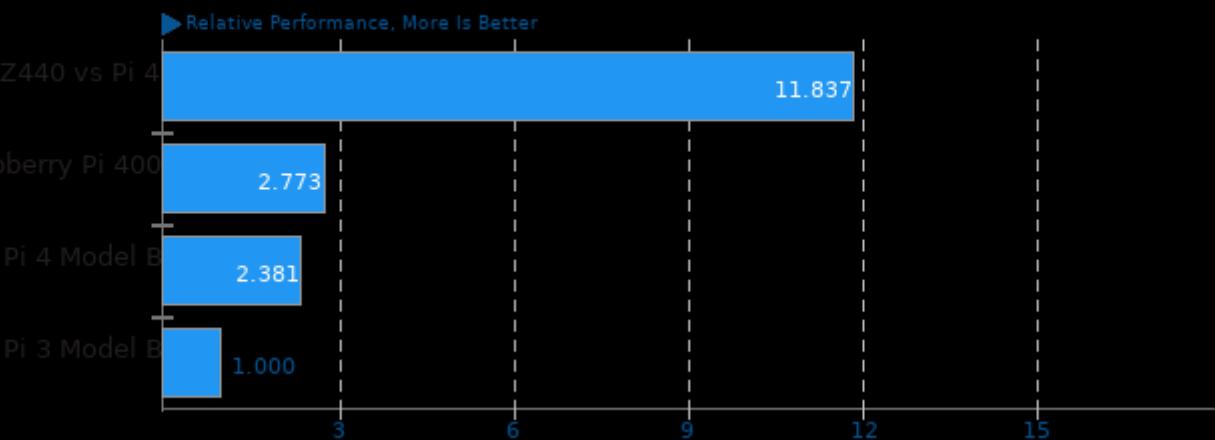
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/dolfin, pts/cloverleaf and pts/lammps

Geometric Mean Of Multi-Core Tests

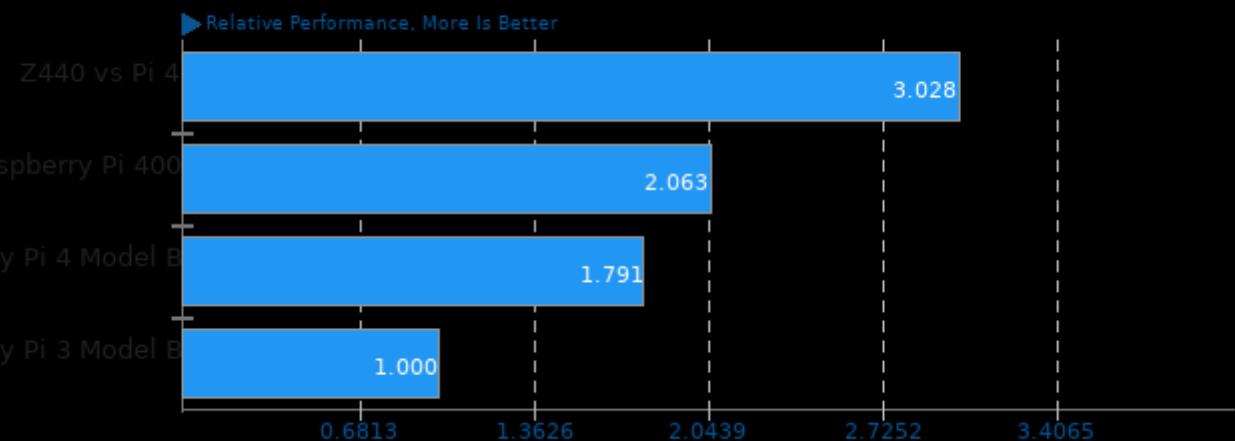
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/c-ray, pts/coremark, pts/kvazaar, pts/smallpt, pts/asmfish, pts/graphics-magick, pts/lammps, pts/compress-zstd, pts/build-apache, pts/build-php, pts/build-imagemagick, pts/build-gdb, pts/build2 and pts/aobench

Geometric Mean Of Productivity Tests

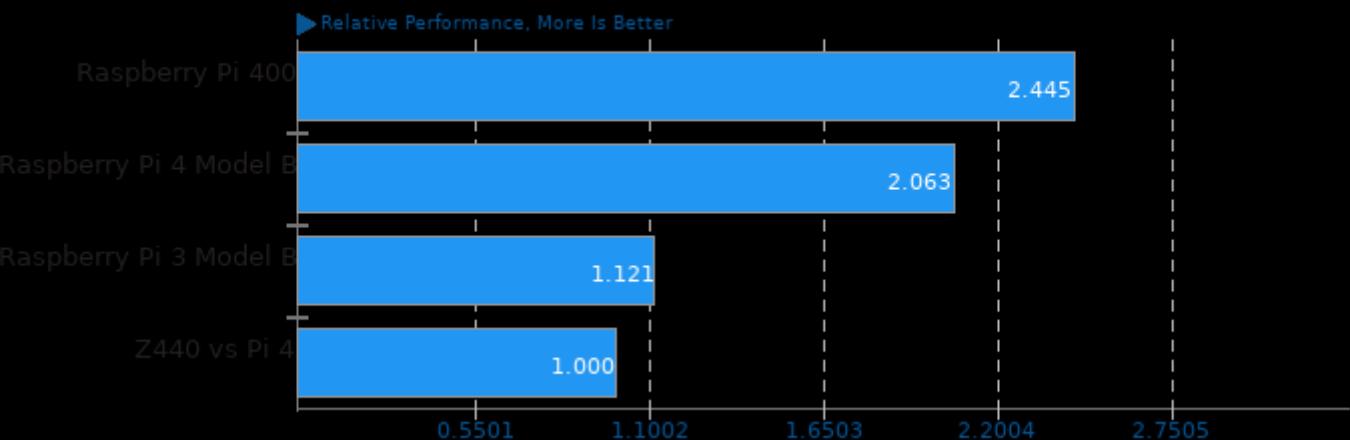
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: system/octave-benchmark, system/inkscape, system/gimp, system/gegl and system/rsvg

Geometric Mean Of Programmer / Developer System Benchmarks Tests

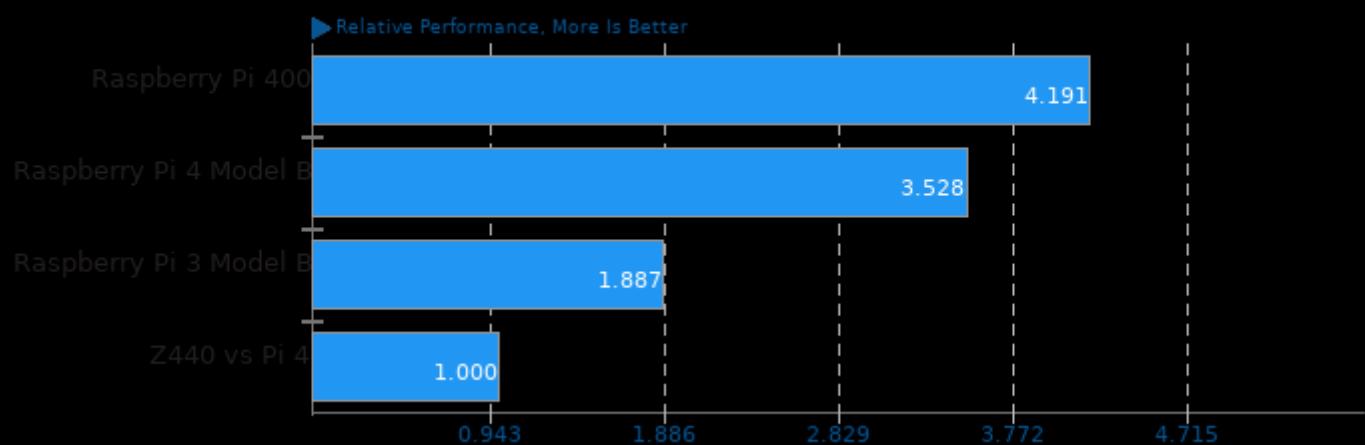
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/sqlite-speedtest, pts/compress-zstd, pts/pyperformance, pts/pybench, pts/build-apache, pts/build-php, pts/build-imagemagick, pts/build-gdb and pts/build2

Geometric Mean Of Python Tests

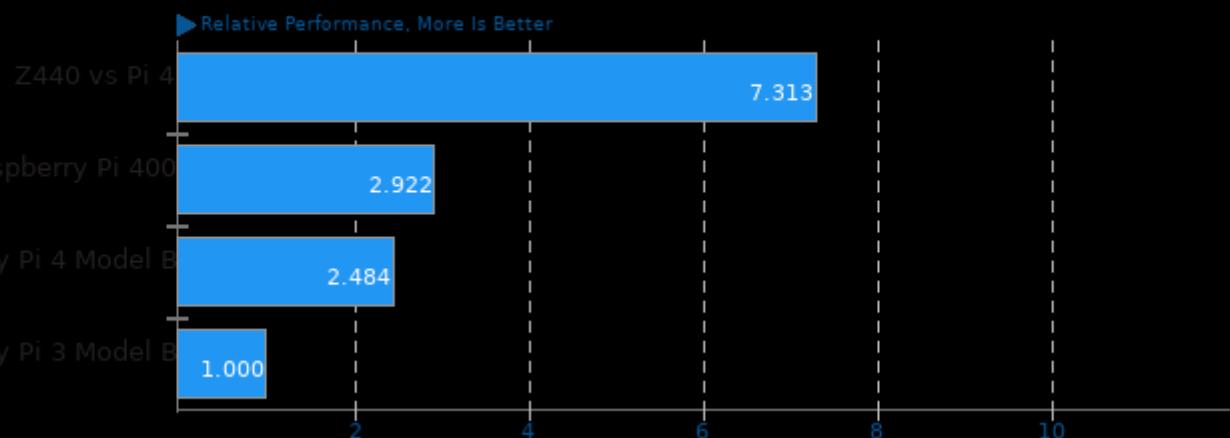
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/pybench, pts/numpy and pts/pyperformance

Geometric Mean Of Renderers Tests

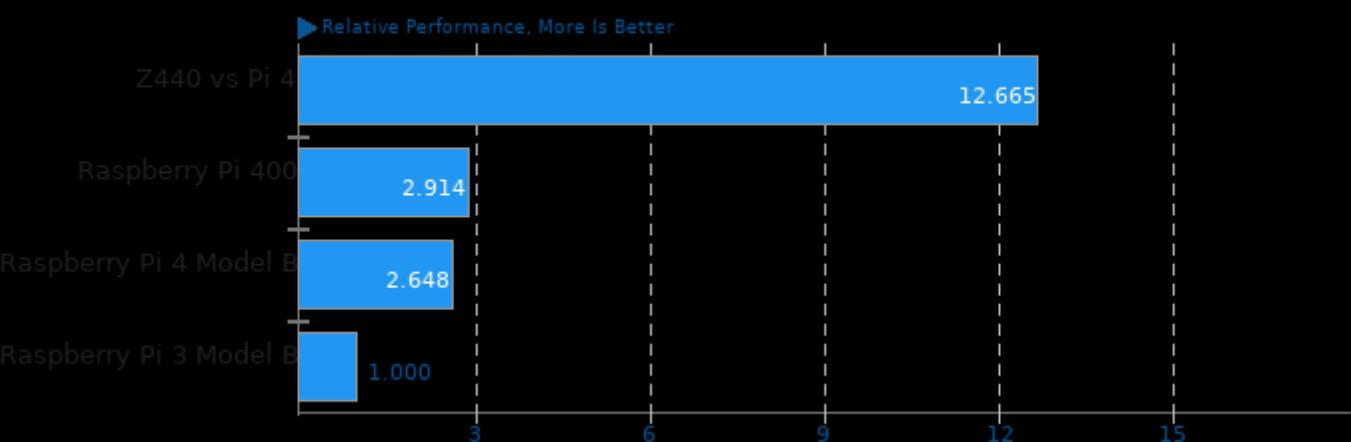
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/c-ray, pts/aobench and pts/smallpt

Geometric Mean Of Scientific Computing Tests

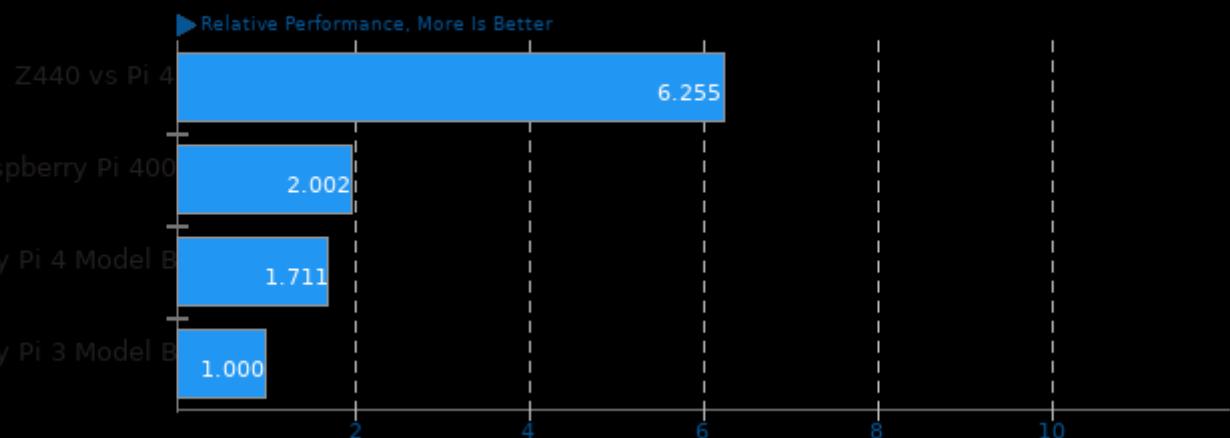
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/ffte, system/octave-benchmark, pts/dolfin, pts/cloverleaf, pts/lammps and pts/himeno

Geometric Mean Of Server Tests

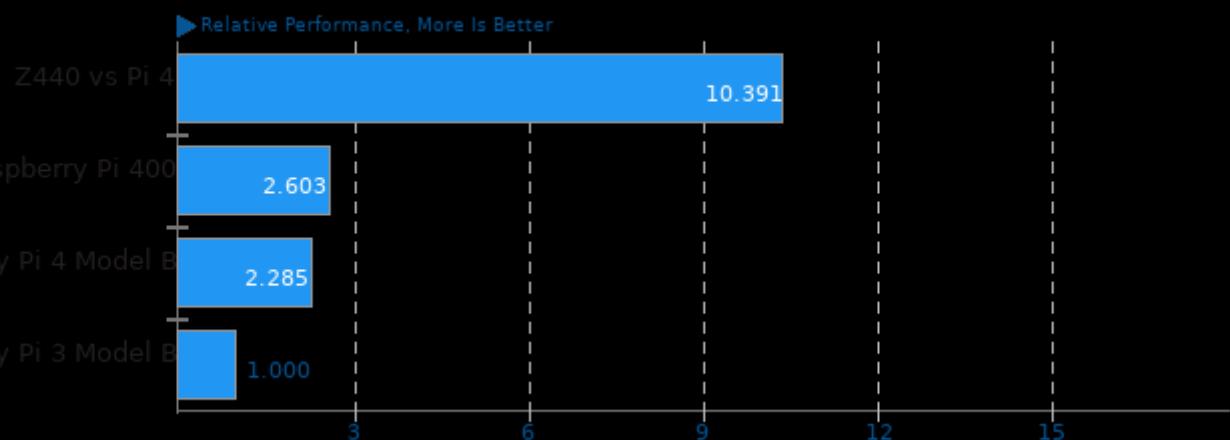
Result Composite - Raspberry Pi 400



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

Geometric Mean Of Server CPU Tests

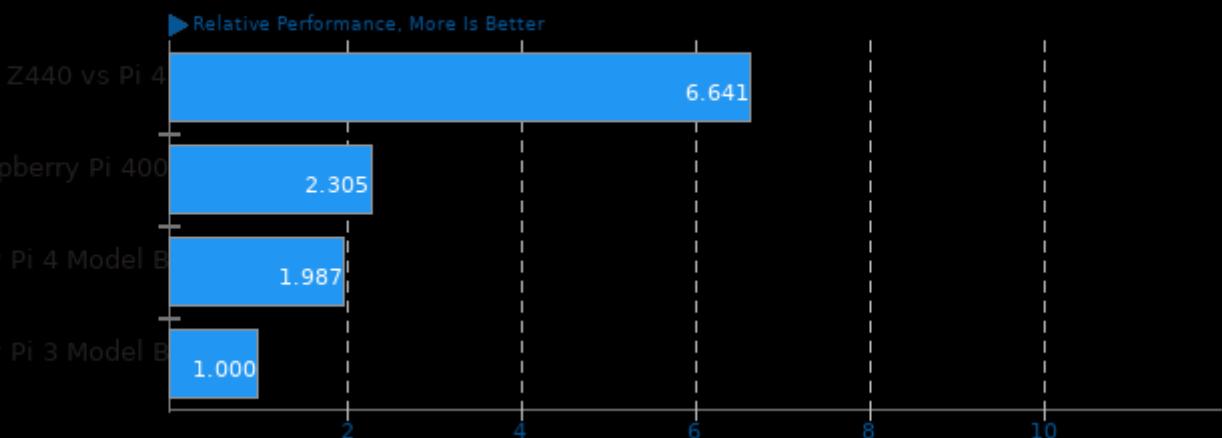
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/dacapobench, pts/himeno, pts/asmfish, pts/build-php, pts/c-ray, pts/compress-zstd, pts/openssl, system/gimp, pts/pybench, pts/numpy, pts/phpbench and system/tesseract-ocr

Geometric Mean Of Single-Threaded Tests

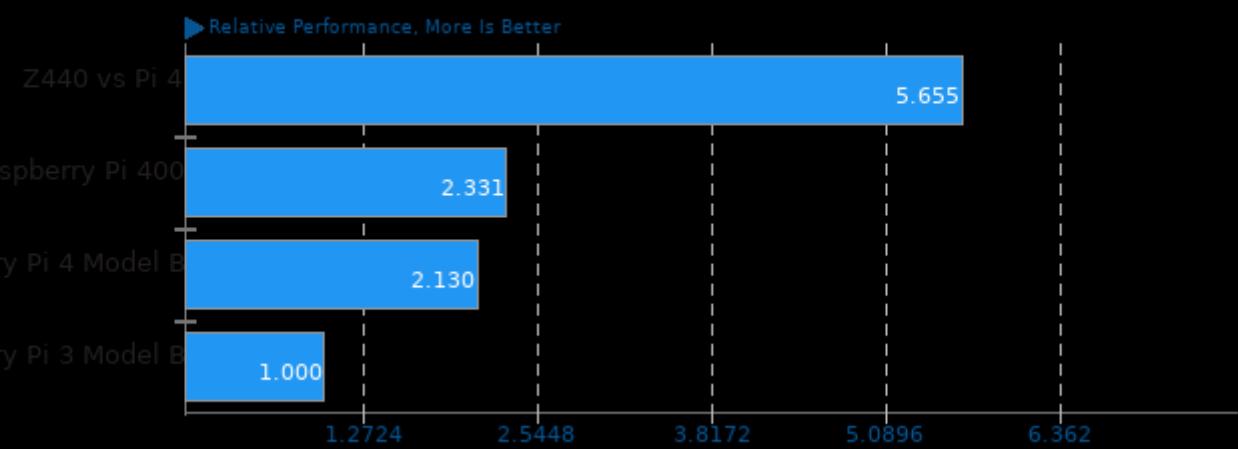
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/numpy, pts/encode-flac, pts/encode-mp3, pts/espeak, pts/perl-benchmark, system/inkscape, pts/pybench, pts/phpbench, pts/hint and system/tesseract-ocr

Geometric Mean Of Speech Tests

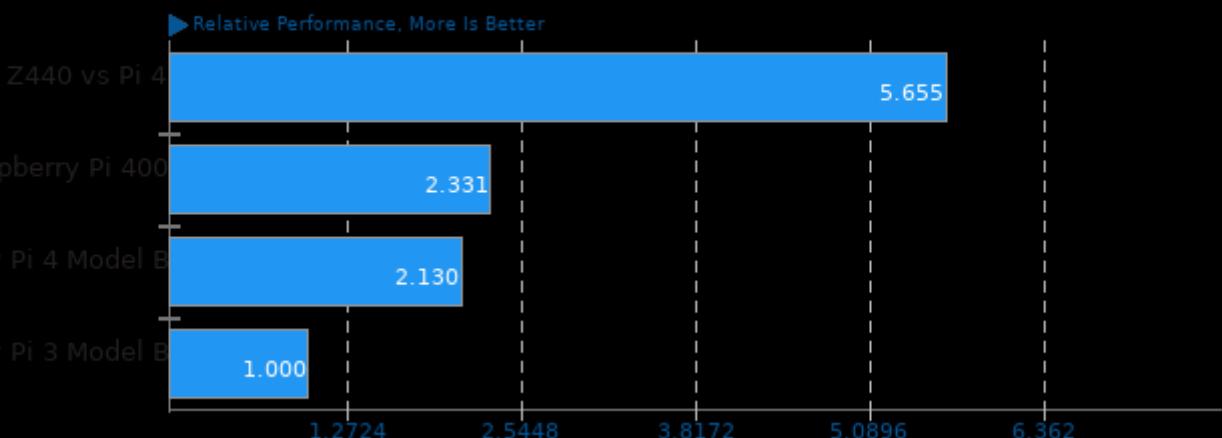
Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/espeak and pts/rnnoise

Geometric Mean Of Telephony Tests

Result Composite - Raspberry Pi 400



Geometric mean based upon tests: pts/espeak and pts/rnnoise

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 20:59.