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nn cxl x

Intel Core i9-10980XE testing with a ASRock X299 Steel Legend (P1.30 BIOS) and llvmpipe on Ubuntu 22.04 via the Phoronix Test Suite.

Automated Executive Summary

C had the most wins, coming in first place for 50% of the tests.

Based on the geometric mean of all complete results, the fastest (C) was 1.016x the speed of the slowest (B). A was 0.992x the speed of C and B was 0.992x the speed of A.

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

Mobile Neural Network (Model: mobilenetV3) at 1.148x
Mobile Neural Network (Model: mobilenet-v1-1.0) at 1.077x
Mobile Neural Network (Model: resnet-v2-50) at 1.077x
SVT-AV1 (Encoder Mode: Preset 10 - Input: Bosphorus 1080p) at 1.069x
Mobile Neural Network (Model: MobileNetV2_224) at 1.065x
Mobile Neural Network (Model: SqueezeNetV1.0) at 1.064x
NCNN (Target: CPU - Model: efficientnet-b0) at 1.045x
Mobile Neural Network (Model: inception-v3) at 1.043x
NCNN (Target: CPU - Model: mobilenet) at 1.04x

NCNN (Target: CPU - Model: alexnet) at 1.031x.

Test Systems:

A

B

C

Processor: Intel Core i9-10980XE @ 4.80GHz (18 Cores / 36 Threads), Motherboard: ASRock X299 Steel Legend (P1.30 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 32GB, Disk: Samsung SSD 970 PRO 512GB, Graphics: llvmpipe, Audio: Realtek ALC1220, Network: Intel I219-V + Intel I211

OS: Ubuntu 22.04, Kernel: 5.19.0-051900rc7-generic (x86_64), Desktop: GNOME Shell 42.2, Display Server: X Server 1.21.1.3, OpenGL: 4.5 Mesa 22.0.1 (LLVM 13.0.1 256 bits), Vulkan: 1.2.204, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1024x768

Kernel Notes: Transparent Huge Pages: madvise
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-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/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
Processor Notes: Scaling Governor: intel_cpufreq schedutil - CPU Microcode: 0x5003302
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Mitigation of Clear buffers; SMT vulnerable + retbleed: Mitigation of Enhanced IBRS + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Mitigation of TSX disabled

	A	B	C
Mobile Neural Network - mobilenetV3 (ms)	2.174	**2.182**	**1.9**
Normalized	87.4%	87.08%	100%
Mobile Neural Network - squeezenetv1.1	2.404	**2.423**	**2.352**
Normalized	97.84%	97.07%	100%
Mobile Neural Network - resnet-v2-50 (ms)	9.902	**10.099**	**9.374**
Normalized	94.67%	92.82%	100%
Mobile Neural Network - SqueezeNetV1.0	4.496	**4.733**	**4.449**
Normalized	98.95%	94%	100%
Mobile Neural Network - MobileNetV2_224	3.477	**3.667**	**3.442**
Normalized	98.99%	93.86%	100%
Mobile Neural Network - mobilenet-v1-1.0	**2.415**	**2.602**	2.558
Normalized	100%	92.81%	94.41%
Mobile Neural Network - inception-v3 (ms)	**20.448**	**21.336**	20.677
Normalized	100%	95.84%	98.89%

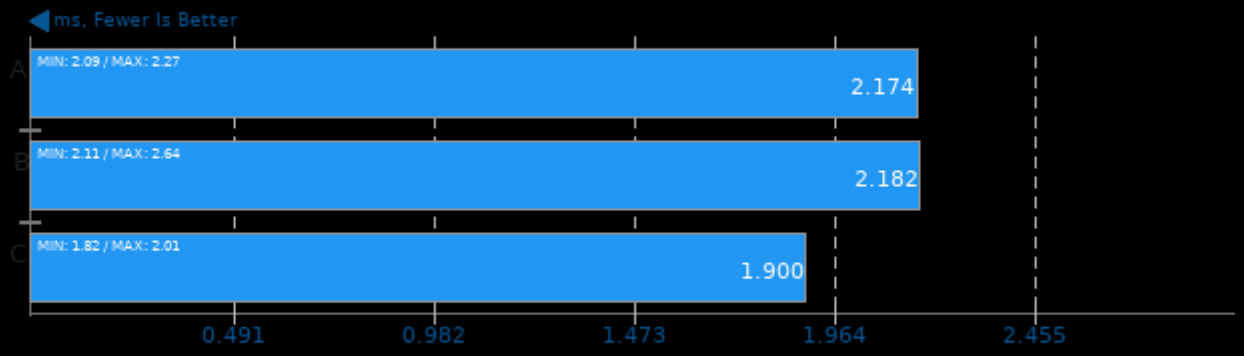
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NCNN - CPU - mobilenet (ms)	14.73	14.5	14.17
Normalized	96.2%	97.72%	100%
NCNN - CPU-v2-v2 - mobilenet-v2 (ms)	5.56	5.49	5.48
Normalized	98.56%	99.82%	100%
NCNN - CPU-v3-v3 - mobilenet-v3 (ms)	4.95	4.96	4.95
Normalized	100%	99.8%	100%
NCNN - CPU - shufflenet-v2 (ms)	5.44	5.48	5.46
Normalized	100%	99.27%	99.63%
NCNN - CPU - mnasnet (ms)	4.81	4.79	4.8
Normalized	99.58%	100%	99.79%
NCNN - CPU - efficientnet-b0 (ms)	7.27	7.06	6.96
Normalized	95.74%	98.58%	100%
NCNN - CPU - blazeface (ms)	2.3	2.35	2.34
Normalized	100%	97.87%	98.29%
NCNN - CPU - googlenet (ms)	11.58	11.63	11.44
Normalized	98.79%	98.37%	100%
NCNN - CPU - vgg16 (ms)	32.52	31.64	32.31
Normalized	97.29%	100%	97.93%
NCNN - CPU - resnet18 (ms)	8.55	8.64	8.59
Normalized	100%	98.96%	99.53%
NCNN - CPU - alexnet (ms)	6.09	6.08	6.27
Normalized	99.84%	100%	96.97%
NCNN - CPU - resnet50 (ms)	14.88	14.69	14.86
Normalized	98.72%	100%	98.86%
NCNN - CPU - yolov4-tiny (ms)	24.2	24.11	24
Normalized	99.17%	99.54%	100%
NCNN - CPU - squeezenet_ssd (ms)	17.8	17.64	17.57
Normalized	98.71%	99.6%	100%
NCNN - CPU - regnety_400m (ms)	18.6	19.07	18.89
Normalized	100%	97.54%	98.46%
NCNN - CPU - vision_transformer (ms)	151.66	152.08	151.34
Normalized	99.79%	99.51%	100%
NCNN - CPU - FastestDet (ms)	6.49	6.61	6.46
Normalized	99.54%	97.73%	100%
SVT-AV1 - Preset 4 - Bosphorus 4K (FPS)	1.549	1.566	1.567
Normalized	98.85%	99.94%	100%
SVT-AV1 - Preset 8 - Bosphorus 4K (FPS)	39.346	39.108	38.6
Normalized	100%	99.4%	98.1%
SVT-AV1 - Preset 10 - Bosphorus 4K (FPS)	74.128	72.916	72.569
Normalized	100%	98.36%	97.9%
SVT-AV1 - Preset 12 - Bosphorus 4K (FPS)	104.01	105.72	105.922
Normalized	98.19%	99.81%	100%
SVT-AV1 - Preset 4 - Bosphorus 1080p (FPS)	3.67	3.664	3.64
Normalized	100%	99.84%	99.18%
SVT-AV1 - Preset 8 - Bosphorus 1080p (FPS)	73.798	75.436	74.629
Normalized	97.83%	100%	98.93%
SVT-AV1 - Preset 10 - Bosphorus 1080p	150.99	141.19	148.732
Normalized	100%	93.51%	98.5%
SVT-AV1 - Preset 12 - Bosphorus 1080p	166.388	168.953	171.43
Normalized	97.06%	98.56%	100%

nn cxl x

Mobile Neural Network 2.0

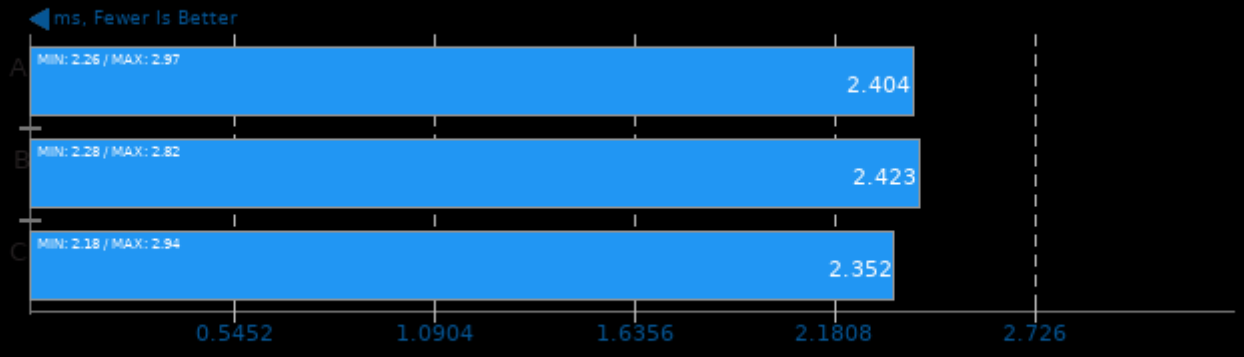
Model: mobilenetV3



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

Mobile Neural Network 2.0

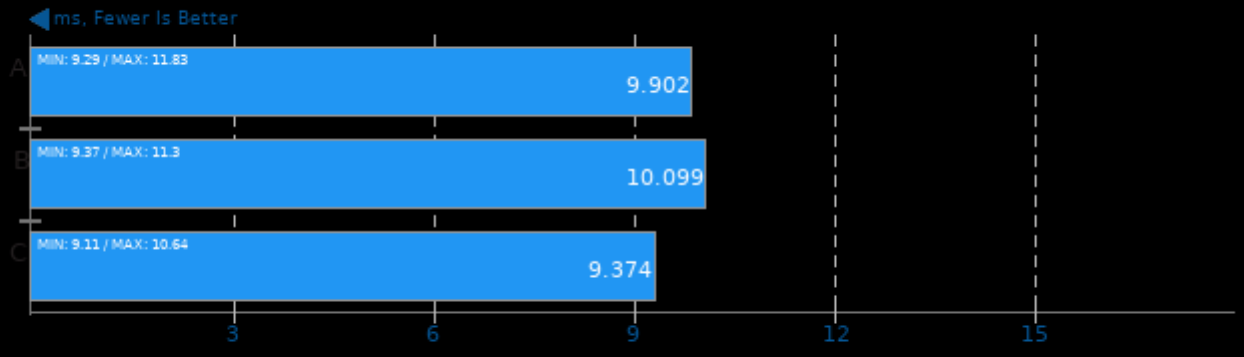
Model: squeezenetv1.1



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

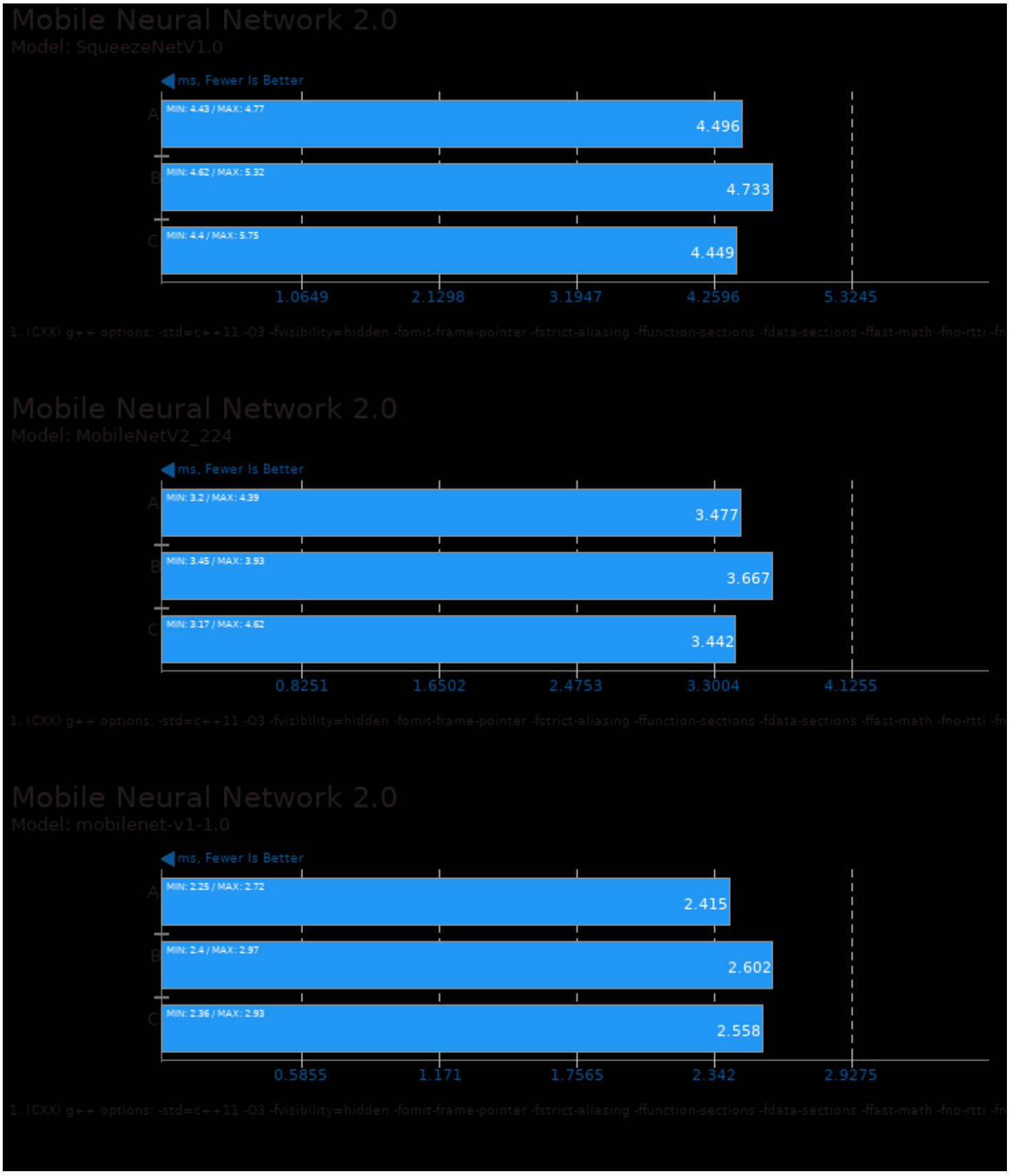
Mobile Neural Network 2.0

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 -fn

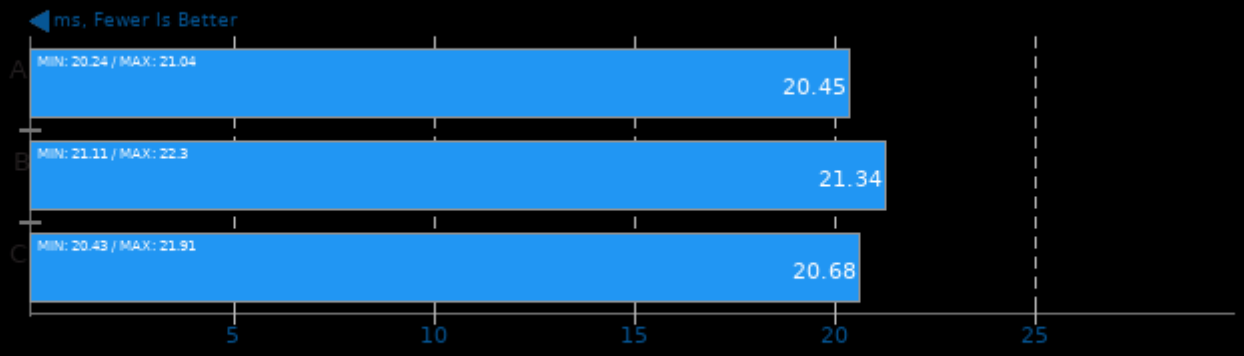
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Mobile Neural Network 2.0
Model: SqueezeNetV1.0
ms, Fewer Is Better
A
MIN: 4.43 / MAX: 4.77
4.496
B
MIN: 4.62 / MAX: 5.32
4.733
C
MIN: 4.4 / MAX: 5.75
4.449
1.0649
2.1298
3.1947
4.2596
5.3245
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv
Mobile Neural Network 2.0
Model: MobileNetV2_224
ms, Fewer Is Better
A
MIN: 3.2 / MAX: 4.39
3.477
B
MIN: 3.45 / MAX: 3.93
3.667
C
MIN: 3.17 / MAX: 4.62
3.442
0.8251
1.6502
2.4753
3.3004
4.1255
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv
Mobile Neural Network 2.0
Model: mobilenet-v1-1.0
ms, Fewer Is Better
A
MIN: 2.25 / MAX: 2.72
2.415
B
MIN: 2.4 / MAX: 2.97
2.602
C
MIN: 2.36 / MAX: 2.93
2.558
0.5855
1.171
1.7565
2.342
2.9275
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv

nn cxl x

Mobile Neural Network 2.0

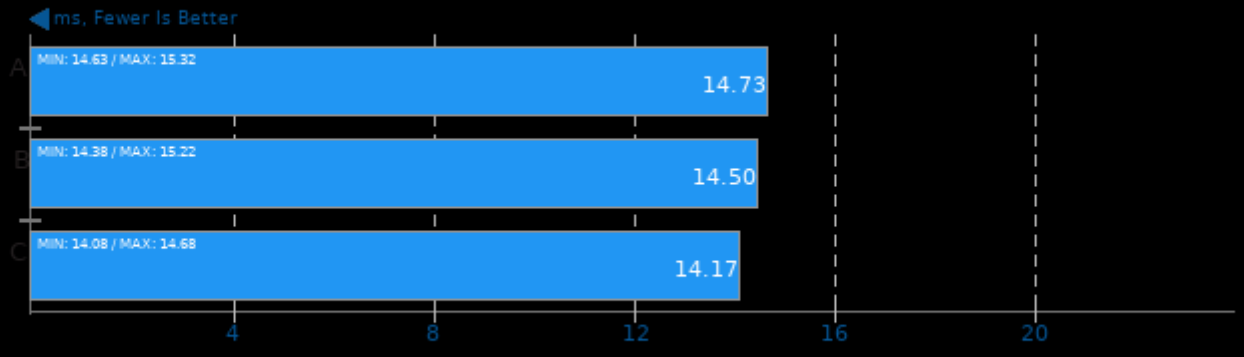
Model: inception-v3



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

NCNN 20220729

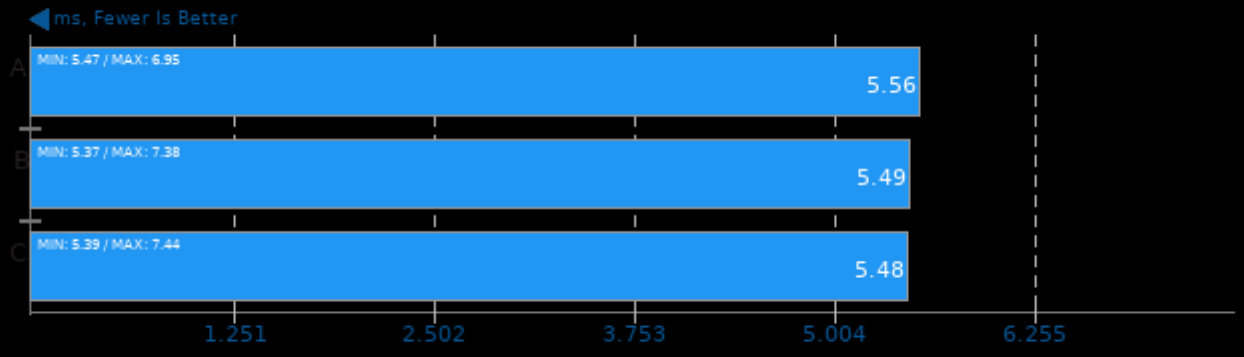
Target: CPU - Model: mobilenet



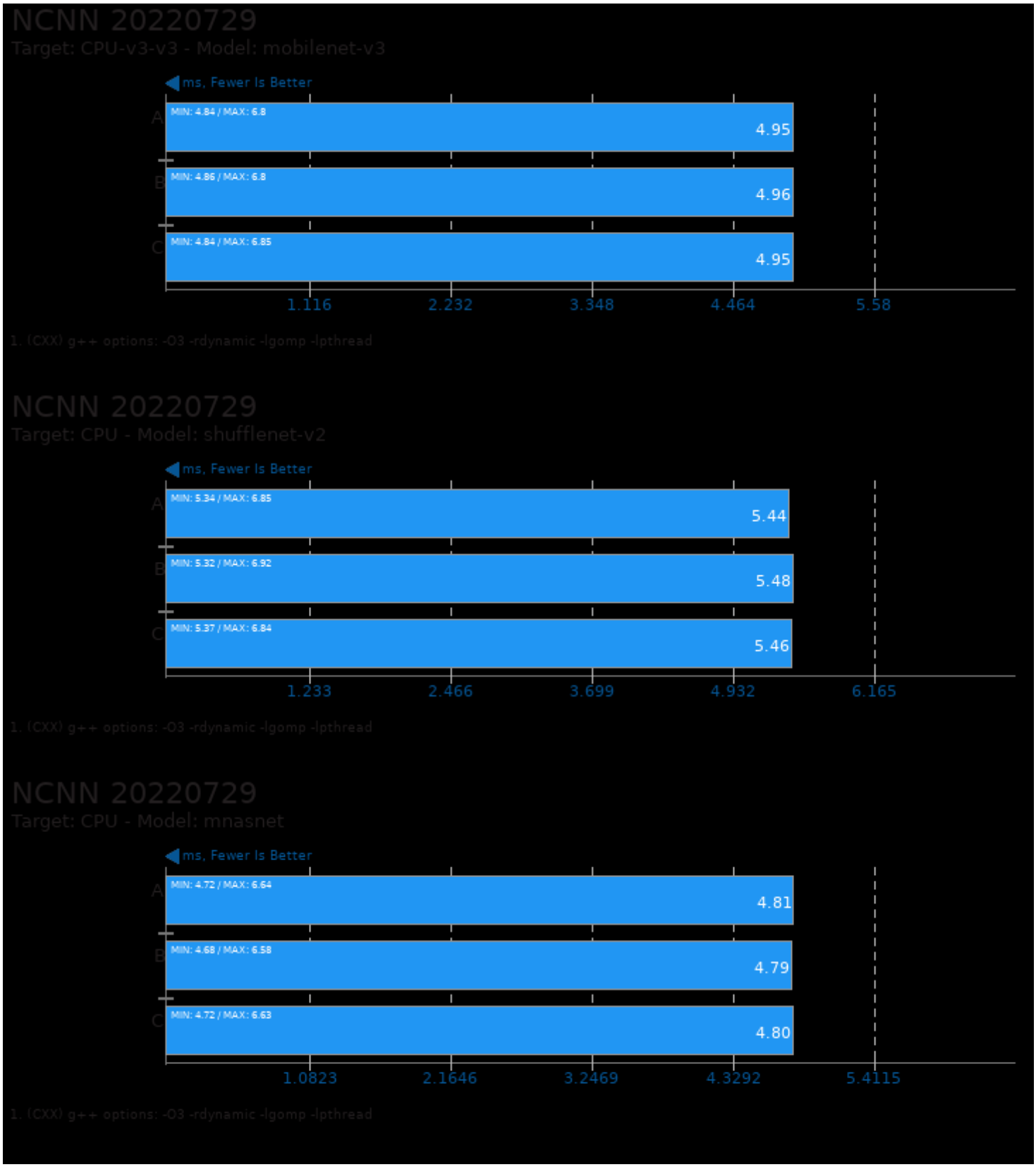
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

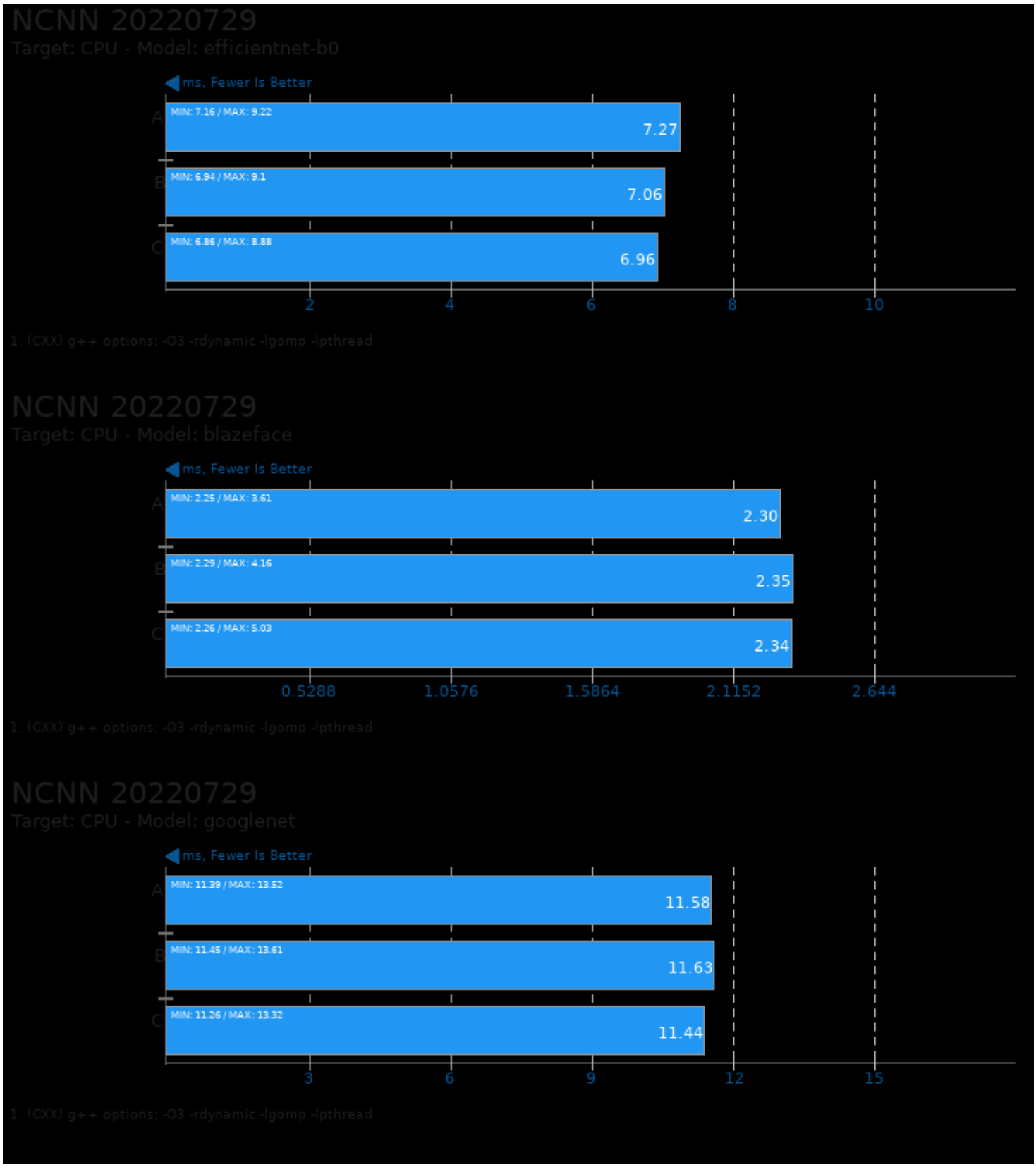
NCNN 20220729

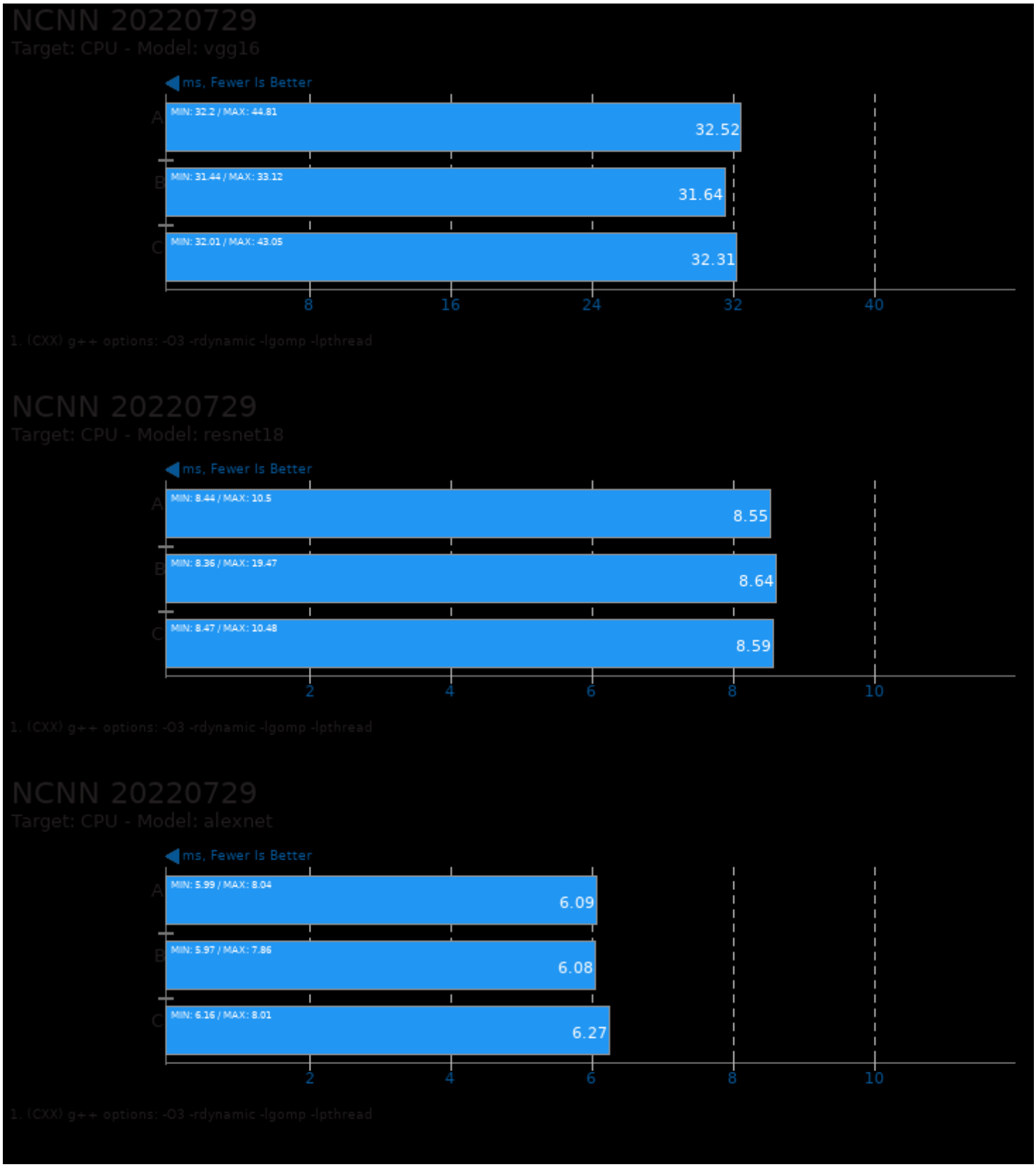
Target: CPU-v2-v2 - Model: mobilenet-v2



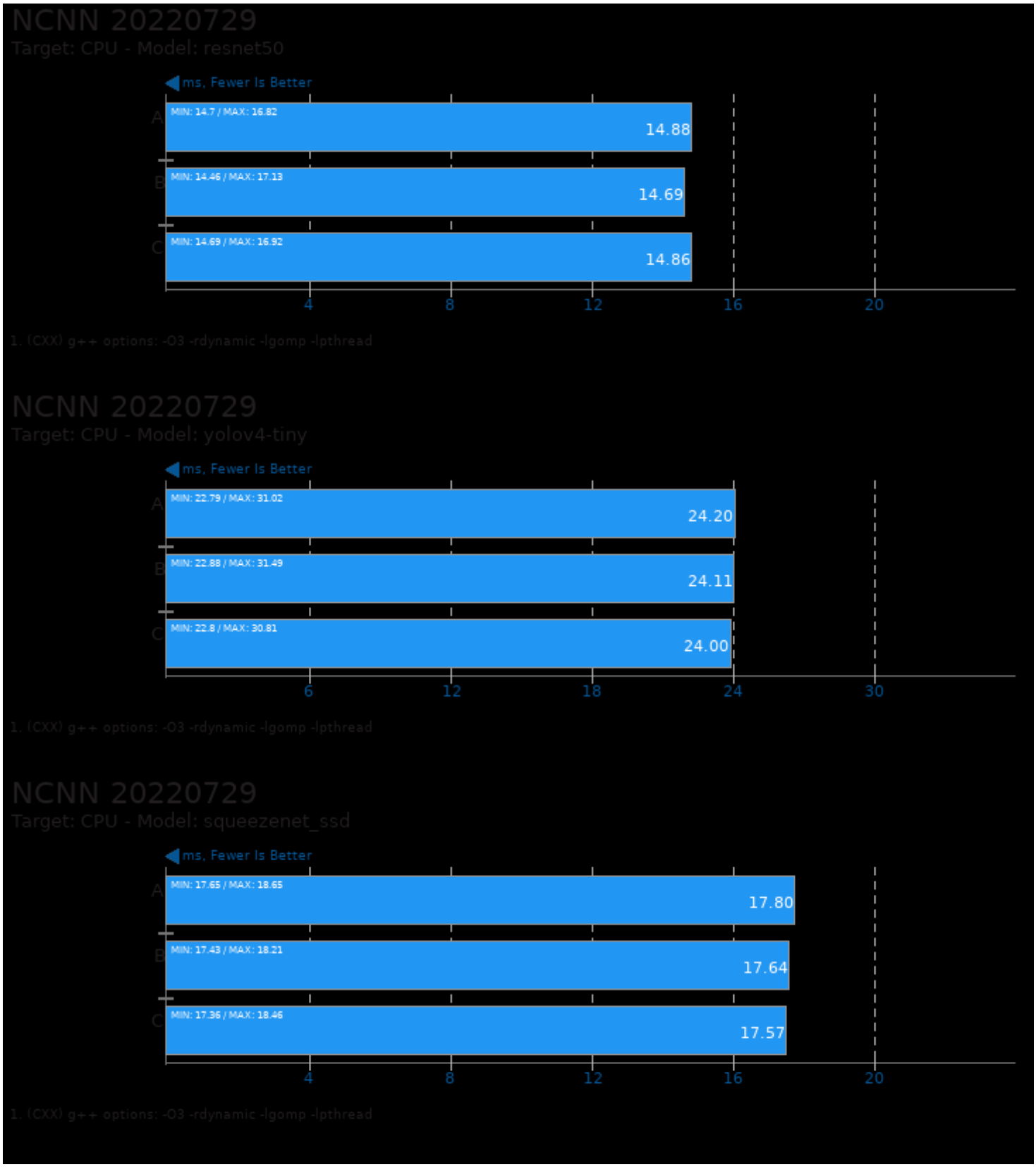
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread


NCNN 20220729
Target: CPU-v3-v3 - Model: mobilenet-v3
ms, Fewer Is Better
A
MIN: 4.84 / MAX: 6.8
4.95
B
MIN: 4.86 / MAX: 6.8
4.96
C
MIN: 4.84 / MAX: 6.85
4.95
1.116
2.232
3.348
4.464
5.58
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: shufflenet-v2
ms, Fewer Is Better
A
MIN: 5.34 / MAX: 6.85
5.44
B
MIN: 5.32 / MAX: 6.92
5.48
C
MIN: 5.37 / MAX: 6.84
5.46
1.233
2.466
3.699
4.932
6.165
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: mnasnet
ms, Fewer Is Better
A
MIN: 4.72 / MAX: 6.64
4.81
B
MIN: 4.68 / MAX: 6.58
4.79
C
MIN: 4.72 / MAX: 6.63
4.80
1.0823
2.1646
3.2469
4.3292
5.4115
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

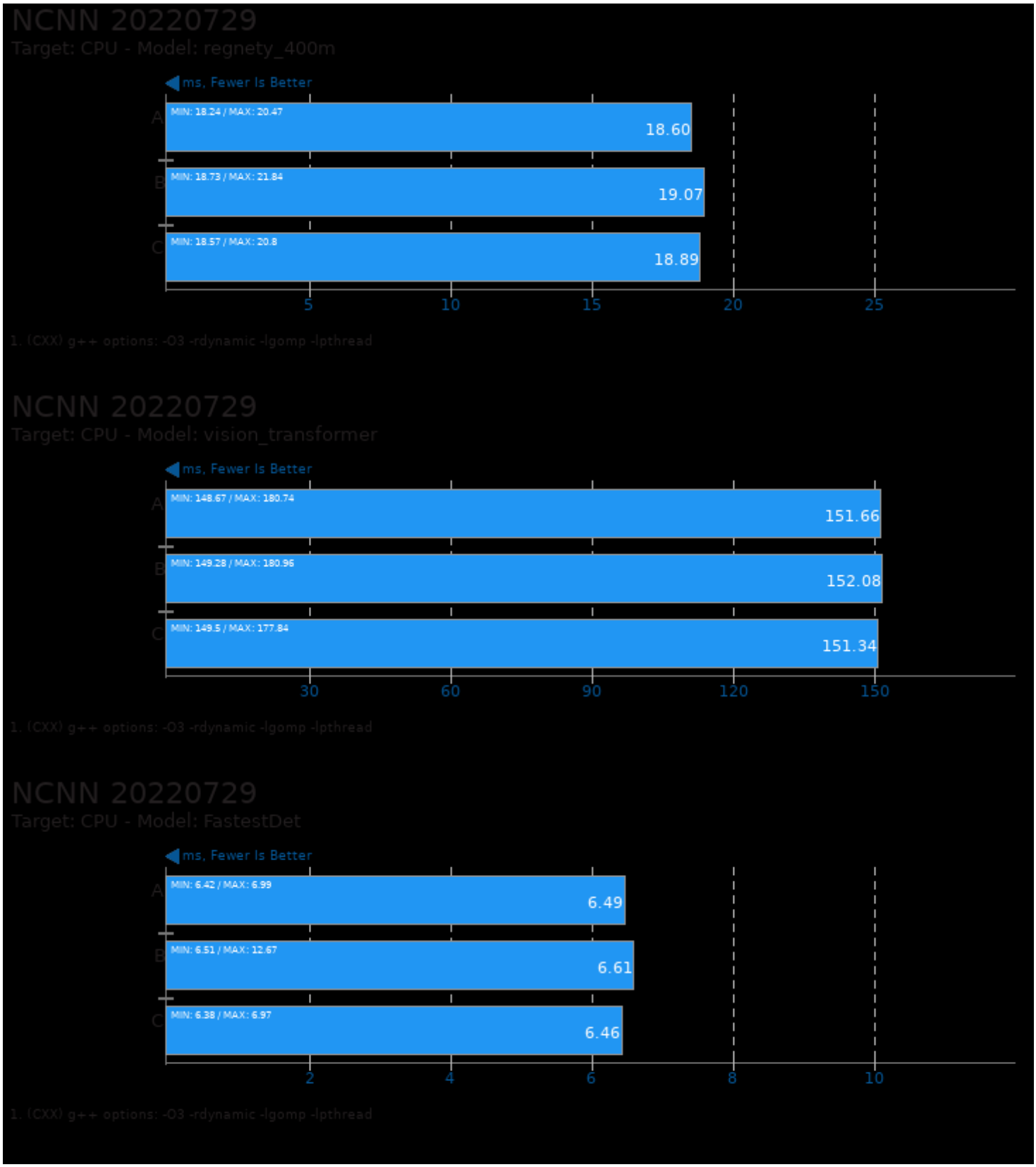

NCNN 20220729
Target: CPU - Model: efficientnet-b0
ms, Fewer Is Better
A
MIN: 7.16 / MAX: 9.22
7.27
B
MIN: 6.94 / MAX: 9.1
7.06
C
MIN: 6.86 / MAX: 8.88
6.96
2
4
6
8
10
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: blazeface
ms, Fewer Is Better
A
MIN: 2.25 / MAX: 3.61
2.30
B
MIN: 2.29 / MAX: 4.16
2.35
C
MIN: 2.26 / MAX: 5.03
2.34
0.5288
1.0576
1.5864
2.1152
2.644
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: googlenet
ms, Fewer Is Better
A
MIN: 11.39 / MAX: 13.52
11.58
B
MIN: 11.45 / MAX: 13.61
11.63
C
MIN: 11.26 / MAX: 13.32
11.44
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

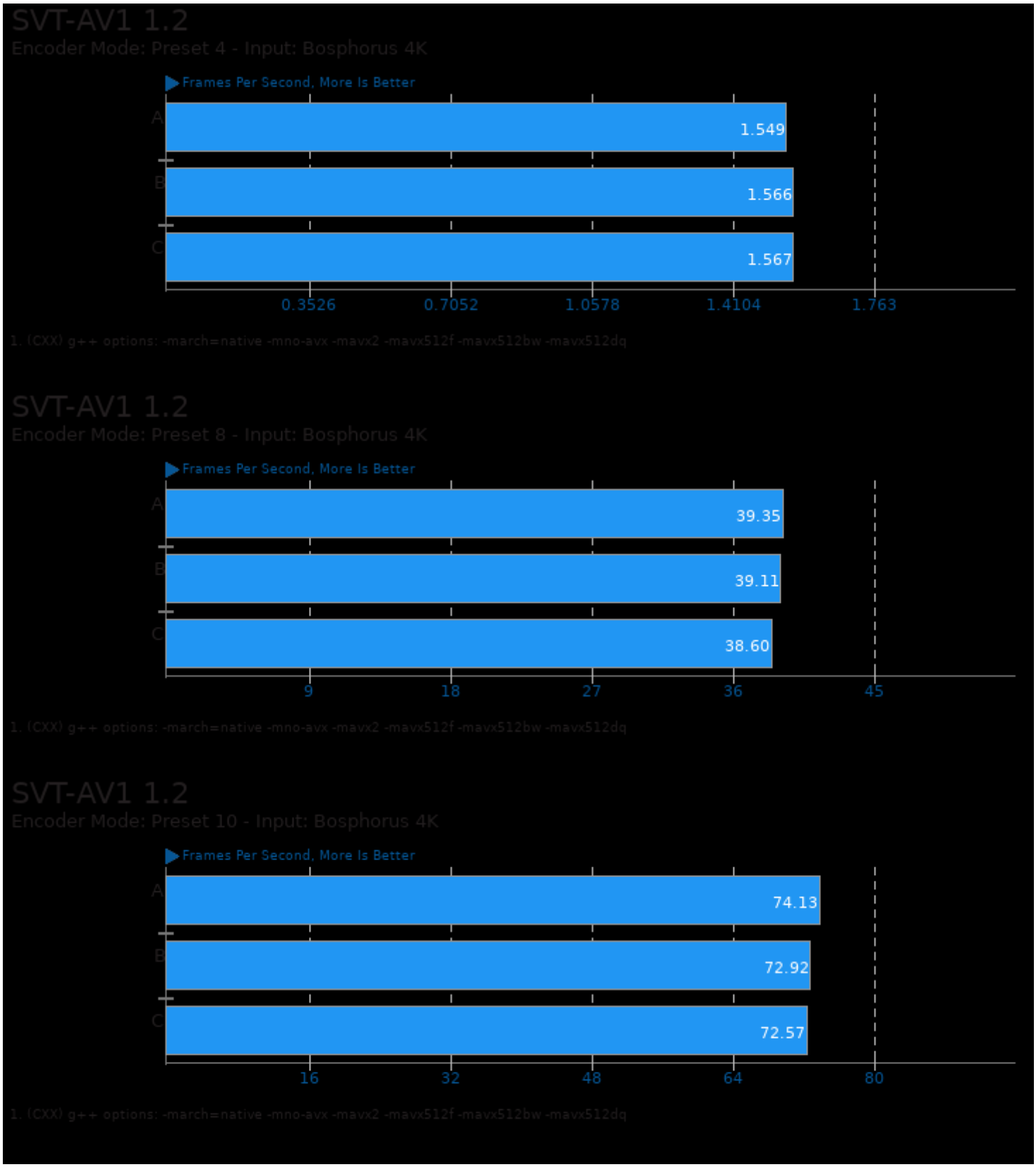

NCNN 20220729
Target: CPU - Model: vgg16
ms, Fewer Is Better
A
MIN: 32.2 / MAX: 44.81
32.52
B
MIN: 31.44 / MAX: 33.12
31.64
C
MIN: 32.01 / MAX: 43.05
32.31
8
16
24
32
40
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: resnet18
ms, Fewer Is Better
A
MIN: 8.44 / MAX: 10.5
8.55
B
MIN: 8.36 / MAX: 19.47
8.64
C
MIN: 8.47 / MAX: 10.48
8.59
2
4
6
8
10
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: alexnet
ms, Fewer Is Better
A
MIN: 5.99 / MAX: 8.04
6.09
B
MIN: 5.97 / MAX: 7.86
6.08
C
MIN: 6.16 / MAX: 8.01
6.27
2
4
6
8
10
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

nn cxl x

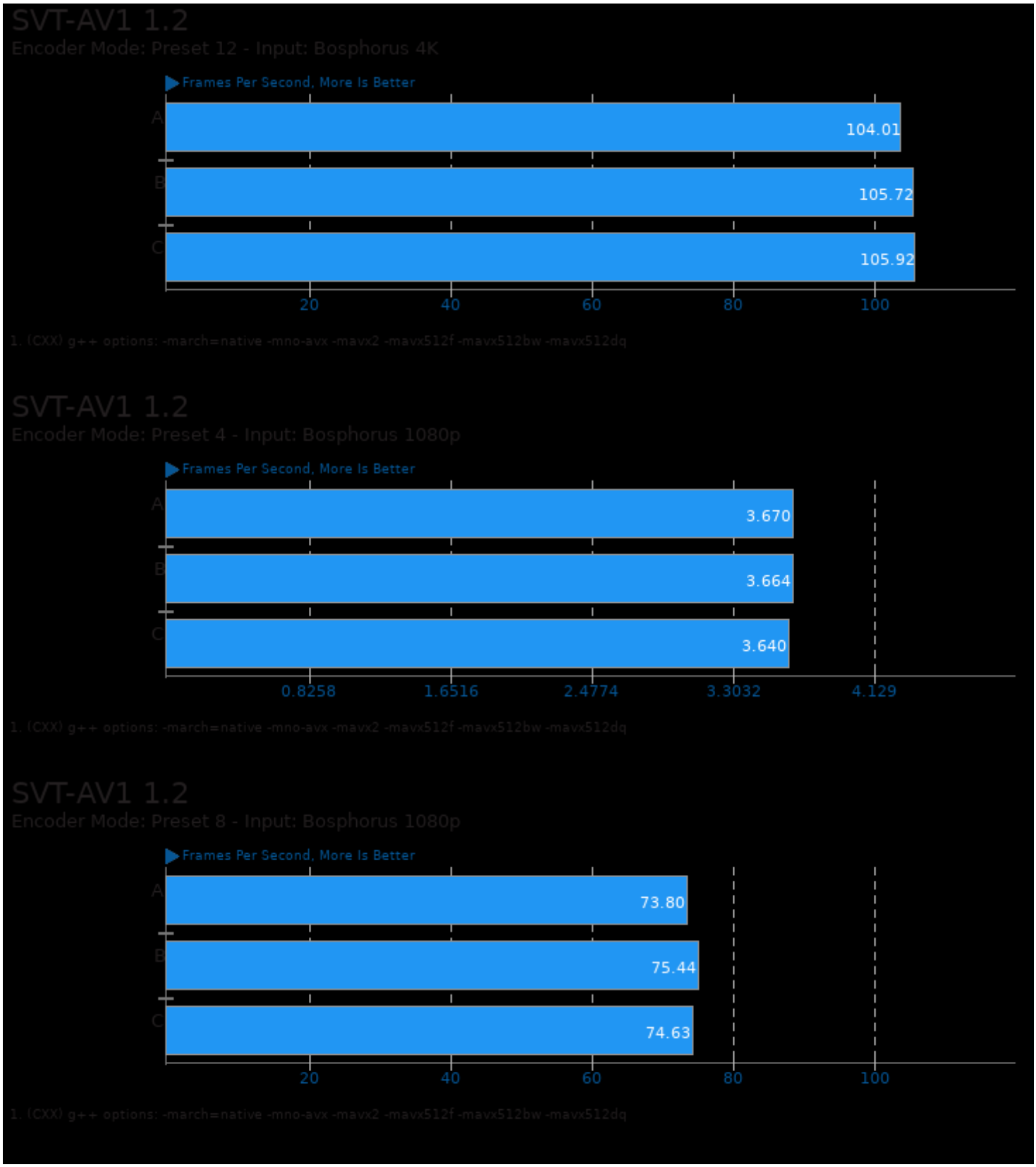

NCNN 20220729
Target: CPU - Model: resnet50
ms, Fewer Is Better
A
MIN: 14.7 / MAX: 16.82
14.88
B
MIN: 14.46 / MAX: 17.13
14.69
C
MIN: 14.69 / MAX: 16.92
14.86
4
8
12
16
20
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: yolov4-tiny
ms, Fewer Is Better
A
MIN: 22.79 / MAX: 31.02
24.20
B
MIN: 22.88 / MAX: 31.49
24.11
C
MIN: 22.8 / MAX: 30.81
24.00
6
12
18
24
30
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: squeezenet_ssd
ms, Fewer Is Better
A
MIN: 17.65 / MAX: 18.65
17.80
B
MIN: 17.43 / MAX: 18.21
17.64
C
MIN: 17.36 / MAX: 18.46
17.57
4
8
12
16
20
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

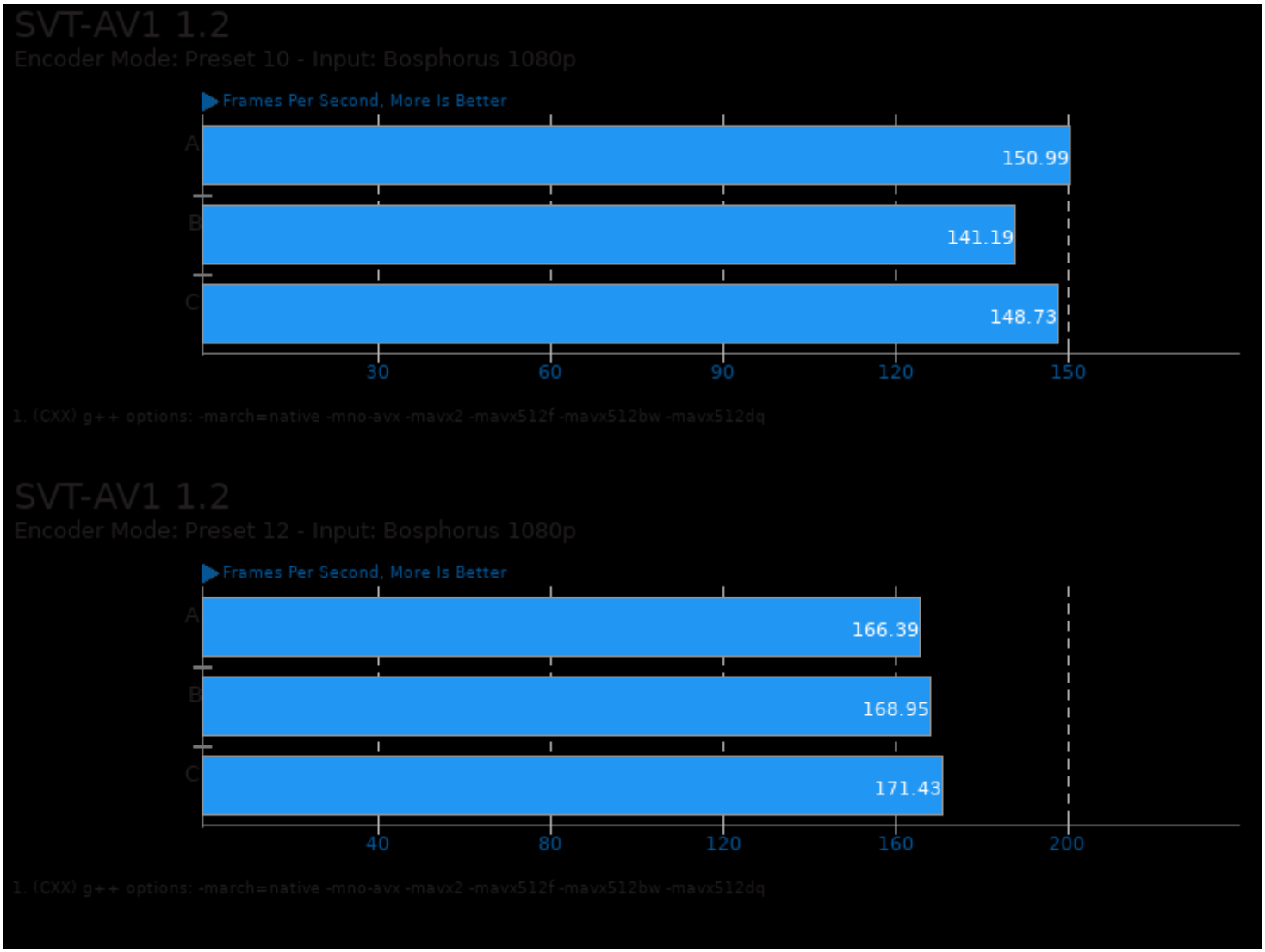
nn cxl x


NCNN 20220729
Target: CPU - Model: regnety_400m
ms, Fewer Is Better
A
MIN: 18.24 / MAX: 20.47
18.60
B
MIN: 18.73 / MAX: 21.84
19.07
C
MIN: 18.57 / MAX: 20.8
18.89
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: vision_transformer
ms, Fewer Is Better
A
MIN: 148.67 / MAX: 180.74
151.66
B
MIN: 149.28 / MAX: 180.96
152.08
C
MIN: 149.5 / MAX: 177.84
151.34
30
60
90
120
150
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20220729
Target: CPU - Model: FastestDet
ms, Fewer Is Better
A
MIN: 6.42 / MAX: 6.99
6.49
B
MIN: 6.51 / MAX: 12.67
6.61
C
MIN: 6.38 / MAX: 6.97
6.46
2
4
6
8
10
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread


SVT-AV1 1.2
Encoder Mode: Preset 4 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
1.549
1.566
1.567
0.3526
0.7052
1.0578
1.4104
1.763
1. (CXX) g++ options: -march=native -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq
SVT-AV1 1.2
Encoder Mode: Preset 8 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
39.35
39.11
38.60
9
18
27
36
45
1. (CXX) g++ options: -march=native -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq
SVT-AV1 1.2
Encoder Mode: Preset 10 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
74.13
72.92
72.57
16
32
48
64
80
1. (CXX) g++ options: -march=native -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq

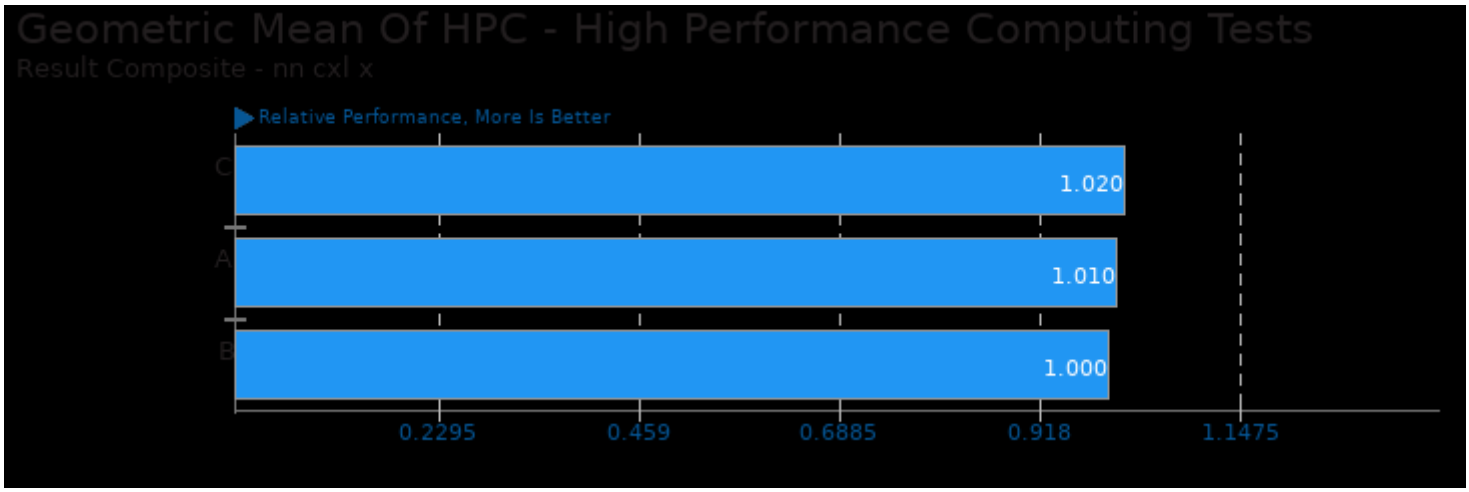
nn cxl x


SVT-AV1 1.2
Encoder Mode: Preset 12 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
104.01
105.72
105.92
20
40
60
80
100
1. (CXX) g++ options: -march=native -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq
SVT-AV1 1.2
Encoder Mode: Preset 4 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
3.670
3.664
3.640
0.8258
1.6516
2.4774
3.3032
4.129
1. (CXX) g++ options: -march=native -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq
SVT-AV1 1.2
Encoder Mode: Preset 8 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
73.80
75.44
74.63
20
40
60
80
100
1. (CXX) g++ options: -march=native -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq

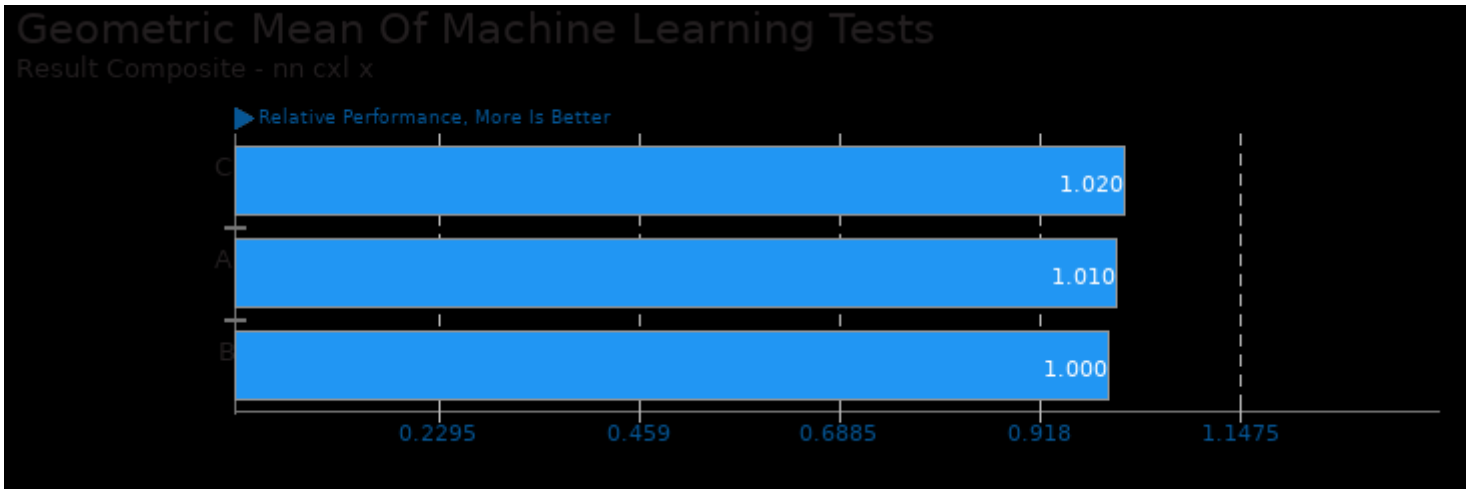

SVT-AV1 1.2
Encoder Mode: Preset 10 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
150.99
141.19
148.73
30
60
90
120
150
1. (CXX) g++ options: -march=native -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq
SVT-AV1 1.2
Encoder Mode: Preset 12 - Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
166.39
168.95
171.43
40
80
120
160
200
1. (CXX) g++ options: -march=native -mno-avx -mavx2 -mavx512f -mavx512bw -mavx512dq

nn cxl x

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



Geometric mean based upon tests: pts/mnn and pts/ncnn



Geometric mean based upon tests: pts/mnn and pts/ncnn

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 14:43.