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9900k-mnn

Intel Core i9-9900K testing with a EVGA 121-KS-E375 v1.0 (1.09 BIOS) and ASUS NVIDIA GeForce GTX 1080 Ti 11GB on Gentoo 2.7 via the Phoronix Test Suite.

Test Systems:

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Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASRock Z390M Pro4 (P4.20 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 16GB, Disk: 240GB Corsair Force MP510, Graphics: Intel UHD 630 3GB (1200MHz), Audio: Realtek ALC892, Monitor: G237HL, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc1daily20200819-generic (x86_64) 20200818, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.6 Mesa 20.0.4, OpenCL: OpenCL 2.1,

Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0xd6 - Thermald 1.9.1
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Vulnerable; SMT vulnerable + meltdown: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Vulnerable: __user pointer sanitization and usercopy barriers only; no swapgs barriers + spectre_v2: Vulnerable IBPB: disabled STIBP: disabled + srbds: Vulnerable + tsx_async_abort: Vulnerable

3900_debian_10

Processor: AMD Ryzen 9 3900 12-Core @ 3.10GHz (12 Cores / 24 Threads), Motherboard: Gigabyte B550 GAMING X V2 (F1 BIOS), Chipset: AMD Starship/Matisse, Memory: 64GB, Disk: Samsung SSD 970 EVO Plus 250GB + Samsung SSD 970 EVO 500GB + 500GB Western Digital WD5000AACS-0 + 500GB Samsung SSD 860 + 2000GB Western Digital WD20EARS-00M, Graphics: NVIDIA GeForce GTX 750 Ti 2GB (1019/2700MHz), Audio: NVIDIA GM107 HD Audio, Monitor: DELL P2421D, Network: Realtek RTL8111/8168/8411

OS: Debian 10, Kernel: 5.9.0-0.bpo.2-amd64 (x86_64), Display Server: X Server 1.20.4, Display Driver: NVIDIA 450.80.02, OpenGL: 4.6.0, Vulkan: 1.2.133, Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0x8701021
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + 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 AMD retpoline IBPB: conditional STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

9900K 50x50x47@1.232v 3900C15-2T

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: EVGA 121-KS-E375 v1.0 (1.09 BIOS), Chipset: Intel 8th/9th, Memory: 32GB, Disk: Samsung SSD 970 EVO 500GB + 256GB PLEXTOR PX-256M6 + 240GB KINGSTON SH103S3 + 2000GB Western Digital WD2003FZEX-0 + 2000GB Samsung SSD 860, Graphics: ASUS NVIDIA GeForce GTX 1080 Ti 11GB, Audio: NVIDIA GP102 HDMI Audio, Network: Intel I219-V

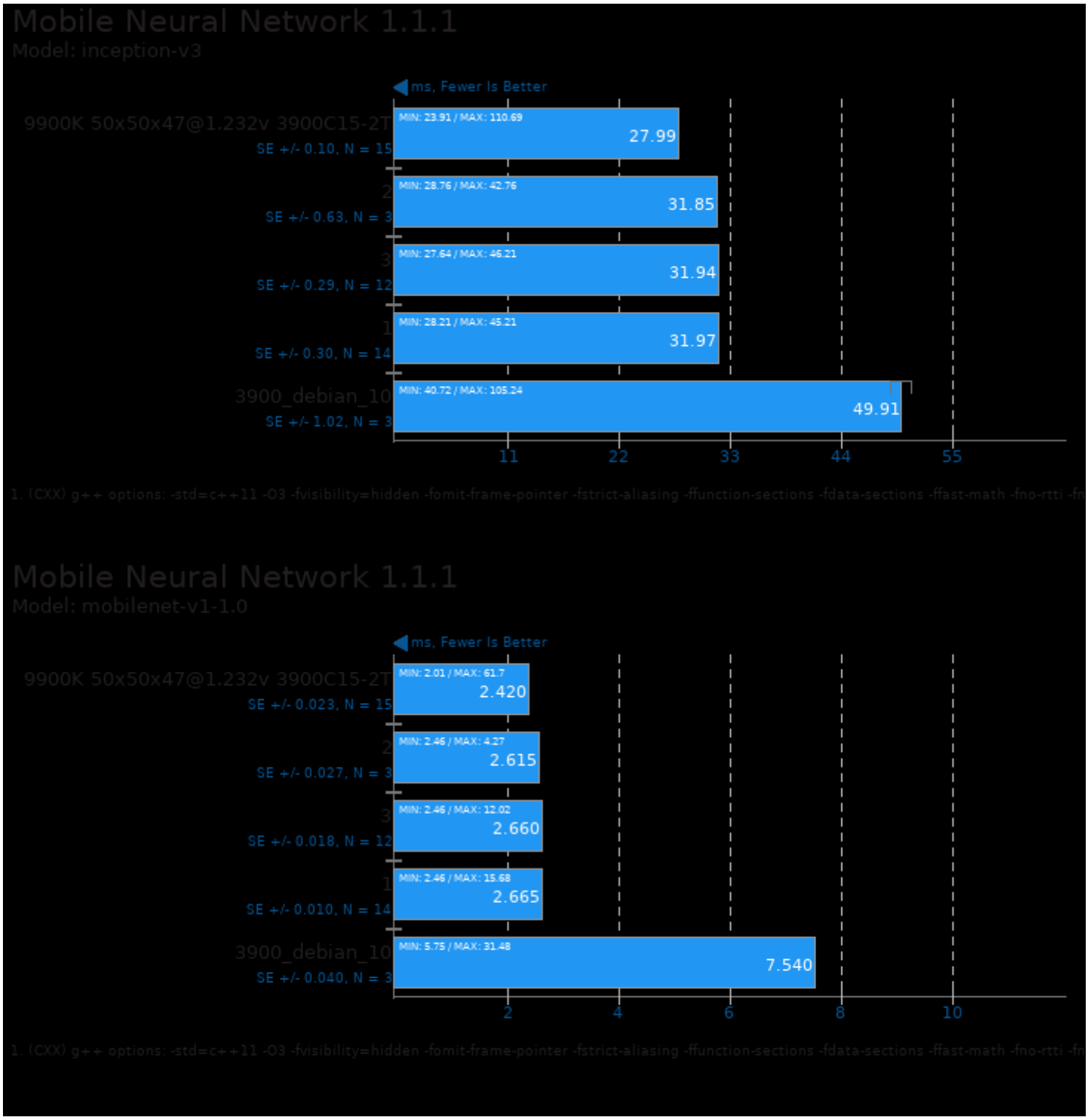
OS: Gentoo 2.7, Kernel: 5.9.13-zen1 (x86_64), Desktop: KDE Plasma, Display Server: X Server 1.20.10, Vulkan: 1.2.155, Compiler: GCC 10.2.0 + Clang 11.0.1 + LLVM 11.0.1 + CUDA 11.1, File-System: reiserfs

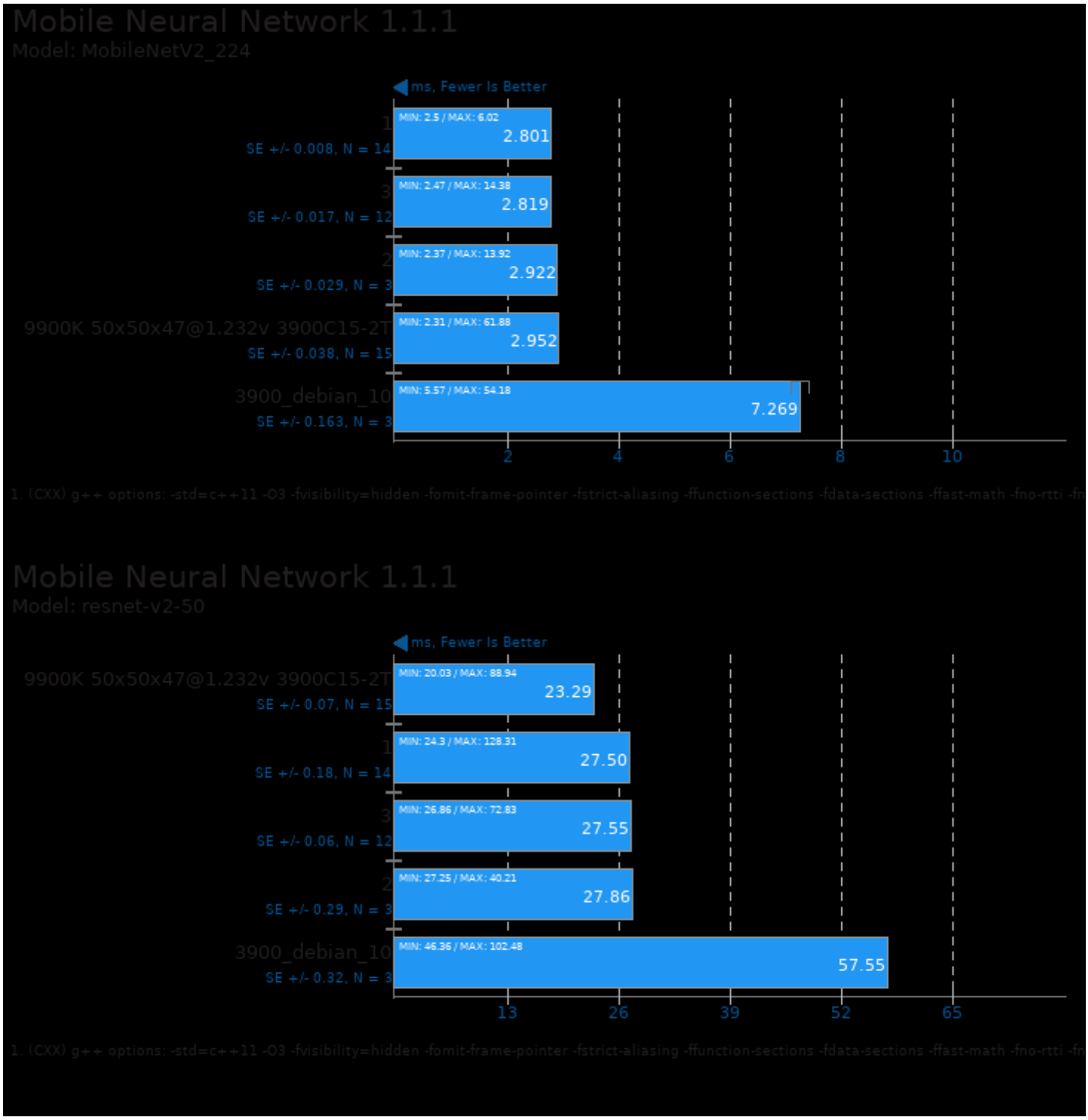
Compiler Notes: --bindir=/usr/x86_64-pc-linux-gnu/gcc-bin/10.2.0 --build=x86_64-pc-linux-gnu --datadir=/usr/share/gcc-data/x86_64-pc-linux-gnu/10.2.0 --disable-esp --disable-fixed-point --disable-isl-version-check --disable-libada --disable-libssp --disable-systemtap --disable-werror --enable-__cxa_atexit --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-languages=c,c++,fortran --enable-libgomp --enable-libstdcxx-time --enable-lto --enable-multilib --enable-nls --enable-obsolete --enable-secureplt --enable-shared --enable-targets=all --enable-threads=posix --enable-vtable-verify --host=x86_64-pc-linux-gnu --includedir=/usr/lib/gcc/x86_64-pc-linux-gnu/10.2.0/include --mandir=/usr/share/gcc-data/x86_64-pc-linux-gnu/10.2.0/man --with-isl --with-multilib-list=m32,m64 --with-python-dir=/share/gcc-data/x86_64-pc-linux-gnu/10.2.0/python --without-zstd
Processor Notes: Scaling Governor: intel_pstate performance - CPU Microcode: 0x98
Security Notes: itlb_multihit: KVM: Mitigation of VMX unsupported + l1tf: Not affected + mds: Vulnerable: Clear buffers attempted no microcode; SMT vulnerable + meltdown: Not affected + 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 retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Vulnerable: No microcode + tsx_async_abort: Vulnerable: Clear buffers attempted no microcode; SMT vulnerable

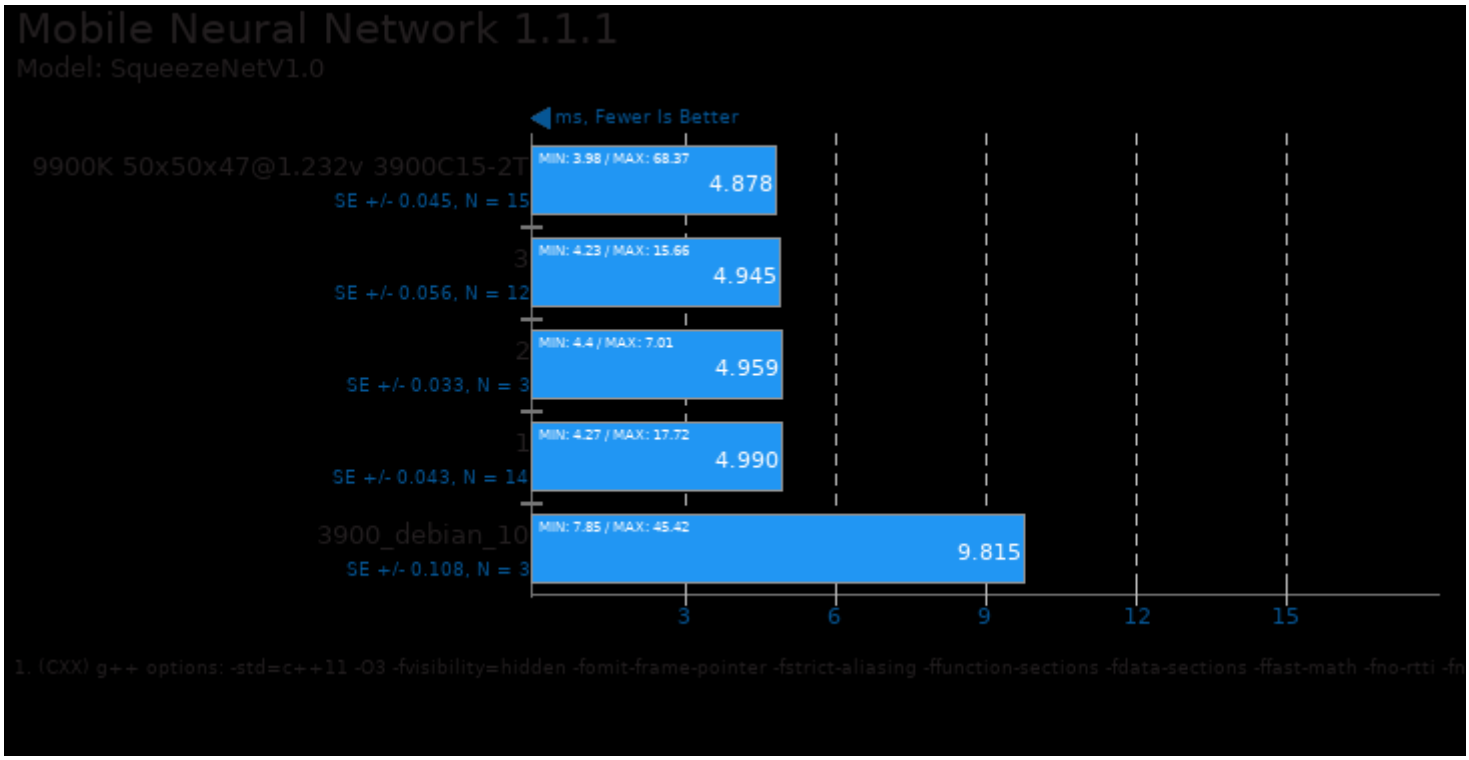
Phoronix Test Suite

9900k-mnn

	1	2	3	3900_debian_10	9900K 50x50x47@1.232v 3900C15-2T
Mobile Neural Network - inception-v3 (ms)	31.965	31.851	31.940	**49.907**	**27.994**
Normalized	87.58%	87.89%	87.65%	56.09%	100%
Standard Deviation	3.6%	3.4%	3.1%	3.5%	1.4%
Mobile Neural Network - mobilenet-v1-1.0 (ms)	2.665	2.615	2.660	**7.540**	**2.420**
Normalized	90.81%	92.54%	90.98%	32.1%	100%
Standard Deviation	1.4%	1.8%	2.3%	0.9%	3.7%
Mobile Neural Network - MobileNetV2_224 (ms)	**2.801**	2.922	2.819	**7.269**	2.952
Normalized	100%	95.86%	99.36%	38.53%	94.88%
Standard Deviation	1%	1.7%	2%	3.9%	5%
Mobile Neural Network - resnet-v2-50 (ms)	27.495	27.863	27.545	**57.553**	**23.289**
Normalized	84.7%	83.58%	84.55%	40.47%	100%
Standard Deviation	2.4%	1.8%	0.7%	1%	1.1%
Mobile Neural Network - SqueezeNetV1.0 (ms)	4.990	4.959	4.945	**9.815**	**4.878**
Normalized	97.76%	98.37%	98.65%	49.7%	100%
Standard Deviation	3.2%	1.2%	3.9%	1.9%	3.5%


Mobile Neural Network 1.1.1
Model: inception-v3
ms, Fewer Is Better
9900K 50x50x47@1.232v 3900C15-2T
SE +/- 0.10, N = 15
MIN: 23.91 / MAX: 110.69
27.99
SE +/- 0.63, N = 3
MIN: 28.76 / MAX: 42.76
31.85
SE +/- 0.29, N = 12
MIN: 27.64 / MAX: 46.21
31.94
SE +/- 0.30, N = 14
MIN: 28.21 / MAX: 45.21
31.97
3900_debian_10
SE +/- 1.02, N = 3
MIN: 40.72 / MAX: 105.24
49.91
11
22
33
44
55
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 1.1.1
Model: mobilenet-v1-1.0
ms, Fewer Is Better
9900K 50x50x47@1.232v 3900C15-2T
SE +/- 0.023, N = 15
MIN: 2.01 / MAX: 61.7
2.420
SE +/- 0.027, N = 3
MIN: 2.46 / MAX: 4.27
2.615
SE +/- 0.018, N = 12
MIN: 2.46 / MAX: 12.02
2.660
SE +/- 0.010, N = 14
MIN: 2.46 / MAX: 15.68
2.665
3900_debian_10
SE +/- 0.040, N = 3
MIN: 5.75 / MAX: 31.48
7.540
2
4
6
8
10
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 1.1.1
Model: MobileNetV2_224
ms, Fewer Is Better
MIN: 2.5 / MAX: 6.02
2.801
SE +/- 0.008, N = 14
MIN: 2.47 / MAX: 14.38
2.819
SE +/- 0.017, N = 12
MIN: 2.37 / MAX: 13.92
2.922
SE +/- 0.029, N = 3
9900K 50x50x47@1.232v 3900C15-2T
MIN: 2.31 / MAX: 61.88
2.952
SE +/- 0.038, N = 15
3900_debian_10
MIN: 5.57 / MAX: 54.18
7.269
SE +/- 0.163, N = 3
2
4
6
8
10
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 1.1.1
Model: resnet-v2-50
ms, Fewer Is Better
9900K 50x50x47@1.232v 3900C15-2T
MIN: 20.03 / MAX: 88.94
23.29
SE +/- 0.07, N = 15
MIN: 24.3 / MAX: 128.31
27.50
SE +/- 0.18, N = 14
MIN: 26.86 / MAX: 72.83
27.55
SE +/- 0.06, N = 12
MIN: 27.25 / MAX: 40.21
27.86
SE +/- 0.29, N = 3
3900_debian_10
MIN: 46.36 / MAX: 102.48
57.55
SE +/- 0.32, N = 3
13
26
39
52
65
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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