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ARMv8 Cortex-A57 testing with a NVIDIA Jetson Nano Developer Kit and NVIDIA TEGRA on Ubuntu 18.04 via the Phoronix Test Suite.

Test Systems:

NVIDIA TEGRA - ARMv8 Cortex-A57

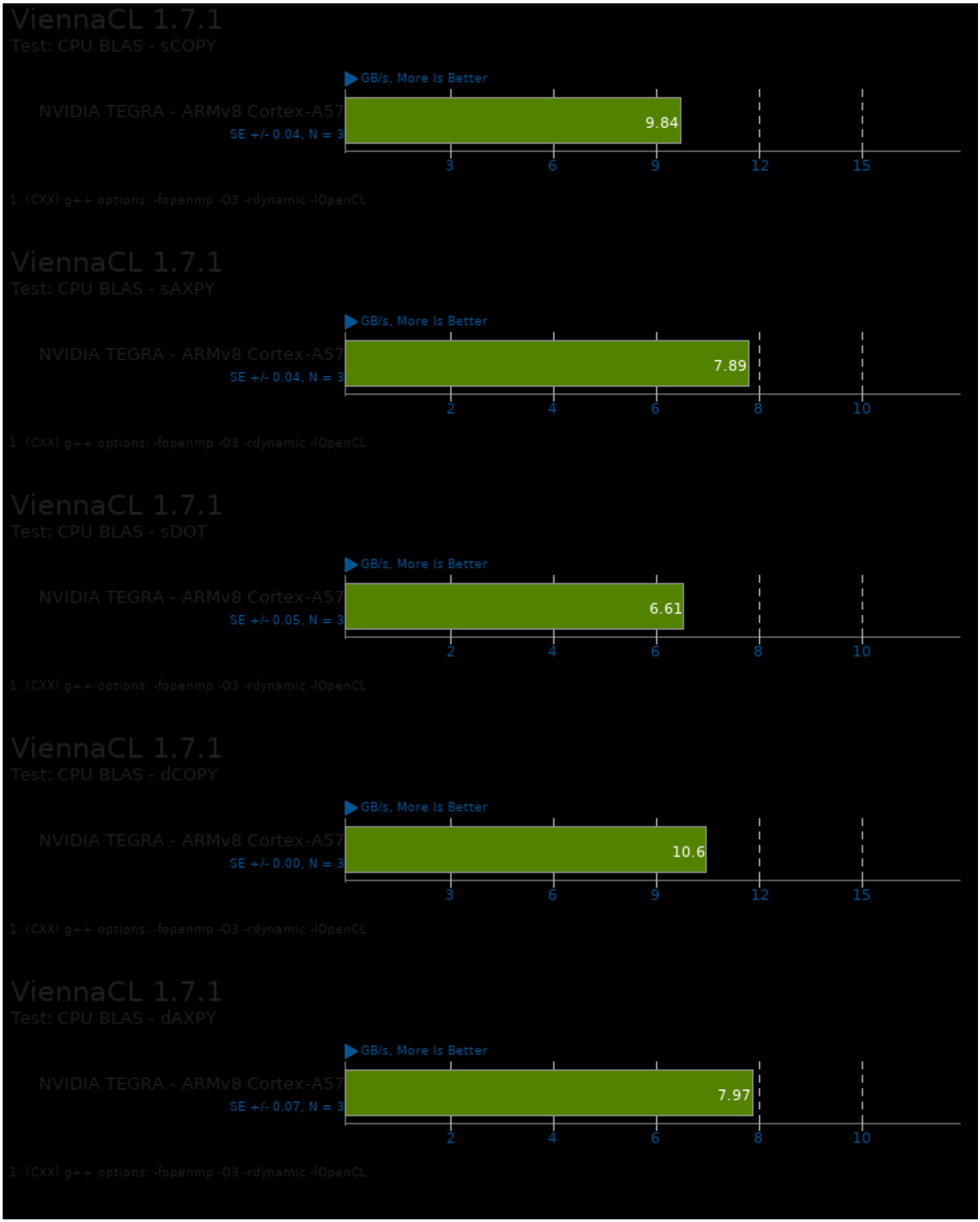
Processor: ARMv8 Cortex-A57 @ 1.48GHz (4 Cores), Motherboard: NVIDIA Jetson Nano Developer Kit, Memory: 4096MB, Disk: 64GB SC64G, Graphics: NVIDIA TEGRA, Network: Realtek RTL8111/8168/8411

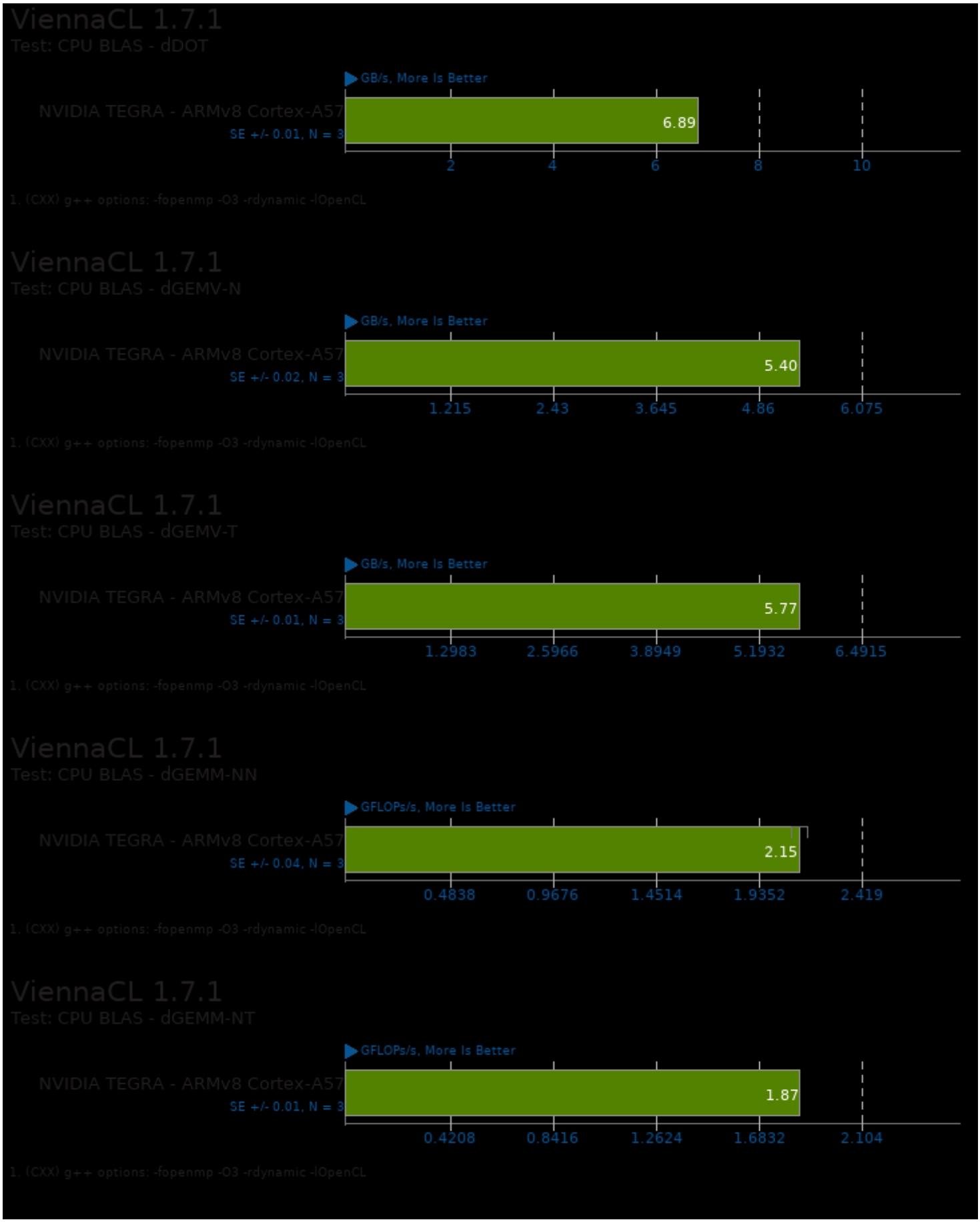
OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: GNOME Shell 3.28.4, Display Server: X Server 1.19.6, Compiler: GCC 7.5.0 + Clang 6.0.0-1ubuntu2 + CUDA 10.2, File-System: ext4, Screen Resolution: 3840x2400

Kernel Notes: Transparent Huge Pages: always
Compiler Notes: --build=aarch64-linux-gnu --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: tegra-cpufreq schedutil
Python Notes: Python 2.7.17 + Python 3.6.9

	NVIDIA TEGRA - ARMv8 Cortex-A57
ViennaCL - CPU BLAS - sCOPY (GB/s)	9.84
Standard Deviation	0.7%
ViennaCL - CPU BLAS - sAXPY (GB/s)	7.89
Standard Deviation	0.8%
ViennaCL - CPU BLAS - sDOT (GB/s)	6.61
Standard Deviation	1.4%
ViennaCL - CPU BLAS - dCOPY (GB/s)	10.6
Standard Deviation	0%
ViennaCL - CPU BLAS - dAXPY (GB/s)	7.97
Standard Deviation	1.5%
ViennaCL - CPU BLAS - dDOT (GB/s)	6.89
Standard Deviation	0.2%
ViennaCL - CPU BLAS - dGEMV-N (GB/s)	5.40
Standard Deviation	0.6%
ViennaCL - CPU BLAS - dGEMV-T (GB/s)	5.77
Standard Deviation	0.3%
ViennaCL - CPU BLAS - dGEMM-NN (GFLOPs/s)	2.15
Standard Deviation	3.2%
ViennaCL - CPU BLAS - dGEMM-NT (GFLOPs/s)	1.87
Standard Deviation	0.9%
ViennaCL - CPU BLAS - dGEMM-TN (GFLOPs/s)	2.47
Standard Deviation	0.2%
ViennaCL - CPU BLAS - dGEMM-TT (GFLOPs/s)	2.14
Standard Deviation	0.3%
NCNN - Vulkan GPU - mobilenet (ms)	111.09
Standard Deviation	0.2%
NCNN - Vulkan GPU-v2-v2 - mobilenet-v2 (ms)	32.15
Standard Deviation	0.2%
NCNN - Vulkan GPU-v3-v3 - mobilenet-v3 (ms)	29.22
Standard Deviation	0.3%
NCNN - Vulkan GPU - shufflenet-v2 (ms)	21.44
Standard Deviation	0.3%
NCNN - Vulkan GPU - mnasnet (ms)	30.70
Standard Deviation	0%
NCNN - Vulkan GPU - efficientnet-b0 (ms)	65.67
Standard Deviation	0.2%
NCNN - Vulkan GPU - blazeface (ms)	7.83
Standard Deviation	0.2%
NCNN - Vulkan GPU - googlenet (ms)	91.27
Standard Deviation	0.1%
NCNN - Vulkan GPU - vgg16 (ms)	444.93
Standard Deviation	0.1%
NCNN - Vulkan GPU - resnet18 (ms)	81.57
Standard Deviation	0.1%
NCNN - Vulkan GPU - alexnet (ms)	102.97
Standard Deviation	1.1%
NCNN - Vulkan GPU - resnet50 (ms)	198.84
Standard Deviation	0.3%
NCNN - Vulkan GPU - yolov4-tiny (ms)	154.03
Standard Deviation	0%
NCNN - Vulkan GPU - squeezenet_ssd (ms)	83.87

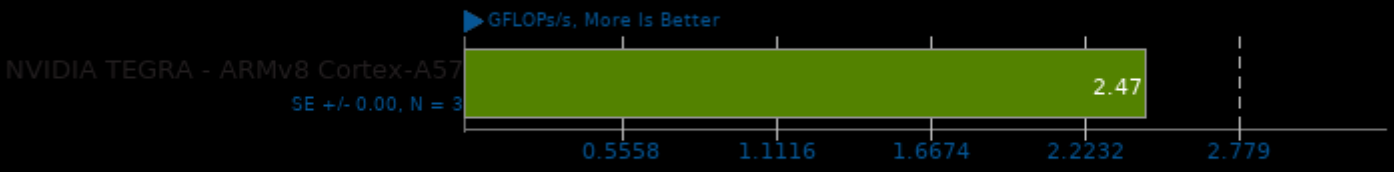
Standard Deviation	0.2%
NCNN - Vulkan GPU - regnety_400m (ms)	53.70
Standard Deviation	0.2%


ViennaCL 1.7.1
Test: CPU BLAS - sCOPY
GB/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.04, N = 3
9.84
3
6
9
12
15
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - sAXPY
GB/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.04, N = 3
7.89
2
4
6
8
10
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - sDOT
GB/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.05, N = 3
6.61
2
4
6
8
10
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dCOPY
GB/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.00, N = 3
10.6
3
6
9
12
15
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dAXPY
GB/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.07, N = 3
7.97
2
4
6
8
10
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: CPU BLAS - dDOT
GB/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.01, N = 3
6.89
2
4
6
8
10
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-N
GB/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.02, N = 3
5.40
1.215
2.43
3.645
4.86
6.075
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-T
GB/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.01, N = 3
5.77
1.2983
2.5966
3.8949
5.1932
6.4915
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-NN
GFLOPs/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.04, N = 3
2.15
0.4838
0.9676
1.4514
1.9352
2.419
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-NT
GFLOPs/s, More Is Better
NVIDIA TEGRA - ARMv8 Cortex-A57
SE +/- 0.01, N = 3
1.87
0.4208
0.8416
1.2624
1.6832
2.104
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

ViennaCL 1.7.1

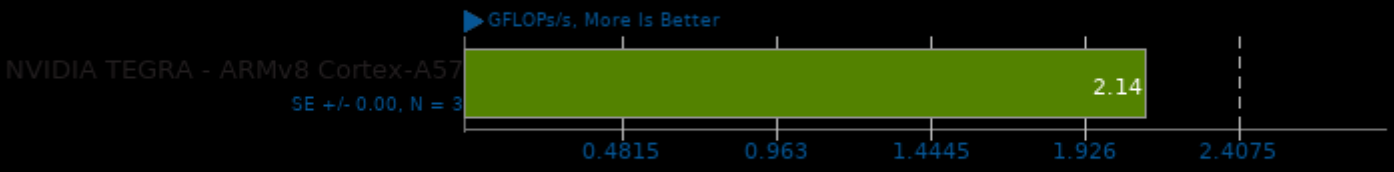
Test: CPU BLAS - dGEMM-TN



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

ViennaCL 1.7.1

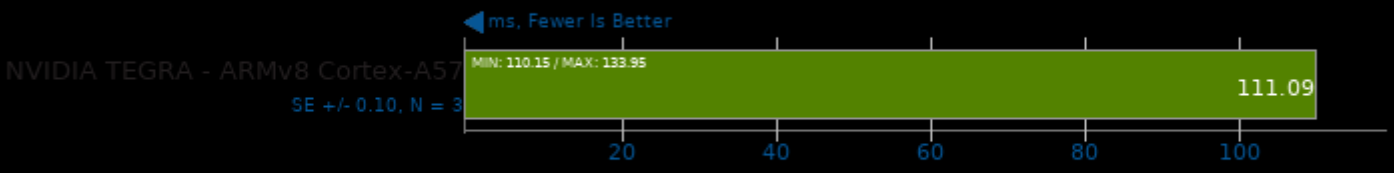
Test: CPU BLAS - dGEMM-TT



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

NCNN 20210525

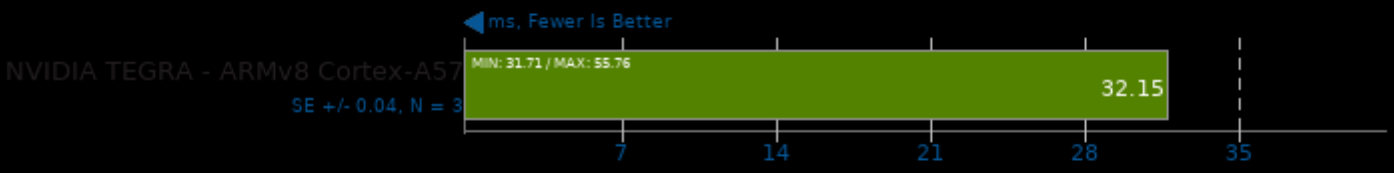
Target: Vulkan GPU - Model: mobilenet



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

NCNN 20210525

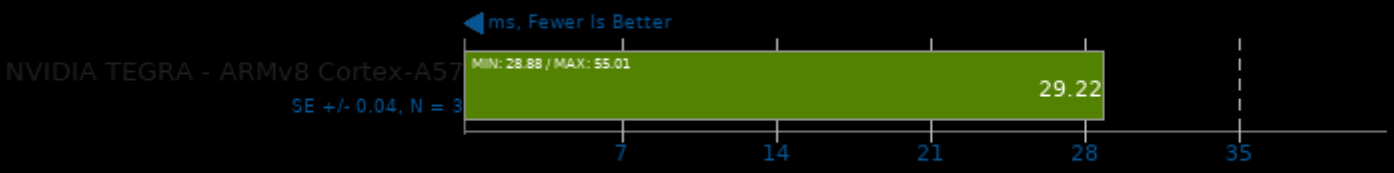
Target: Vulkan GPU-v2-v2 - Model: mobilenet-v2



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

NCNN 20210525

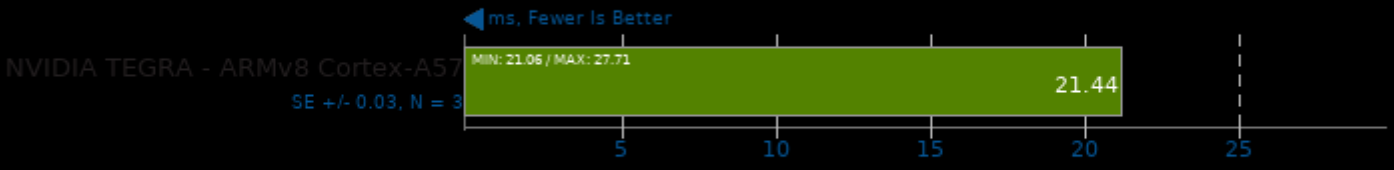
Target: Vulkan GPU-v3-v3 - Model: mobilenet-v3



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

NCNN 20210525

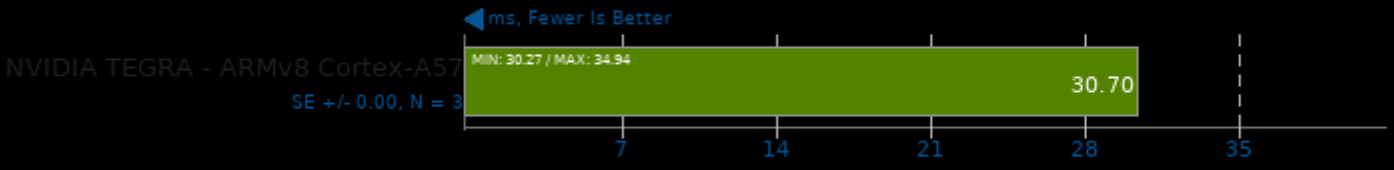
Target: Vulkan GPU - Model: shufflenet-v2



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

NCNN 20210525

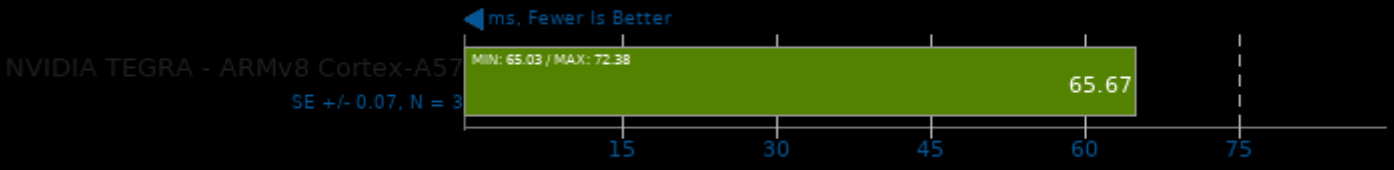
Target: Vulkan GPU - Model: mnasnet



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

NCNN 20210525

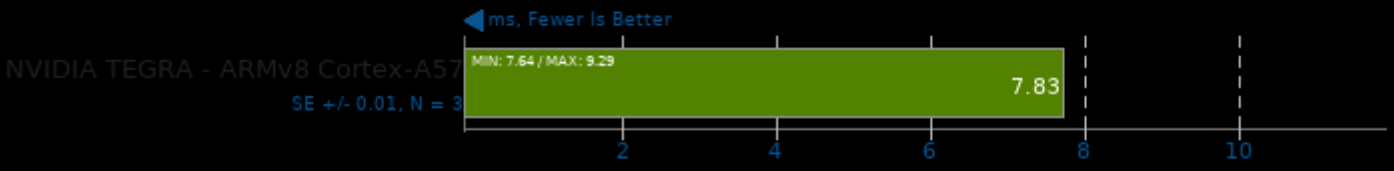
Target: Vulkan GPU - Model: efficientnet-b0



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

NCNN 20210525

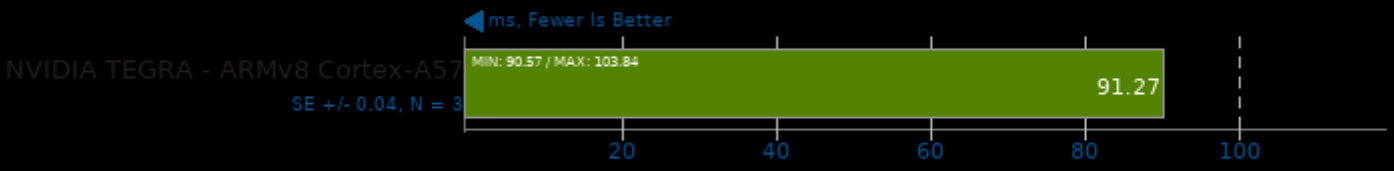
Target: Vulkan GPU - Model: blazeface



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

NCNN 20210525

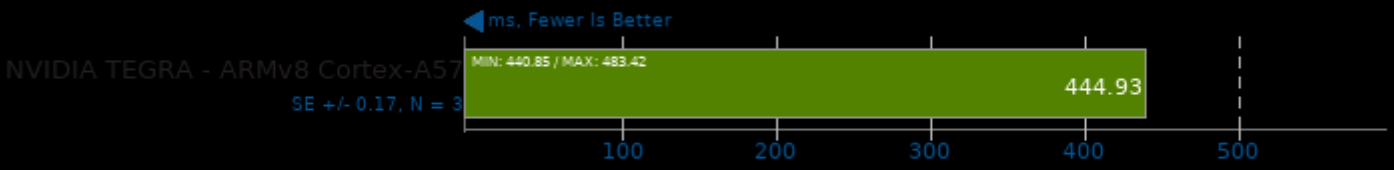
Target: Vulkan GPU - Model: googlenet



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

NCNN 20210525

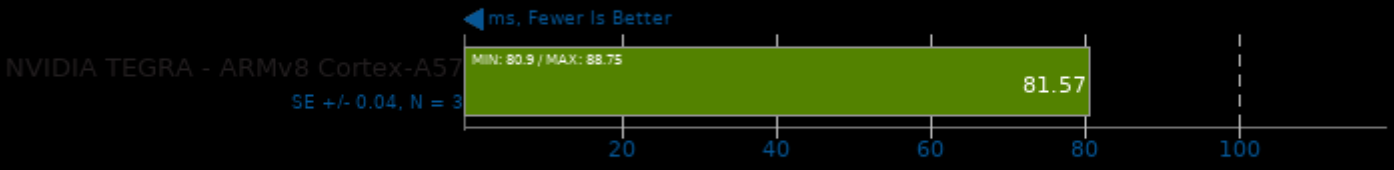
Target: Vulkan GPU - Model: vgg16



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

NCNN 20210525

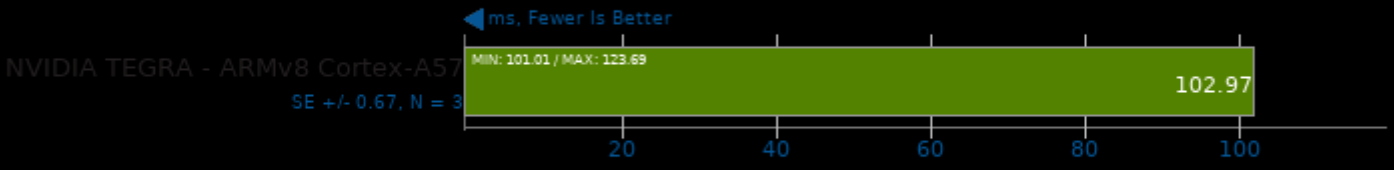
Target: Vulkan GPU - Model: resnet18



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

NCNN 20210525

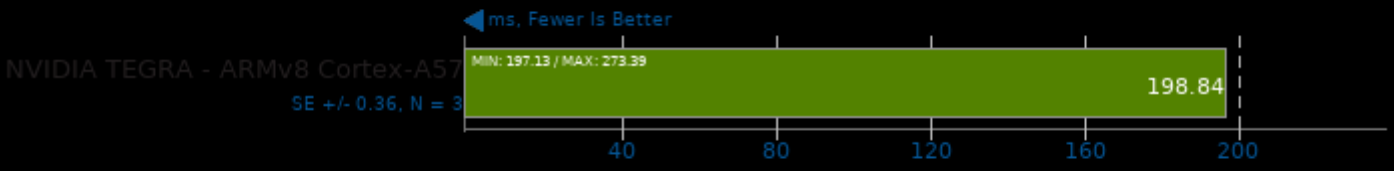
Target: Vulkan GPU - Model: alexnet



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

NCNN 20210525

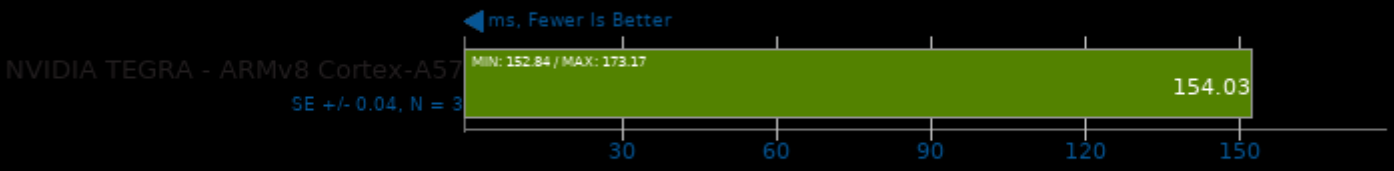
Target: Vulkan GPU - Model: resnet50



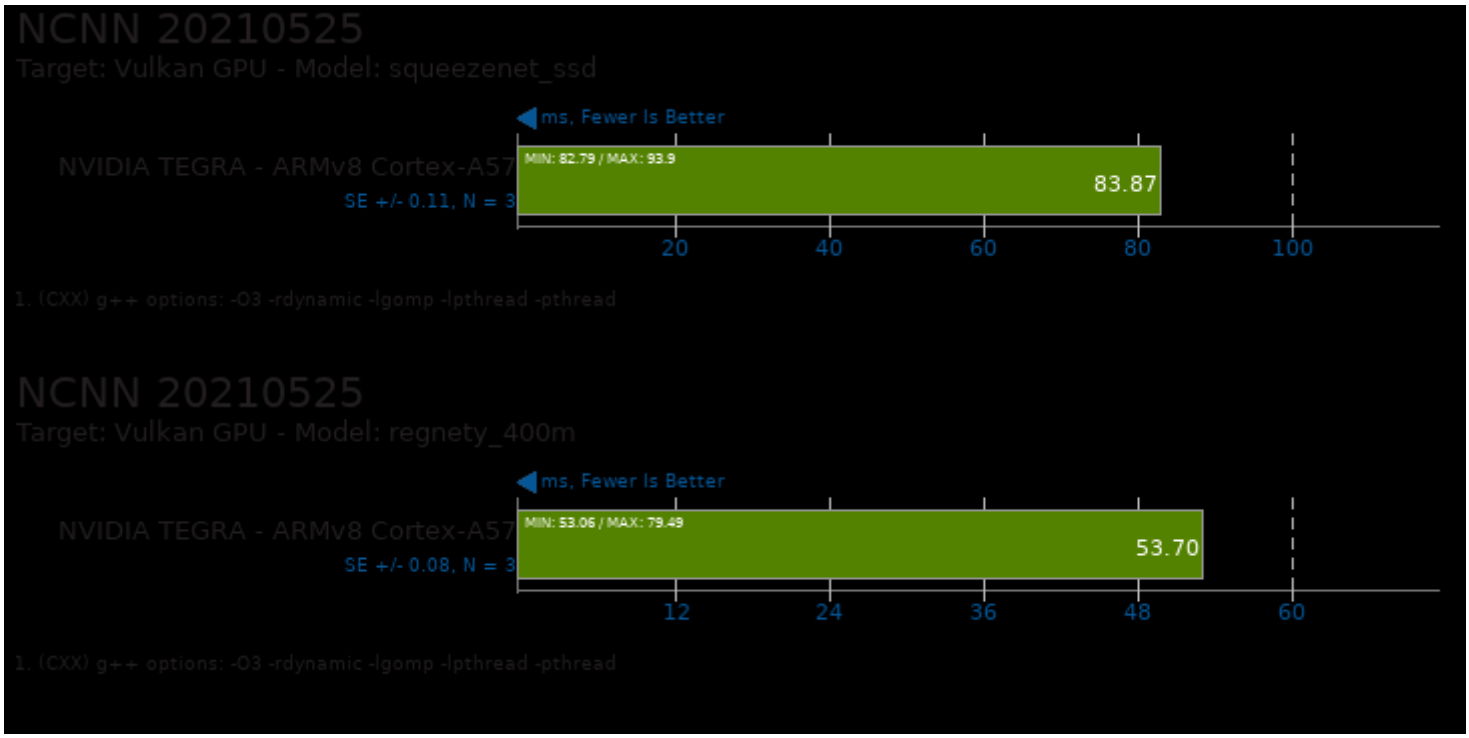
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread

NCNN 20210525

Target: Vulkan GPU - Model: yolov4-tiny



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



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