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LLVM Clang 3.2 Loop Vectorizer

Intel Core i7-3960X testing of the automatic loop vectorizer in LLVM 3.2 with the Clang compiler. Benchmarking by Michael Larabel for a future article on phoronix.com.

Automated Executive Summary

Default had the most wins, coming in first place for 90% of the tests.

Based on the geometric mean of all complete results, the fastest (Default) was 1.115x the speed of the slowest (Loop Vectorization).

Test Systems:

Default

Loop Vectorization

Processor: Intel Core i7-3960X @ 3.30GHz (12 Cores), Motherboard: Intel DX79SI, Chipset: Intel Xeon E5/Core,

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Memory: 8192MB, Disk: 64GB OCZ VERTEX, Graphics: AMD Radeon HD 4650 512MB, Audio: Realtek ALC892, Monitor: DELL S2409W, Network: Intel 82579LM Gigabit Connection

OS: Ubuntu 12.10, Kernel: 3.5.0-17-generic (x86_64), Desktop: Unity 6.8.0, Display Server: X Server 1.13.0, Display Driver: radeon 6.99.99, OpenGL: 2.1 Mesa 9.0 Gallium 0.4, Compiler: Clang 3.2 (SVN 166775) + LLVM 3.2svn, File-System: ext4, Screen Resolution: 1920x1080

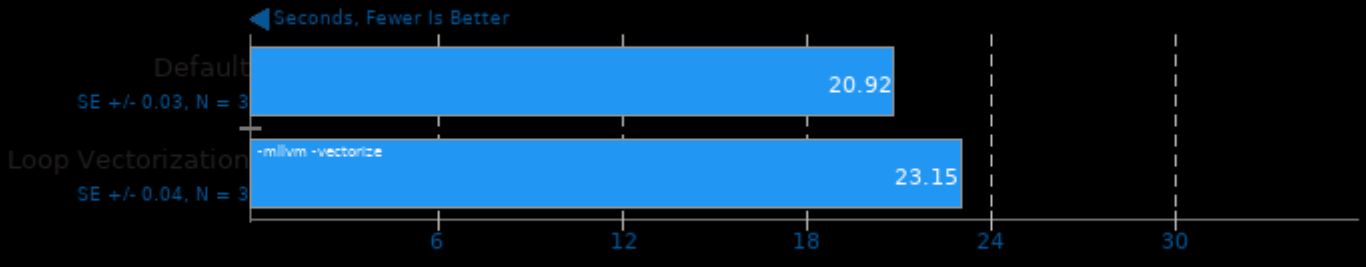
Compiler Notes: Optimized build; Built Oct 26 2012 (10:29:50); Default target: x86_64-unknown-linux-gnu; Host CPU: corei7-avx
Processor Notes: Scaling Governor: ondemand
System Notes: Compiz was running on this system.

	Default	Loop Vectorization
C-Ray - Total Time (sec)	**20.92**	**23.15**
Normalized	100%	90.37%
Standard Deviation	0.2%	0.3%
GraphicsMagick - Blur (Iterations/min)	**82**	**73**
Normalized	100%	89.02%
Standard Deviation	0%	0%
GraphicsMagick - Sharpen (Iterations/min)	31	31
Standard Deviation	0%	0%
GraphicsMagick - Resizing (Iterations/min)	**89**	**84**
Normalized	100%	94.38%
Standard Deviation	0%	0%
GraphicsMagick - HWB Color Space (Iterations/min)	**123**	**122**
Normalized	100%	99.19%
Standard Deviation	0%	0.5%
GraphicsMagick - L.A.T (Iterations/min)	**44**	**20**
Normalized	100%	45.45%
Standard Deviation	0%	0%
Himeno Benchmark - P.P.S (MFLOPS)	**1595**	**1555**
Normalized	100%	97.45%
Standard Deviation	0.3%	0.8%
PostgreSQL pgbench - T.B.T.P.S (TPS)	**324.77**	**336.65**
Normalized	96.47%	100%
Standard Deviation	0.3%	2%
Smallpt - G.I.R.1.S (sec)	**153**	**157**
Normalized	100%	97.45%
Standard Deviation	0.4%	0.4%
Timed HMMer Search - P.D.S (sec)	**15.35**	**15.37**
Normalized	100%	99.87%
Standard Deviation	0.6%	0.2%

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C-Ray 1.1

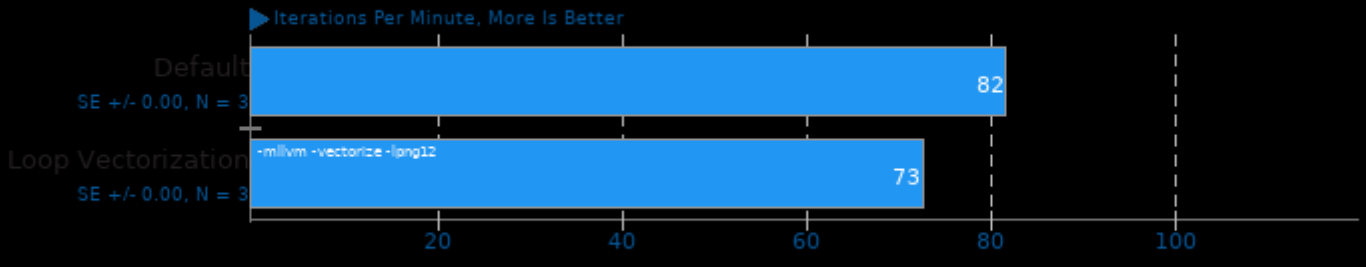
Total Time



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

GraphicsMagick 1.3.16

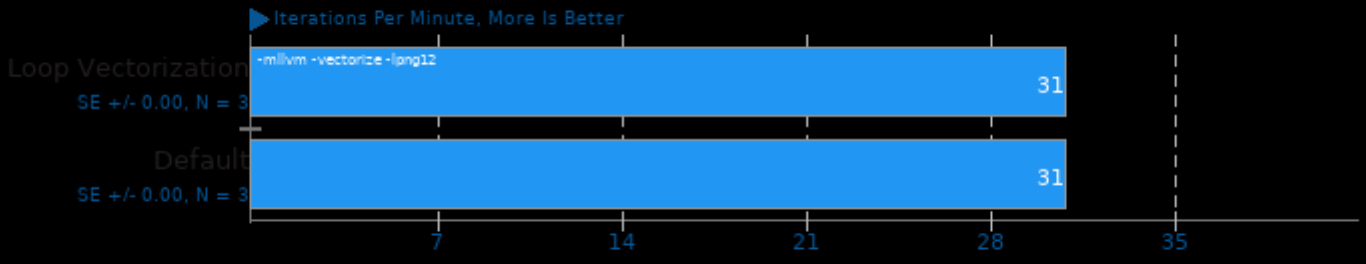
Operation: Blur



1. (CC) gcc options: -O3 -march=native -pthread -lXext -lX11 -lz -lm -lpthread

GraphicsMagick 1.3.16

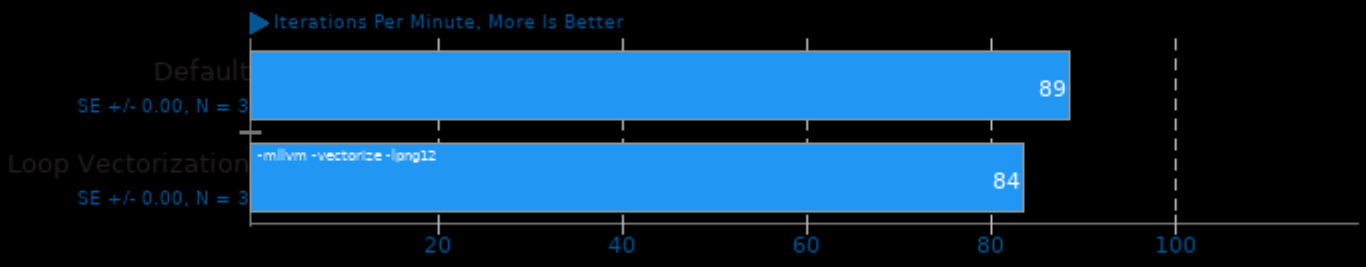
Operation: Sharpen



1. (CC) gcc options: -O3 -march=native -pthread -lXext -lX11 -lz -lm -lpthread

GraphicsMagick 1.3.16

Operation: Resizing

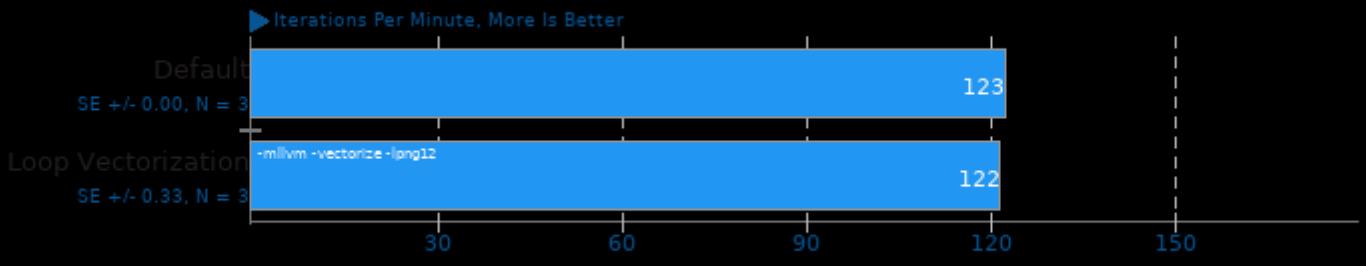


1. (CC) gcc options: -O3 -march=native -pthread -lXext -lX11 -lz -lm -lpthread

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GraphicsMagick 1.3.16

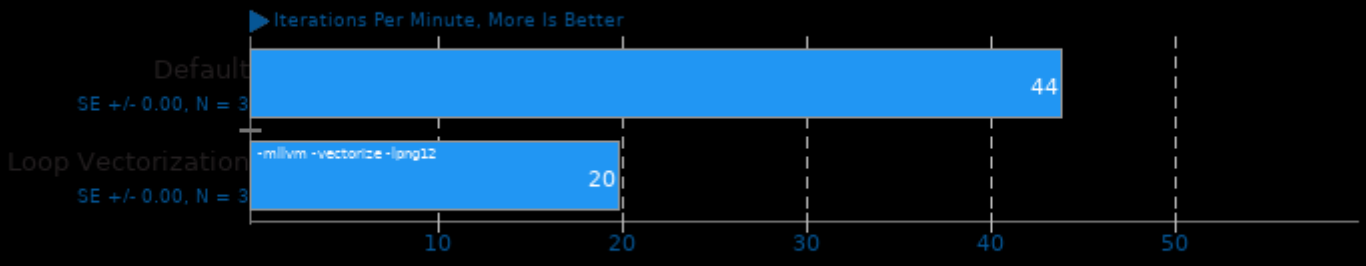
Operation: HWB Color Space



1. (CC) gcc options: -O3 -march=native -pthread -lXext -lX11 -lz -lm -lpthread

GraphicsMagick 1.3.16

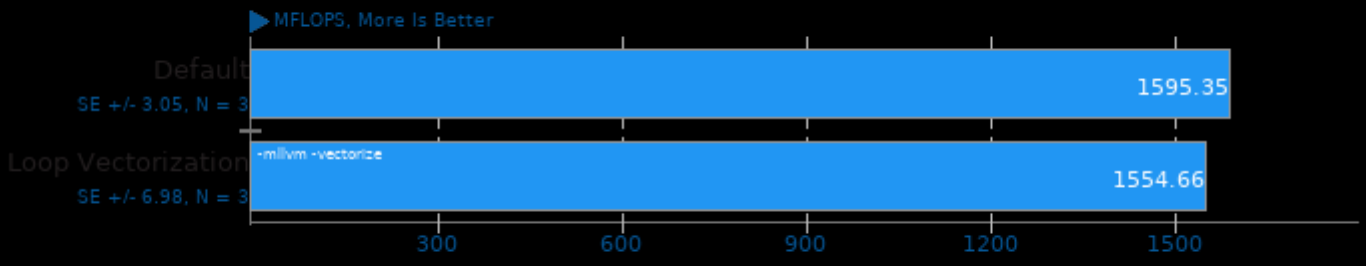
Operation: Local Adaptive Thresholding



1. (CC) gcc options: -O3 -march=native -pthread -lXext -lX11 -lz -lm -lpthread

Himeno Benchmark 3.0

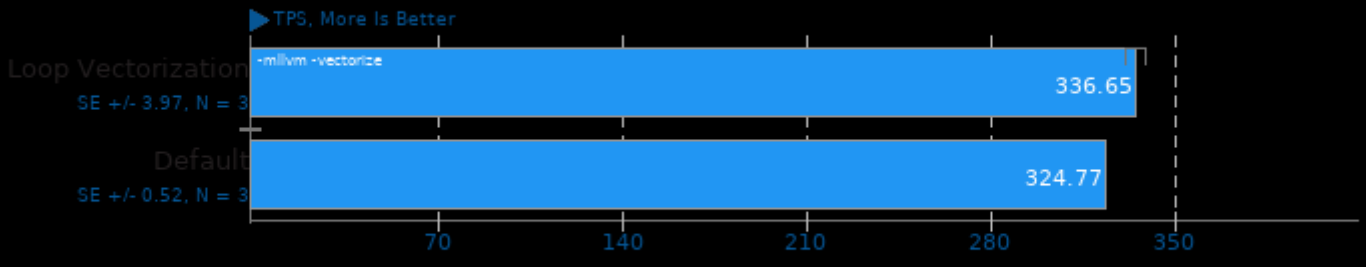
Poisson Pressure Solver



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

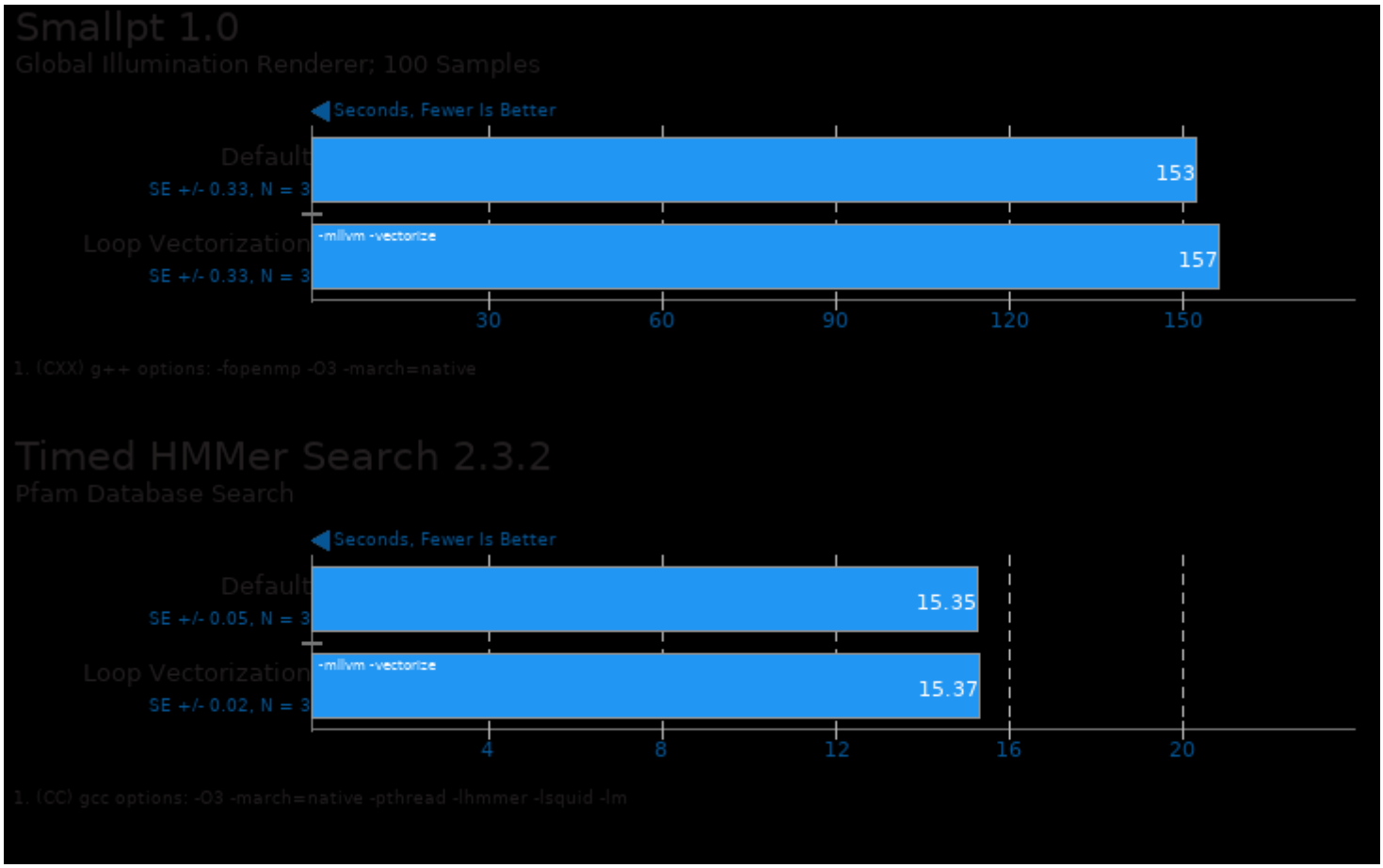
PostgreSQL pgbench 8.4.11

TPC-B Transactions Per Second



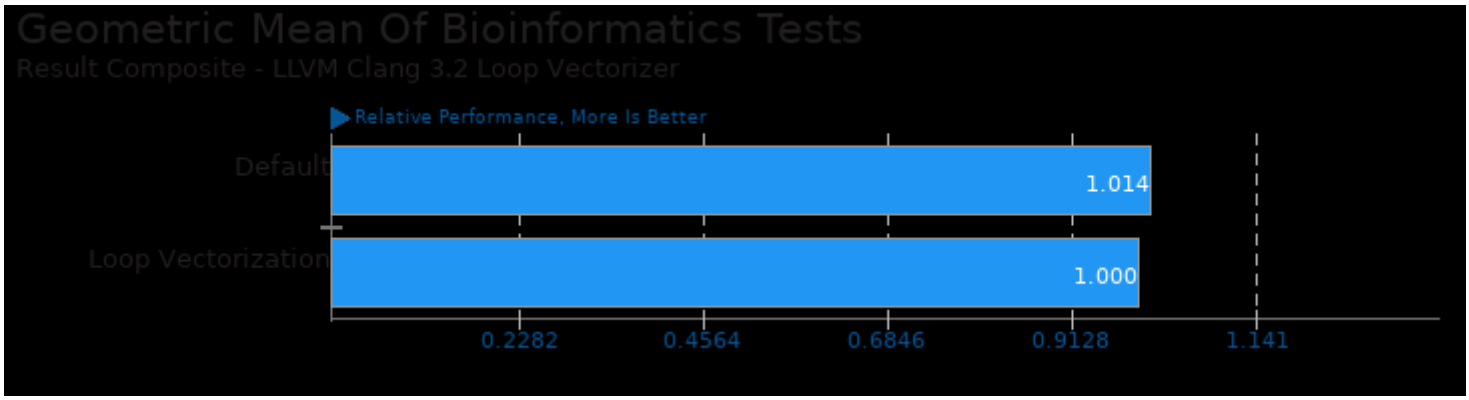
1. (CC) gcc options: -O3 -march=native -fno-strict-aliasing -fwrapv -lpgport -lpq -lcrypt -ldl -lm

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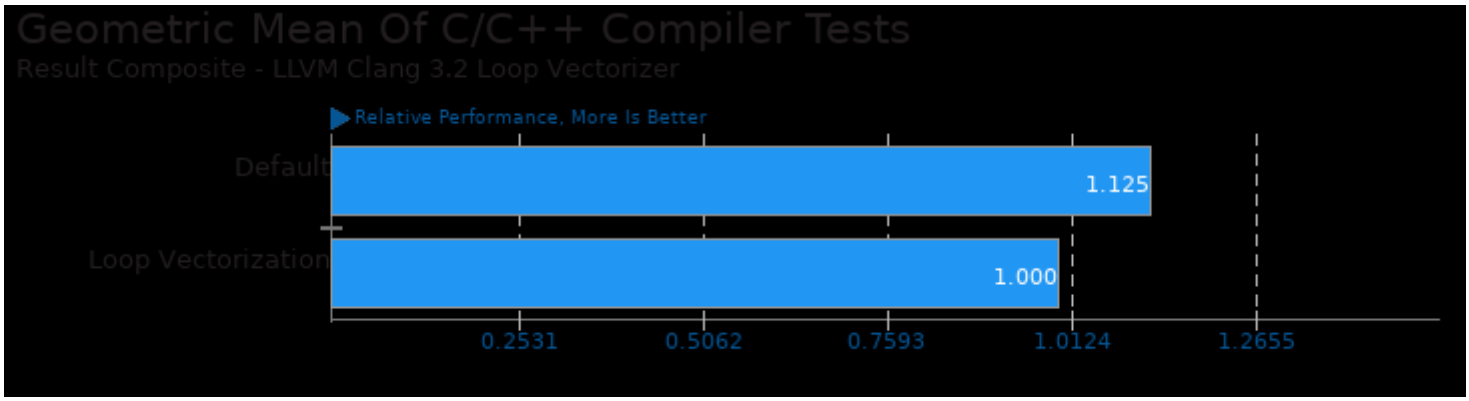


LLVM Clang 3.2 Loop Vectorizer

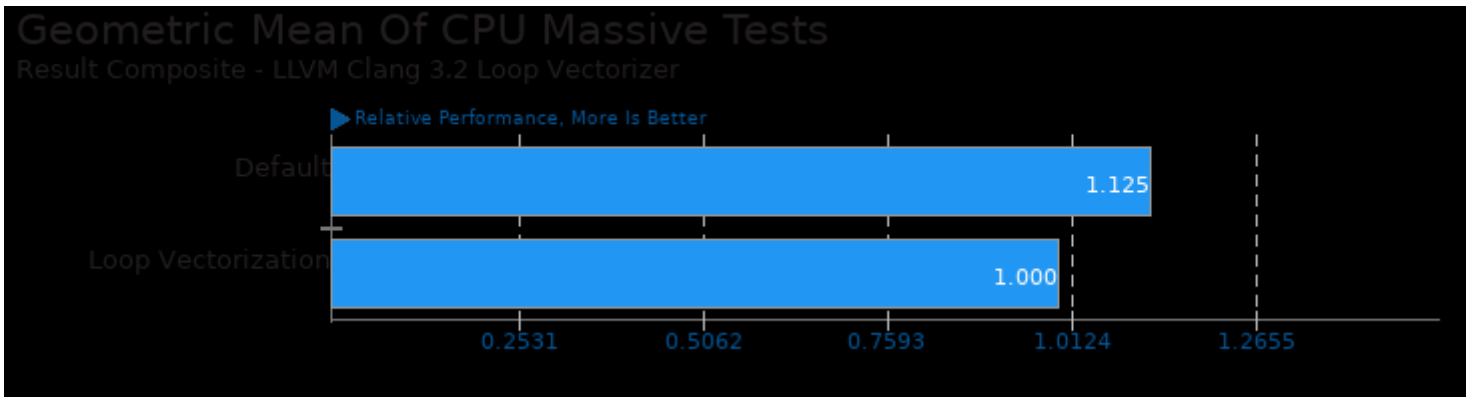
These geometric means are based upon test groupings / test suites for this result file.



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

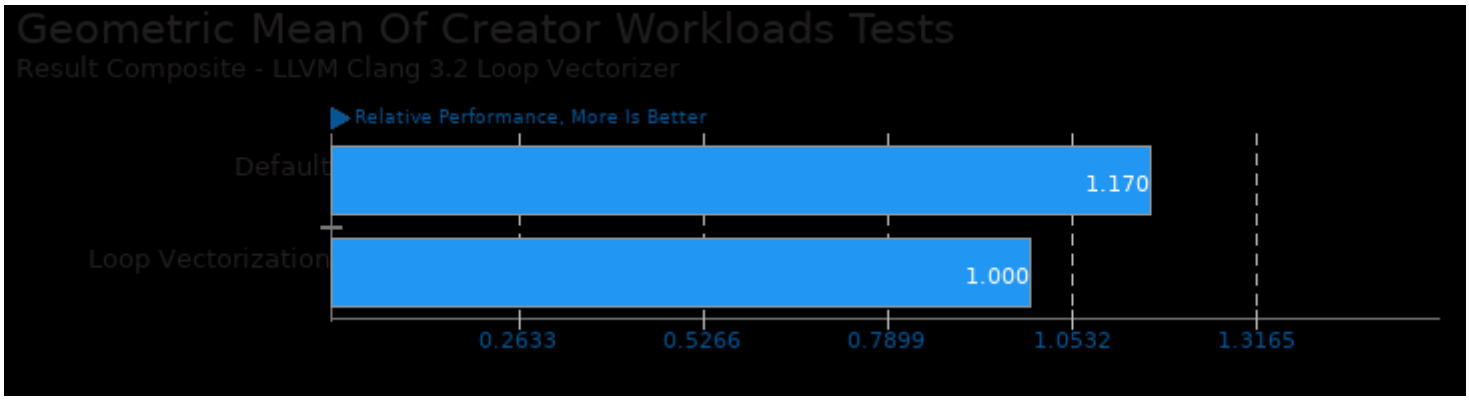


Geometric mean based upon tests: pts/graphics-magick, pts/himeno, pts/hmmer, pts/c-ray and pts/pgbench

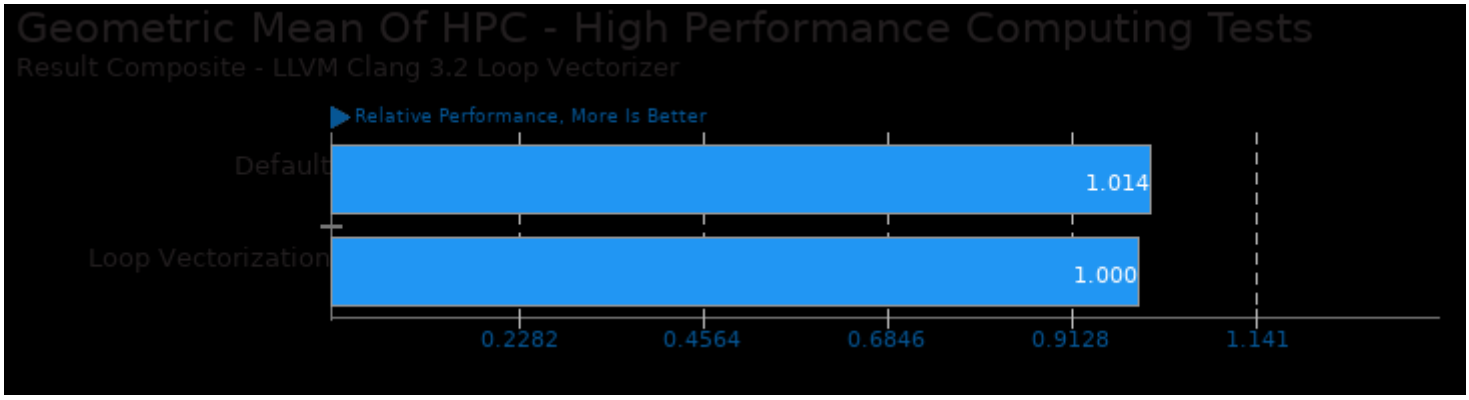


Geometric mean based upon tests: pts/c-ray, pts/graphics-magick, pts/himeno, pts/hmmer and pts/pgbench

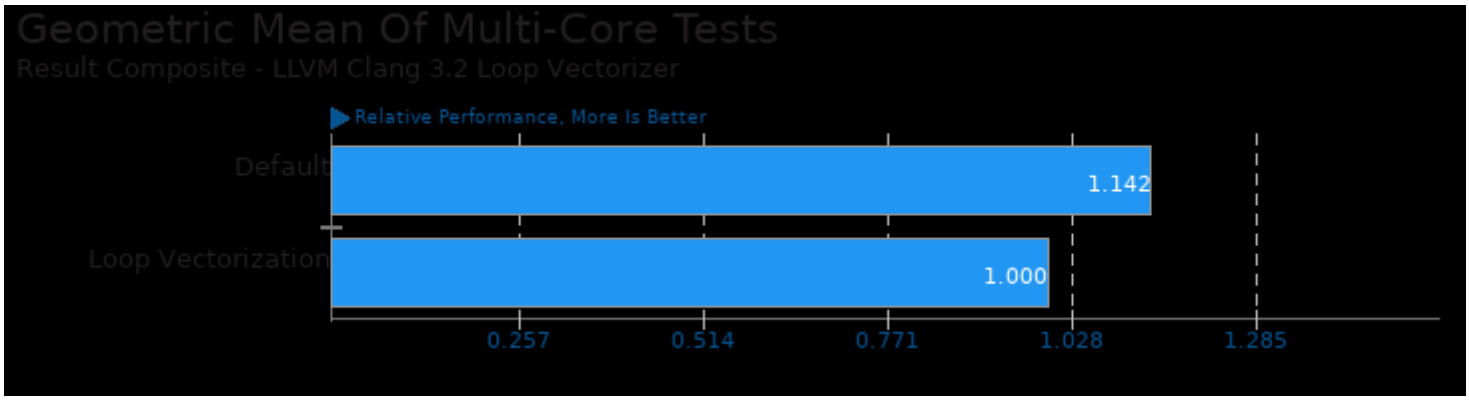
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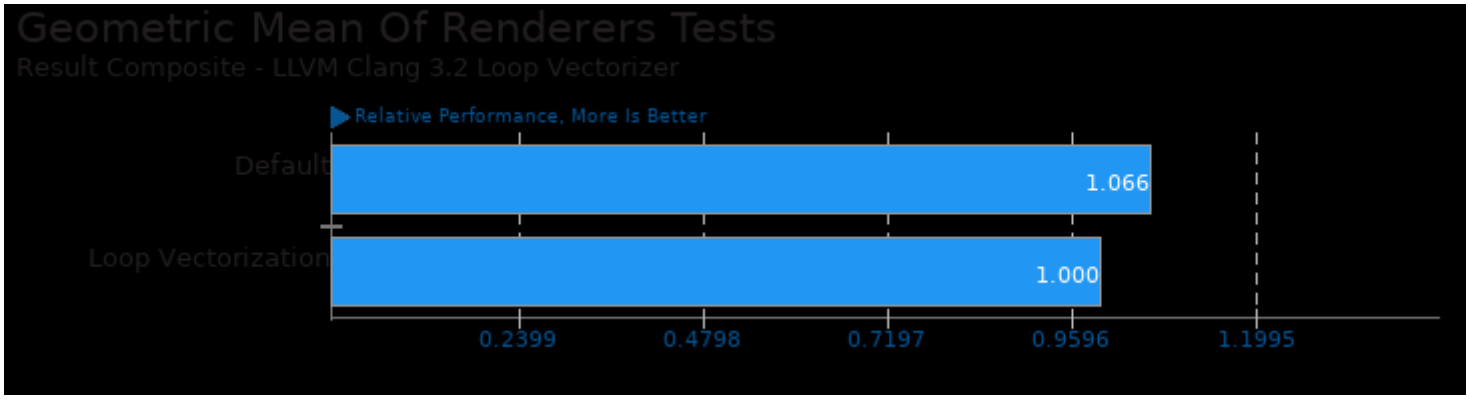
Geometric mean based upon tests: pts/c-ray, pts/smallpt and pts/graphics-magick



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

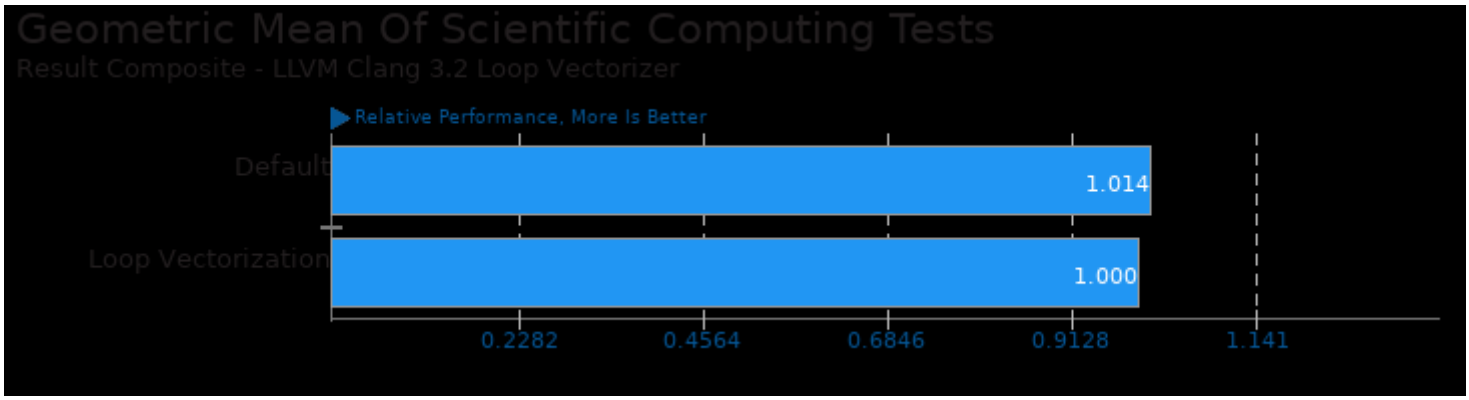


Geometric mean based upon tests: pts/c-ray, pts/smallpt, pts/graphics-magick and pts/pgbench

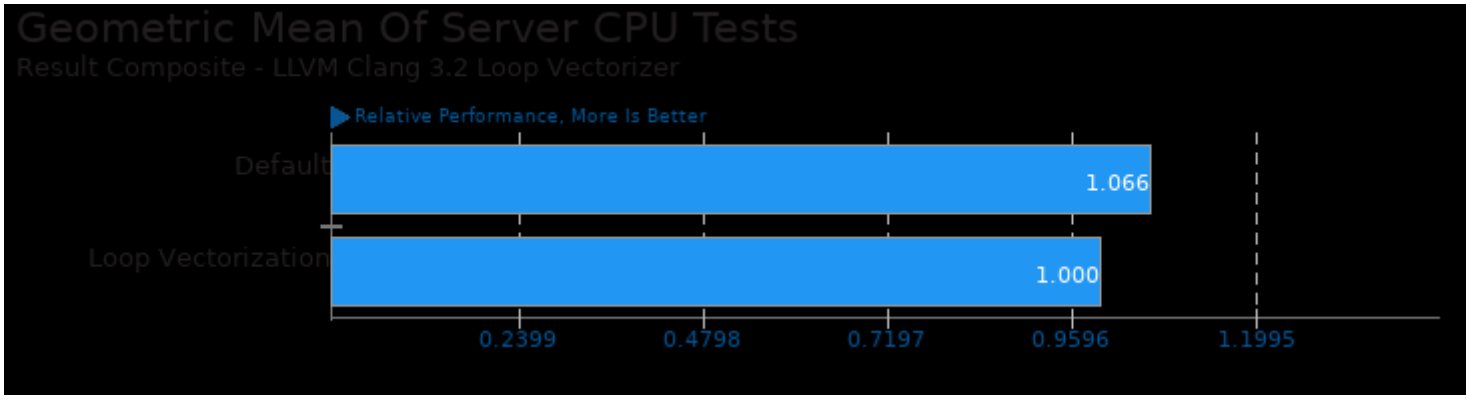


Geometric mean based upon tests: pts/c-ray and pts/smallpt

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



Geometric mean based upon tests: pts/himeno and pts/c-ray

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 02:54.