15×15 Stencil Computation Performance Analysis

Execution Time Comparison

Intel Xeon Platinum 8358
Apple M4 (SME)

Execution Time (µs)

Baseline: 953.0 / 804.1
im2row: 936.2 / 457.7
Stencil2Row: 1860.8 / 826.5
Stencil2Row SIMD/SME: 117.2 / 15.4
Stencil2Row OpenMP/SME-Tiles: 61.5 / 8.7

Speedup Factor Analysis

Intel Xeon Platinum 8358
Apple M4 (SME)
Baseline (1.0×)

Speedup Factor (×)

Baseline: 1.0× / 1.0×
im2row: 1.0× / 1.8×
Stencil2Row: 0.5× / 1.0×
Stencil2Row SIMD/SME: 8.1× / 52.2×
Stencil2Row OpenMP/SME-Tiles: 15.5× / 91.9×