create the future

Compiler A64FX – Your Path You Must Decide!

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Performance portability (x86→A64FX) not easy to achieve

Testing >100 Kernels and HPC Workloads on Fugaku

Time-to-Solution [in s] (FJtrad) and Relative Performance Gain (others) Three compilers and runtime Micro Kernels (all with [1|12]) 0.001 -0.961 -0.964 -0.985-0.879 Time-to-Solution [in s] (FJtrad) and Relative Performance Gain (others) -0.196-0.958five variations PolyBench (all with [1|1]) -0.016-0.797correlation [C] -0.406-0.668 0.990 0.005 2.857 0.389 0.606 0.991 (2x Fujitsu, -0.003-0.6340.092 1.169 7.152 1.408 0.076 0.025 0.008 0.004 -0.020 -0.062 1.931 -0.053 12.491 0.011 0.378 0.315 -0.022 -0.833 2x LLVM, Time-to-Solution [in s] (FJtrad) and Relative Performance Gain (others) 0.169 0.231 0.377 1.350 -0.0051.065 0.977 15.296 -0.035 -0.6880.001 [48]1 -0.023 [48]1] 0.966 17.264 1.197 -0.008 HPCG [C++ 0.528 [48]1] 0.031 [48]1] -0.116 [48]1 -0.191 [48]1 -0.518 [48]1 1.480 2.847 1.498 & GNU) 1.676 [1|36] -0.004 [1]36 -0.004run error -0.071 2.046 0.020 0.005 1303.331 1.499 1.587 1.485 -0.638-0.581 0.058 [8]6 0.206 [32]1 -0.854 -0.192 -0.852 -0.041run error Time-to-Solution [in s] (FJtrad) and Relative Performance Gain (others) -0.579 -0.577 -0.781 0.129 run error 0.077 0.522 0.383 0.043 [48]1] 0.010 0.024 [48]1] 0.113 [48]1] -0.292-0.534-0.375 -0.008 -0.416144 654 -0.656 -0.637-0.5710.127 0.021 -0.304 [48]1] -0.014-0.145-0.043 153.212 0.025 0.269 0.003 [48]1 -0.484 [48]1] 227.200 -0.741 0.045 [32] -0.840 -0.844 0.145 0.063 [32]1] LLVM+Polly 0.078 0.057 Time-to-Solution (in s) (FJtrad) and Relative Performance Gain (others) 0.388 0.818 -0.300 -0.421 0.362 -0.541 -0.139 [16]3 -0.486 0.543 -0.334 [48]1] 0.011 [1|48] 0.014 [10|4] -0.446 [1|48] -0.123 [1|48] 0.061 [12|4] 0.003 [24|2] Across all 108 BMs: median 0.007 [1]48] -0.322 [1|32] LLVM+Pollv 0.155 [1|48] -0.426 (1|36) -0.446 (1|48) -0.864 [1|32] -0.123 [1|48 0.002 [1|32] -0.004 [1|32] runtime improvement of 16% is -0.013 [1]4 -0.004 [114 possible (by selecting right compiler)

+1.0

Relative Performance Gain