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Optimization Report

Intel(R) Advisor can now assist with vectorization and show optimization
  report messages with your source code.
See "https://software.intel.com/en-us/intel-advisor-xe" for details.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 18.0.3.222 Build 20180410
Compiler options: -std=c99 -O2 -Wall -W -Werror -restrict -march=core-avx2 -qopt-report=5 -qopt-report-
phase=vec -o mmvec

Begin optimization report for: main()
    Report from: Vector optimizations [vec]

LOOP BEGIN at mm.c(110,5) inlined into mm.c(207,6)
   remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
   LOOP BEGIN at mm.c(112,9) inlined into mm.c(207,6)
      remark #15319: loop was not vectorized: novector directive used
   LOOP END
LOOP END

LOOP BEGIN at mm.c(118,5) inlined into mm.c(207,6)
   remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
   LOOP BEGIN at mm.c(120,9) inlined into mm.c(207,6)
      remark #15319: loop was not vectorized: novector directive used
   LOOP END
LOOP END

LOOP BEGIN at mm.c(142,5) inlined into mm.c(209,6)
   remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
   LOOP BEGIN at mm.c(144,8) inlined into mm.c(209,6)
      remark #15319: loop was not vectorized: novector directive used
   LOOP END
LOOP END

LOOP BEGIN at mm.c(149,5) inlined into mm.c(209,6)
   remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
   LOOP BEGIN at mm.c(151,8) inlined into mm.c(209,6)
      remark #15319: loop was not vectorized: novector directive used
   LOOP END
LOOP END

LOOP BEGIN at mm.c(189,5) inlined into mm.c(212,5)
   remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
   LOOP BEGIN at mm.c(191,8) inlined into mm.c(212,5)
      remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
      LOOP BEGIN at mm.c(191,8) inlined into mm.c(212,5)
         remark #15319: loop was not vectorized: novector directive used
      LOOP END
      LOOP BEGIN at mm.c(191,8) inlined into mm.c(212,5)
      <Remainder>
      LOOP END
   LOOP END
LOOP END
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LOOP BEGIN at mm.c(53,4) inlined into mm.c(213,5)
  remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
  LOOP BEGIN at mm.c(55,7) inlined into mm.c(213,5)
    remark #15319: loop was not vectorized: novector directive used
  LOOP END
  LOOP BEGIN at mm.c(55,7) inlined into mm.c(213,5)
  <Remainder>
  LOOP END
LOOP END

LOOP BEGIN at mm.c(83,5) inlined into mm.c(213,5)
  remark #15542: loop was not vectorized: inner loop was already vectorized
  LOOP BEGIN at mm.c(84,8) inlined into mm.c(213,5)
    remark #15542: loop was not vectorized: inner loop was already vectorized
    LOOP BEGIN at mm.c(86,9) inlined into mm.c(213,5)
      remark #15388: vectorization support: reference matrix_1[m][n] has aligned access   [ mm.c(87,36) ]
      remark #15388: vectorization support: reference t_matrix[l][n] has aligned access   [ mm.c(87,53) ]
      remark #15305: vectorization support: vector length 8
      remark #15399: vectorization support: unroll factor set to 2
      remark #15300: LOOP WAS VECTORIZED
      remark #15448: unmasked aligned unit stride loads: 2
      remark #15475: --- begin vector cost summary ---
      remark #15476: scalar cost: 9
      remark #15477: vector cost: 0.870
      remark #15478: estimated potential speedup: 7.490
      remark #15488: --- end vector cost summary ---
    LOOP END
    LOOP BEGIN at mm.c(86,9) inlined into mm.c(213,5)
    <Remainder loop for vectorization>
      remark #15388: vectorization support: reference matrix_1[m][n] has aligned access   [ mm.c(87,36) ]
      remark #15388: vectorization support: reference t_matrix[l][n] has aligned access   [ mm.c(87,53) ]
      remark #15305: vectorization support: vector length 8
      remark #15309: vectorization support: normalized vectorization overhead 1.429
      remark #15301: REMAINDER LOOP WAS VECTORIZED
    LOOP END
    LOOP BEGIN at mm.c(86,9) inlined into mm.c(213,5)
    <Remainder loop for vectorization>
    LOOP END
  LOOP END
LOOP END

LOOP BEGIN at mm.c(170,5) inlined into mm.c(217,7)
  remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
  LOOP BEGIN at mm.c(172,8) inlined into mm.c(217,7)
    remark #15319: loop was not vectorized: novector directive used
  LOOP END
LOOP END
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Begin optimization report for: transpose_matrix(int, float (*)[*], float (*)[*])
    Report from: Vector optimizations [vec]

LOOP BEGIN at mm.c(53,4)
   remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
   LOOP BEGIN at mm.c(55,7)
      remark #15319: loop was not vectorized: novector directive used
   LOOP END
   LOOP BEGIN at mm.c(55,7)
   <Remainder>
   LOOP END
LOOP END
=================================================================================

Begin optimization report for: multiply(int, float (*__restrict__)[*], float (*__restrict__)[*], float (*__restrict__)[*],
struct rusage)
    Report from: Vector optimizations [vec]


LOOP BEGIN at mm.c(53,4) inlined into mm.c(82,3)
   remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
   LOOP BEGIN at mm.c(55,7) inlined into mm.c(82,3)
      remark #15319: loop was not vectorized: novector directive used
   LOOP END
   LOOP BEGIN at mm.c(55,7) inlined into mm.c(82,3)
   <Remainder>
   LOOP END
LOOP END

LOOP BEGIN at mm.c(83,5)
   remark #15542: loop was not vectorized: inner loop was already vectorized
   LOOP BEGIN at mm.c(84,8)
      remark #15542: loop was not vectorized: inner loop was already vectorized
      LOOP BEGIN at mm.c(86,9)
         remark #15388: vectorization support: reference matrix_1[m][n] has aligned access   [ mm.c(87,36) ]
         remark #15388: vectorization support: reference t_matrix[l][n] has aligned access   [ mm.c(87,53) ]
         remark #15305: vectorization support: vector length 8
         remark #15399: vectorization support: unroll factor set to 2
         remark #15300: LOOP WAS VECTORIZED
         remark #15448: unmasked aligned unit stride loads: 2
         remark #15475: --- begin vector cost summary ---
         remark #15476: scalar cost: 9
         remark #15477: vector cost: 0.870
         remark #15478: estimated potential speedup: 7.490
         remark #15488: --- end vector cost summary ---
      LOOP END
```

```
      LOOP BEGIN at mm.c(86,9)
      <Remainder loop for vectorization>
        remark #15388: vectorization support: reference matrix_1[m][n] has aligned access   [ mm.c(87,36) ]
        remark #15388: vectorization support: reference t_matrix[l][n] has aligned access   [ mm.c(87,53) ]
        remark #15305: vectorization support: vector length 8
        remark #15309: vectorization support: normalized vectorization overhead 1.429
        remark #15301: REMAINDER LOOP WAS VECTORIZED
      LOOP END
      LOOP BEGIN at mm.c(86,9)
      <Remainder loop for vectorization>
      LOOP END
    LOOP END
  LOOP END
  ================================================================================

  Begin optimization report for: generate_random_matrices(int, float (*)[*], float (*)[*])
     Report from: Vector optimizations [vec]

  LOOP BEGIN at mm.c(110,5)
    remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
    LOOP BEGIN at mm.c(112,9)
      remark #15319: loop was not vectorized: novector directive used
    LOOP END
  LOOP END

  LOOP BEGIN at mm.c(118,5)
    remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
    LOOP BEGIN at mm.c(120,9)
      remark #15319: loop was not vectorized: novector directive used
    LOOP END
  LOOP END
  ================================================================================

  Begin optimization report for: generate_matrices(int, float (*)[*], float (*)[*])
     Report from: Vector optimizations [vec]

  LOOP BEGIN at mm.c(142,5)
    remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
    LOOP BEGIN at mm.c(144,8)
      remark #15319: loop was not vectorized: novector directive used
    LOOP END
  LOOP END

  LOOP BEGIN at mm.c(149,5)
    remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
    LOOP BEGIN at mm.c(151,8)
      remark #15319: loop was not vectorized: novector directive used
    LOOP END
  LOOP END
```

```
Begin optimization report for: print_matrix_result(int, float (*)[*])
    Report from: Vector optimizations [vec]


LOOP BEGIN at mm.c(170,5)
   remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
   LOOP BEGIN at mm.c(172,8)
      remark #15319: loop was not vectorized: novector directive used
   LOOP END
LOOP END
===========================================================================

Begin optimization report for: init_matrix(int, float (*)[*])
    Report from: Vector optimizations [vec]


LOOP BEGIN at mm.c(189,5)
   remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
   LOOP BEGIN at mm.c(191,8)
      remark #15541: outer loop was not auto-vectorized: consider using SIMD directive
      LOOP BEGIN at mm.c(191,8)
         remark #15319: loop was not vectorized: novector directive used
      LOOP END
      LOOP BEGIN at mm.c(191,8)
      <Remainder>
      LOOP END
   LOOP END
LOOP END
===========================================================================
```