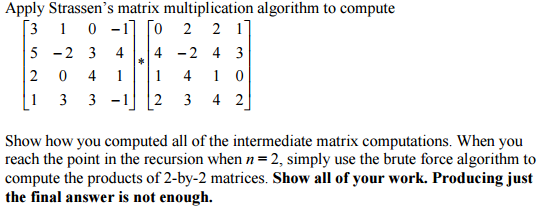
Sandeep Heera

Strassen’s Matrix Multiplication Algorithm

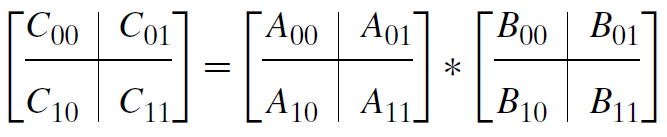


Let *A* be the matrix:

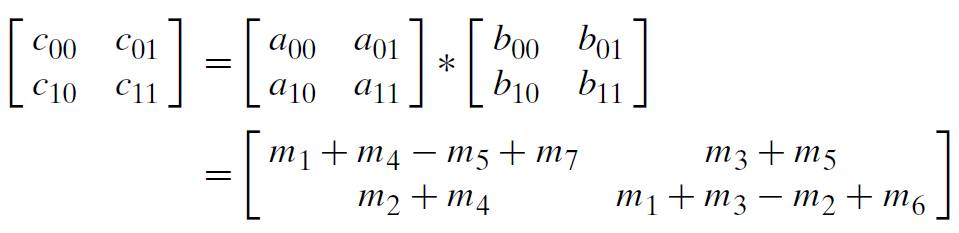
*B* be the matrix:

And *C* be the product of these two matrices:

The two matrices are *n* x *n* matrices where *n* is a power of 2 (22) so we don’t need to pad the matrices with additional rows and columns of zeros. Strassen’s matrix multiplication algorithm tells us that we can divide *A*, *B*, and *C* into four *n*/2 x *n*/2 submatrices (from pg. 190 in the text):



In accordance with Strassen’s matrix multiplication algorithm, we are to compute the 7 products of the resulting submatrices recursively. Dividing the matrices into *n*/2 x *n*/2 partitions yields 2 x 2 matrices (*n* = 2). To compute each submatrix, we apply Strassen’s matrix multiplication algorithm (from pg. 189 in the textbook):



We replace *c00* with *C00* and do the same for all remaining submatrices of *A*, *B*, and *C*:

Compute *M1*-*M7* by Strassen’s formulas:

The final resulting matrix *C* will be: