Amanda Jenkins and LaToya McIntyre

CS 320 Algorithms

Fall 2019

Matrix Multiplication Algorithms

SQUARE-MATRIX-MULTIPLY(A, B)

Runtime:

1    *n* = A.*rows*

2    let C be a new *n* × *n* matrix

3    **for** i = 1 **to** *n*

4        **for** j = 1 **to** *n*

5            cij = 0

6            **for** k = 1 **to** *n*

7                cij = cij + aik · bkj

8    **return** C

SQUARE-MATRIX-MULTIPLY-RECURSIVE(A,B)

Runtime:

1 n = A.rows

2 let C be a new *n* x *n* matrix

3 **if** n ==1

4 c11=a11+b11

5 **else** partition A, B, C as (lines 7 – 10) where

6

7

8

9

10

11 return C

Strassen Algorithm Runtime:

where