**CSCI 2150L**

**Session 6 Topics:**

1. We started with general form of matrix multiplication between two arbitrary matrices A and B. The resultant matrix C was generated as follows:

Observe the dimensions of the matrices. The second dimension of the first matrix had to match with the first dimension of the second matrix for matrix multiplication. In other words number of columns in first matrix should be equal to number of rows of second matrix. Any element of C is a result of summation of element-wise multiplication between *i*th row of A and *j*th column of B i.e.

Note that *i*th row of A is being accessed from left to right whereas the *j*th column of B is being accessed top to bottom.

1. Subsequently we created a row vector A. We computed transpose of A i.e. A’. Multiplying A and A’ following the rule of matrix multiplication will give us one single element computed using the formula given above.

We also computed the element-wise multiplication of A with itself i.e. A.\*A. We observed that the sum of the elements of A.\*A is the same as A\*A’.

1. Then we discussed parametric representation of a circle. We took help of the pythagorus theorem that states that for a right angle triangle ΔABC

A

B

C

shown beside. It follows from the statement of the theorem that

Where

and

And subsequently we obtain the trigonometric relation

This relation, however has a striking similarity with the equation of a circle with radius *a* which is

(2)

Comparing (1) and (2) we can propose following two equations

and (3)

Thus we obtained a parametric representation of circle in (3). Subsequently we created an array and computed *x* and *y* matrices following (3). We also plotted *x* and *y* using **plot(x,y)** command to convince ourselves that this representation represent circle indeed.