MATRIX ANALYSIS

LU FACTORISATION

This is also called LU Decomposition

Consider a system of equations

x\_1 + x\_2 – x\_3 = 4

x\_1 - 2{x\_2} + 3{x\_3} = -6

2{x\_1} + 3{x\_2} + x\_3 = 7

Represented by a matrix AX = B

Let A = LU and substitute into AX = B

Solve LUX = B for X to solve the system

Let UX = Y

LY = B and UX = Y

First Solve LY = B for Y and then solve UX = Y for X

U is the upper triangular matrix. We do this by row operations.

xR\_y + R\_z

The negative of the multiplier (-x) is what will fill the position of the one that turned 0 in the upper triangular matrix (U)