Assuming that there are 3 points on a circle that are following the same equation of circle: (x1,y1), (x2,y2) and (x3,y3). Let the unknown parameters describing the interested equation of circle be ‘xc’, ‘yc’ and ‘r’ for the centre and radius of the circle respectively.

The equation of the circle for the 3 points can be written as:

Expanding the Squares,

(Equation 1)

(Equation 2)

(Equation 3)

Subtracting Equation 2 from 1 and Equation 3 from 2,

Re-arranging the above into matrix form,

Let A = and C =

Thus, xc and yc can be found simply by evaluating A-1C in the equation above. Similarly for n points, one can construct n-1 unique equations making the matrix A of dimension (n-1) x 2 and matrix C of dimension (n-1). This can be seen in the script ‘CircleFit.m’.