ENGR 421 – HW6 – Report

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Implementation:

I used MASS library to generate random data points according to given parameters. The data points are plotted below.

Chart, scatter chart

Description automatically generated

After that, I implemented I used the algorithms in Lab 11 to implement the EM algorithm and ran k-means clustering with k = 5. After 100 iterations the mean vector that the EM algorithm finds is below.

Text, letter

Description automatically generated

A picture containing chart

Description automatically generatedLater on, I drew the clustering result obtained by the EM algorithm and colored each cluster with a different color. Also I drew the original Gaussian densities with dashed lines and the Gaussian densities that the EM algorithm finds with the solid lines. I used mixtools library to draw the ellipses. I drew the Gaussian densities where their values are 0.05. The result is below.