# Gaussian Random Vectors, Gaussian Discriminant Analysis

*Submit a PDF of your answers to Canvas.*

**1.** Download and open the associated notebook and dataset. The dataset consists of a number of points $\boldsymbol{x}_1, \boldsymbol{x}_2, \ldots, \boldsymbol{x}_n$ in a 3-dimensional space, and their associated label $y \in \mathbb{R}^3$.

**a)** Load the data and create a scatter plot by running the code. Does the data look normally distributed?

**b)** Complete the code in the second cell to find the mean and covariance of each class.

**c)** Complete the code to compute the log-likelihood of a new data point $\boldsymbol{x}$. The function should take $\boldsymbol{x}$, a mean vector, and a co-variance matrix to compute the log likelihood.

**d)** Run the script to test the new data points and compute return an accuracy. What is the accuracy of the classifier?