# Deep Learning
# Assignment 6 Report

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# Contents

# 1  Introduction

This report explains the methodology involved to deploy a Gaussian Mixture Model employing the Expansion-Maximization algorithm (EM).

# 2  Implementation

The initialization procedure involved setting initial values for the weights ($\pi_c$), the means ($\mu_c$) and covariance ($\Sigma_c$) for each group category $c \in K$. The weights were initialized dividing the unit in equal valued terms based on the number $|K|$ of groups. Random data points were taken as initial values for the means. For the covariance, the identity matrix was used as initial values. The results after performing the algorithm are shown in figures **??** and **??**. The algorithm groups those examples from the same category together.
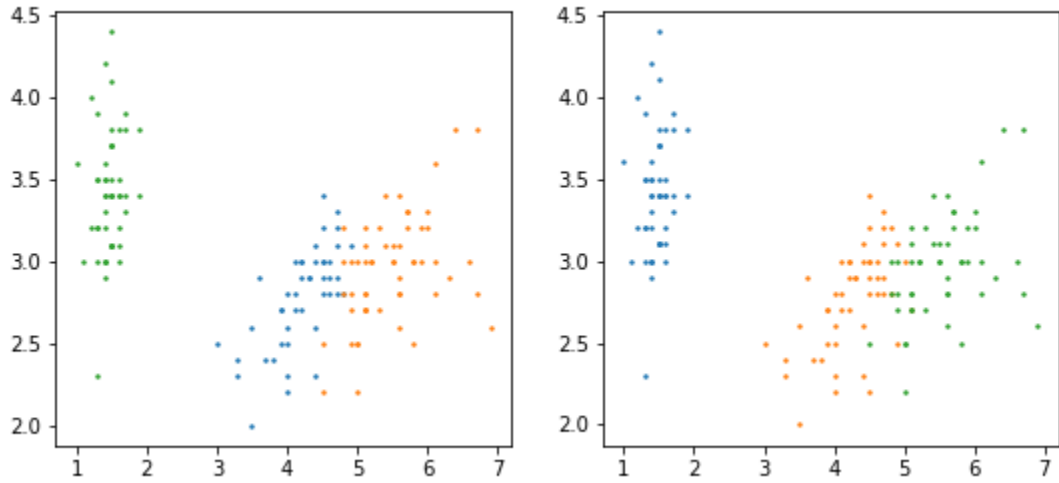


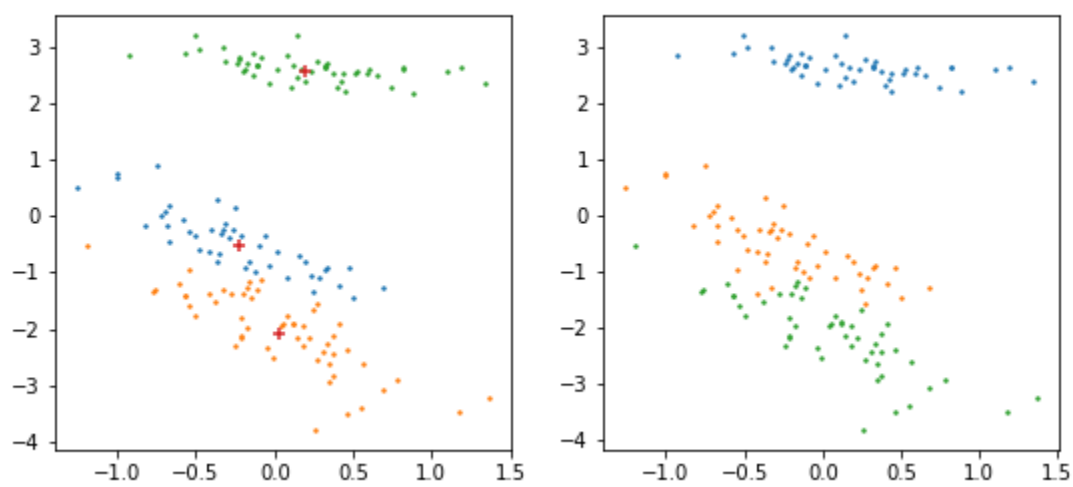Figure 1: Group allocation displayed with the raw data after conducting GMM.

Figure 2: Group allocation after PCA.