CSE 472

Machine Learning Sessional

Dimensionality Reduction using Principal Component Analysis and Clustering using Expectation-maximization Algorithm

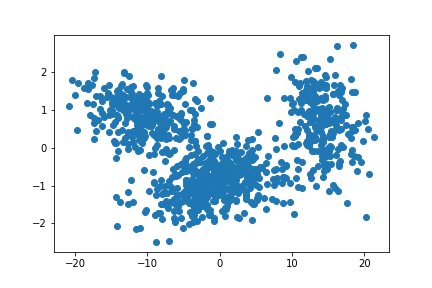
#### Zahin Wahab

#### St ID:1505031

**Principal Component Analysis (PCA):**

Two highest eigenvalues: 98.20975315996711,1.0677144032146537

PCA plot:



**Expectation-maximization(EM) algorithm:**

From the above PCA plot, the number of Gaussian distributions, K= 3

Dimension of vector, D= 2

Initial means:

Initial Co-variances:

Initial mixing coefficients:

Final means:

Final Co-variances:

Final mixing coefficients:

Gaussian Distribution of PCA analysed data (K=3) using EM algorithm: 