

1. Compute the multivariate mean vector.
2. Compute the sample covariance matrix as inner products between the columns of the centered data matrix.
3. Compute the sample covariance matrix as outer product between the centered data points.
4. compute the eigen values and eigen vectors of the covariance matrix that is computed from attributes 7, and 8.
5. Compute the covariance matrix between attributes 3,7, and 8.
6. Convert attribute 2 to a categorical attribute with 4 categories then compute the covariance matrix of the new attribute. Note: chose the threshold values " first quartile, median, and third quartile.
7. Plot Empirical CDFs of Attributes,4,6, and 8 .
8. Compute the covariance matrix of attribute 10.
9. Compute the correlation between Attributes 1 and 2 by computing the cosine of the angle between the centered attribute vectors. Plot the scatter plot between these two attributes.
10. Assuming that Attribute 1 is normally distributed, plot its probability density function.
11. Which attribute has the largest variance, and which attribute has the smallest variance? Print these values.
12. Which pair of attributes has the largest covariance, and which pair of attributes has the smallest covariance? Print these values.
13. Plot attribute 2 vs attribute 5 . Mark each point as a circle.