

Non-Linear Support Vector Machines

1. Create a contrived 2-class dataset that are non-linearly separable. Each sample is 2-dimensional. Plot the dataset using 2-d plot
2. Write a program to visualize Gaussian kernel with various values for σ and μ
3. Generate classification dataset with 2 classes where each sample is in 2-d space.

NB: Use function `make_gaussian_quantiles`

https://scikit-learn.org/stable/modules/generated/sklearn.datasets.make_gaussian_quantiles.html

Convert this dataset into 3d using RBF function and plot the dataset

4. Fit the dataset created in Q.3 using SVM classifier with kernel = rbf, linear, and poly and various values for penalty term C. You may split the dataset into 80%-20% split. Plot 3 accuracy graphs. One with RBF with varying C. Second with Linear with varying C. Third with Polynomial kernel with varying C