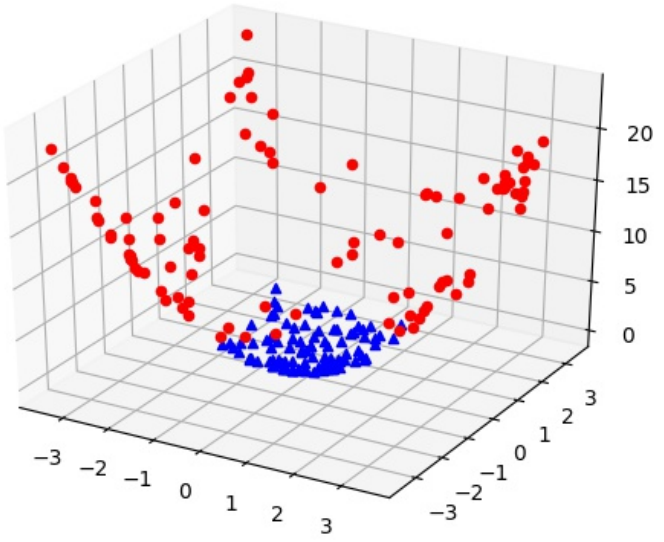
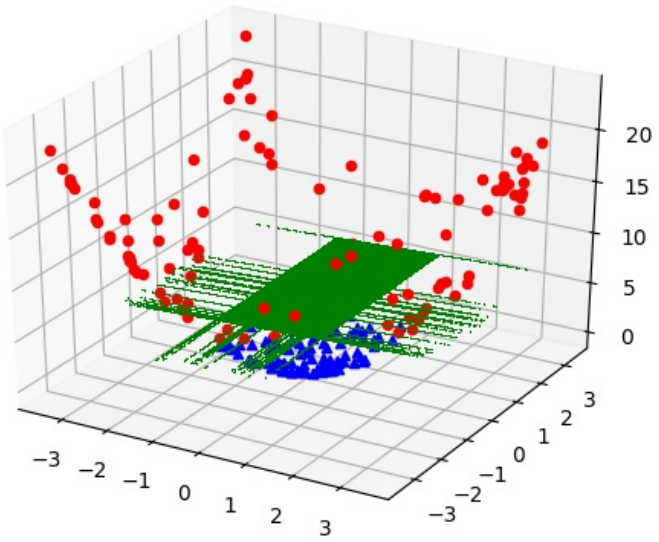
Kernel Trick Perceptron

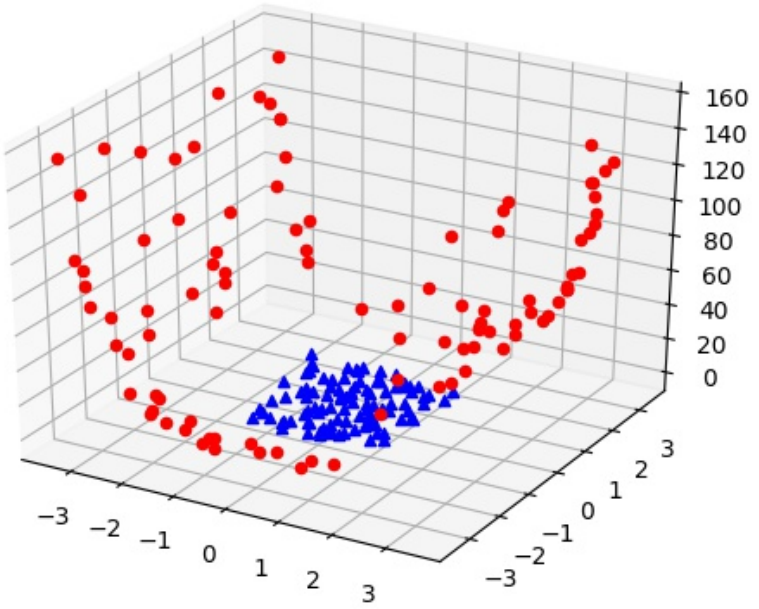


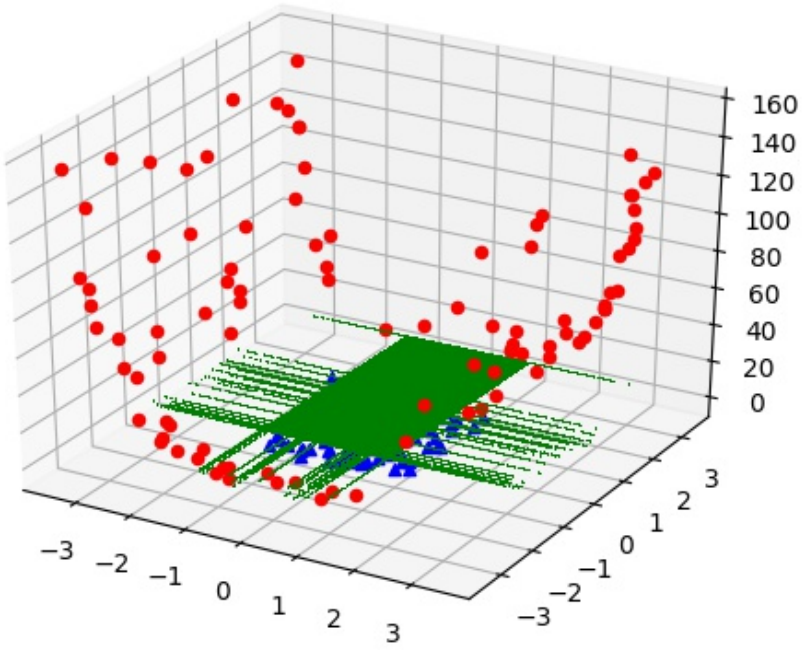


Kernel : (X, Y, $X^2 + Y^2$)

Training Accuracy: 1.0000

Data is linearly separable using the current kernel.

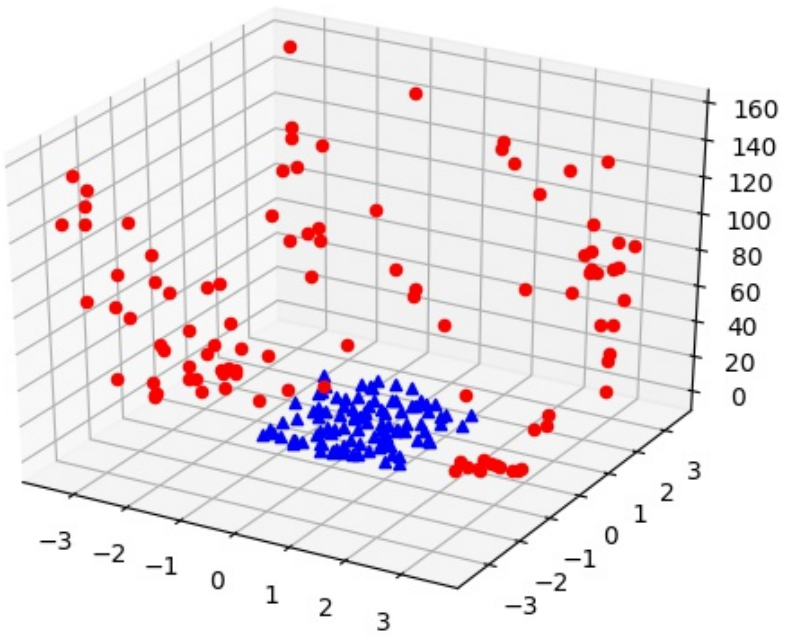


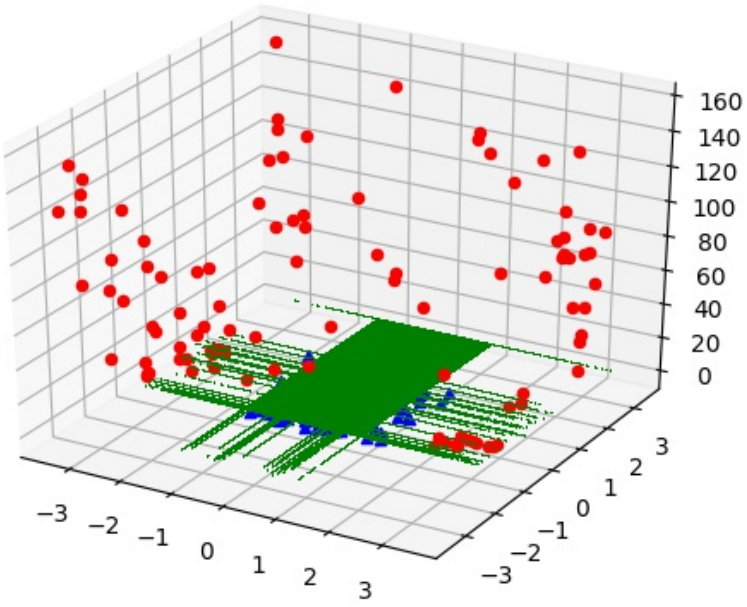


Kernel: (X, Y, X^4 + Y2)

Training Accuracy: 0.9750

Data is still not linearly separable using the current kernel.





Kernel : $(X, Y, X^2 + Y^4)$

Training Accuracy: 0.9350

Data is still not linearly separable using the current kernel

Letter Classification (SVM)

--kernel--: sigmoid

Fold 1 -> Training Accuracy: 0.3114 Testing Accuracy: 0.3080

Fold 2 -> Training Accuracy: 0.3251 Testing Accuracy: 0.3315

Fold 3 -> Training Accuracy: 0.3254 Testing Accuracy: 0.3190

Fold 4 -> Training Accuracy: 0.3171 Testing Accuracy: 0.3340

Fold 5 -> Training Accuracy: 0.3376 Testing Accuracy: 0.3520

--Fold-- 1 :
(Accuracy: 0.308, Precision: 0.308, Recall: 0.308, F1-Score: 0.308)

--Fold-- 2 :
(Accuracy: 0.3315, Precision: 0.3315, Recall: 0.3315, F1-Score: 0.3315)

--Fold-- 3 :
(Accuracy: 0.319, Precision: 0.319, Recall: 0.319, F1-Score: 0.319)

--Fold-- 4 :
(Accuracy: 0.334, Precision: 0.334, Recall: 0.334, F1-Score: 0.334)

--Fold-- 5 :
(Accuracy: 0.352, Precision: 0.352, Recall: 0.352, F1-Score: 0.352)

--kernel--: poly

Fold 1 -> Training Accuracy: 0.9971 Testing Accuracy: 0.9665

Fold 2 -> Training Accuracy: 0.9971 Testing Accuracy: 0.9615

Fold 3 -> Training Accuracy: 0.9969 Testing Accuracy: 0.9645

Fold 4 -> Training Accuracy: 0.9971 Testing Accuracy: 0.9610

Fold 5 -> Training Accuracy: 0.9972 Testing Accuracy: 0.9590

--Fold-- 1 :
(Accuracy: 0.9665, Precision: 0.9665, Recall: 0.9665, F1-Score:

0.9665)

--Fold-- 2 :
(Accuracy: 0.9615, Precision: 0.9615, Recall: 0.9615, F1-Score:
0.9615)

--Fold-- 3 :
(Accuracy: 0.9645, Precision: 0.9645, Recall: 0.9645, F1-Score:
0.9645)

--Fold-- 4 :
(Accuracy: 0.961, Precision: 0.961, Recall: 0.961, F1-Score:
0.961)

--Fold-- 5 :
(Accuracy: 0.959, Precision: 0.959, Recall: 0.959, F1-Score:
0.959)

--kernel--: rbf

Fold 1 -> Training Accuracy: 0.9976 Testing Accuracy: 0.9740

Fold 2 -> Training Accuracy: 0.9976 Testing Accuracy: 0.9760

Fold 3 -> Training Accuracy: 0.9974 Testing Accuracy: 0.9730

Fold 4 -> Training Accuracy: 0.9975 Testing Accuracy: 0.9710

Fold 5 -> Training Accuracy: 0.9976 Testing Accuracy: 0.9730

--Fold-- 1 :
(Accuracy: 0.974, Precision: 0.974, Recall: 0.974, F1-Score:
0.974)

--Fold-- 2 :
(Accuracy: 0.976, Precision: 0.976, Recall: 0.976, F1-Score:
0.976)

--Fold-- 3 :
(Accuracy: 0.973, Precision: 0.973, Recall: 0.973, F1-Score:
0.973)

--Fold-- 4 :
(Accuracy: 0.971, Precision: 0.971, Recall: 0.971, F1-Score:
0.971)

--Fold-- 5 :
(Accuracy: 0.973, Precision: 0.973, Recall: 0.973, F1-Score:
0.973)

--kernel--: linear

Fold 1 -> Training Accuracy: 0.8766 Testing Accuracy: 0.8600

Fold 2 -> Training Accuracy: 0.8781 Testing Accuracy: 0.8555

Fold 3 -> Training Accuracy: 0.8774 Testing Accuracy: 0.8490

Fold 4 -> Training Accuracy: 0.8793 Testing Accuracy: 0.8550

Fold 5 -> Training Accuracy: 0.8801 Testing Accuracy: 0.8535

--Fold-- 1 :
(Accuracy: 0.86, Precision: 0.86, Recall: 0.86, F1-Score: 0.86)

--Fold-- 2 :
(Accuracy: 0.8555, Precision: 0.8555, Recall: 0.8555, F1-Score: 0.8555)

--Fold-- 3 :
(Accuracy: 0.849, Precision: 0.849, Recall: 0.849, F1-Score: 0.849)

--Fold-- 4 :
(Accuracy: 0.855, Precision: 0.855, Recall: 0.855, F1-Score: 0.855)

--Fold-- 5 :
(Accuracy: 0.8535, Precision: 0.8535, Recall: 0.8535, F1-Score: 0.8535)