Contents

Sample RBF script.

```
%First define the data

X=randn(1500,2);
Y=exp(-(X(:,1).^2+X(:,2).^2)/4)+0.15*randn(1500,1);  %Add some noise
```

Split the data into training and testing sets

In this case, we'll use 300 points for training

```
temp=randperm(1500);
Xtrain=X(temp(1:300),:);
Xtest=X(temp(301:end),:);

Ytrain=Y(temp(1:300),:);
Ytest=Y(temp(301:end),:);
```

Create the Radial Basis Function.

For this example, we will use 10 points chosen at random from the data as our set of centers

```
temp=randperm(1500);
Centers=X(temp(1:10),:);

A=edm(Xtrain,Centers);
Phi=rbf1(A,1,3);

alpha=pinv(Phi)*Ytrain;
```

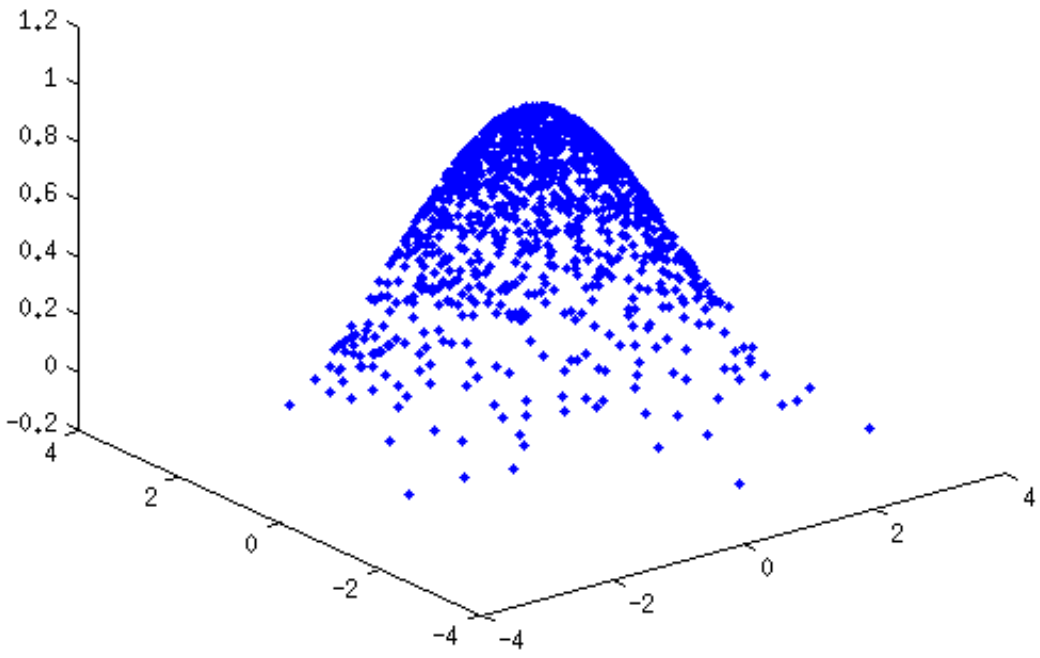
The error is measured by the error on the test set:

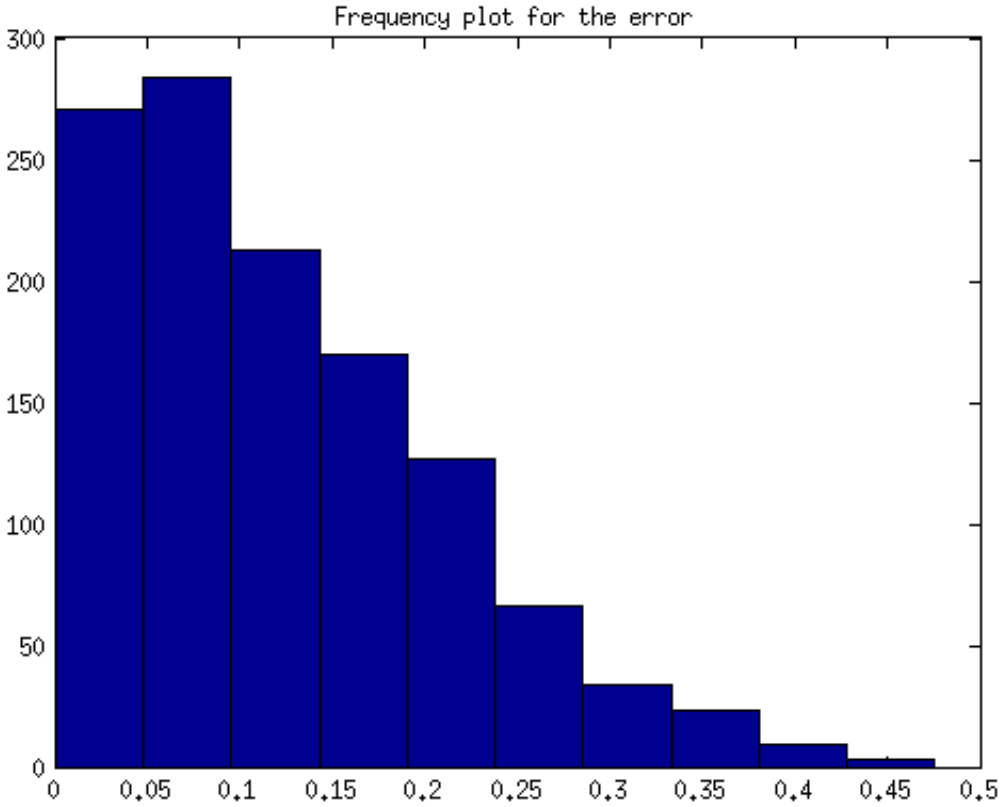
```
%Compute the new EDM:
A=edm(Xtest,Centers);
Phi=rbf1(A,1,3);

Yout=Phi*alpha;
[m,n]=size(Ytest);
%The error is the norm of the difference:
for j=1:m
    Err(j)=norm(Ytest(j,:)-Yout(j,:));
```

```
end
```

Plot in 3d

```
figure(1)
plot3(Xtest(:,1),Xtest(:,2),Yout,'.');

figure(2);  % This is a frequency plot (or histogram) of the error
hist(Err)
title('Frequency plot for the error');
```





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