

```

clear
load('aca2.mat');
% load('aca5.mat');
X1 = X(:,1:2:size(X,2));
s1 = s(1:2:size(s,2));
numCluster = max(s1);
minMissrate = 1;
minGamma = 0;
minK = 0;
missRate = zeros(100,49);
for gamma=1:100
    for k=2:50
        r = spectralClustering(X1,gamma,k,numCluster);
        groups = r;
        Missrate = Misclassification(groups,s1);
        missRate(gamma,k) = Missrate;
        if (Missrate < minMissrate)
            minMissrate = Missrate;
            minGamma = gamma;
            minK = k;
        end
    end
end

csvwrite('myFile2.txt',missRate);
% csvwrite('myFile2.txt',missRate);

```

```

function r = spectralClustering(S,gamma,k,numCluster)
[D,N] = size(S);
A = buildKernel(S,gamma,k);
d = diag(sum(A,2)');
L = eye(size(d,1))-(d^(-1/2))*A*(d^(-1/2));
[V,E] = eig(L);
X = V(:,1:numCluster);
Y = zeros(size(X));
for i = 1:N
    Y(i,:) = X(i,:)./norm(X(i,:),2);
end
r = kmeans(Y,numCluster);

```

```

function K = buildKernel(S,gamma,k)
[D,N] = size(S);
for i = 1:N
    S(:,i) = S(:,i)/norm(S(:,i));
end
K = zeros(N,N);
for i = 1:N
    for j = i+1:N
        K(i,j) = exp(-gamma*(norm(S(:,i))-S(:,j))^2));
    end
end
K = K + K';
for j = 1:N
    [val,ind] = sort(K(:,j),'descend');
    K(ind(k+1:N),j) = 0;
end
K = (K+K')/2 + eye(N);

```