


```

function [C1, C2, C3, D1, D2, D3] = genCV(new_p,new_tar)
%Classes
Dx = unique(new_tar);

% Randomized pixels from all samples (so patient data interspersed)
npix = size(new_p,2);
ipix = randperm(npix);
rtargets = new_tar(ipix);
rpatterns = new_p(:,ipix);

%Divide patterns into three groups
C1 = []; C2 = []; C3 = [];
D1 = []; D2 = []; D3 = [];

for iDx = 1:length(Dx)

%Indexing the size of the three groups
inds = find(rtargets==Dx(iDx));
count = ceil(length(inds)/3);
if(mod(length(inds),3)==1)
I1 = count; I2 = count*2; I3 = count*3-2;
elseif(mod(length(inds),3)==2)
I1 = count; I2 = count*2-1; I3 = count*3-1;
else
I1 = count; I2 = count*2; I3 = count*3;
end

%Pixels
Dx_d = rpatterns(:,inds);
C1 = [C1 Dx_d(:,1:I1)];
C2 = [C2 Dx_d(:,I1+1:I2)];
C3 = [C3 Dx_d(:,I2+1:I3)];
%Labels
D1 = [D1 ones(1,length(1:I1))*Dx(iDx)];
D2 = [D2 ones(1,length(I1+1:I2))*Dx(iDx)];
D3 = [D3 ones(1,length(I2+1:I3))*Dx(iDx)];
end

%%KNN
k = ; %Choose any between 1:15
%Select test & training sets
test = C1;
dx_testing = D1;
train = [C2 C3];
dx_training = [D2 D3];

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Outlier removal
%
% INPUT:
% training - training dataset
% dx_training - selected labels
% para - data structure containing parameter name and units as strings
%
% OUTPUT
% training - data with outliers removed
% training_dx - labeled data
% Outs - # of outliers removed
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
function [IQtrain, dx_training, Outs] = rmIQR(train,dx_training,para,pnm)
[Q] = prctile(training,[ ],2); %Place range within brackets
Q1 = Q(:,1);
Q3 = Q(:,2);
IQR = Q3-Q1;
lbound = Q1-1.5*IQR;
ubound = Q3+1.5*IQR;
pind = find(strcmp(param.name,pnm));
outlier_idx1 = find(training(pind,:)<lbound(pind));
outlier_idx2 = find(training(pind,*)>ubound(pind));
IQtrain = training;
IQtrain(:,[outlier_idx1 outlier_idx2]) = [];

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dx_training([outlier_idx1 outlier_idx2]) = [];  
outs = length([outlier_idx1 outlier_idx2]);  
end  
  
NNout = knnsearch(IQtrain', test', 'K',k);
```