% Loop for training and testing 10 times

for iteration = 1:10

fprintf('Iteration %d of 10\n', iteration);

% Create and configure the neural network

hiddenLayerSize = [40, 20]; % Hidden layer configuration

net = feedforwardnet(hiddenLayerSize, 'trainlm'); % Create a new NN

% Divide data into training, validation, and test sets

net.divideParam.trainRatio = 0.8; % 80% training

net.divideParam.valRatio = 0.3; % 30% validation

net.divideParam.testRatio = 0.3; % 30% testing

% Set training parameters

net.trainParam.epochs = 1000; % Max epochs

net.trainParam.goal = 1e-6; % Performance goal

net.trainParam.min\_grad = 1e-7; % Minimum gradient

% Train the network with PCA-reduced inputs

[net, tr] = train(net, inputs, targets);