**EX-8**

1. **cofiCostFunc**

%% %%%%% WORKING: Without Regularization %%%%%%%%%%

Error = (X\*Theta') - Y;

J = (1/2)\*sum(sum(Error.^2.\*R));

X\_grad = (Error.\*R)\*Theta; % Nm x n

Theta\_grad = (Error.\*R)'\*X; % Nu x n

%% %%%%% WORKING: With Regularization

Reg\_term\_theta = (lambda/2)\*sum(sum(Theta.^2));

Reg\_term\_x = (lambda/2)\*sum(sum(X.^2));

J = J + Reg\_term\_theta + Reg\_term\_x;

X\_grad = X\_grad + lambda\*X; % Nm x n

Theta\_grad = Theta\_grad + lambda\*Theta; % Nu x n

1. **estimateGaussian**

mu = ((1/m)\*sum(X))';

sigma2 = ((1/m)\*sum((X-mu').^2))';

1. **selectThreshold**

cvPredictions = (pval < epsilon); % m x 1

tp = sum((cvPredictions == 1) & (yval == 1)); % m x 1

fp = sum((cvPredictions == 1) & (yval == 0)); % m x 1

fn = sum((cvPredictions == 0) & (yval == 1)); % m x 1

prec = tp/(tp+fp);

rec = tp/(tp+fn);

F1 = 2\*prec\*rec / (prec + rec);