var = 6;

Hyper\_UNB\_k2\_y = tot\_y\_unbalanced{var}';

Hyper\_UNB\_k2\_t= tot\_t\_unbalanced{var}'-1;

Hyper\_k2\_y= tot\_y{var};

Hyper\_k2\_t = tot\_t{var}'-1;

HyperAUC \_k2=rocplot1(Hyper\_k2\_y,Hyper\_k2\_t,1,10000,'with K2','m')

HyperAUC\_UNB\_k2=rocplot1(Hyper\_UNB\_k2\_y,Hyper\_UNB\_k2\_t,1,10000,'with K2 UNB ','k')

Hyper\_UNB\_without\_Latent\_y = tot\_y\_unbalanced{var}';

Hyper\_UNB\_without\_Latent\_t = tot\_t\_unbalanced{var}'-1;

Hyper\_without\_Latent\_y = tot\_y{var};

Hyper\_without\_Latent\_t = tot\_t{var}'-1;

HyperAUC\_without\_Latent=rocplot1(Hyper\_without\_Latent\_y',Hyper\_without\_Latent\_t',1,10000,'with','r')

Hyper\_UNB\_IC\_y = tot\_y\_unbalanced{var}';

Hyper\_UNB\_IC\_t= tot\_t\_unbalanced{var}'-1;

Hyper\_IC\_y= tot\_y{var};

Hyper\_IC\_t = tot\_t{var}'-1;

HyperAUC \_IC=rocplot1(Hyper\_IC\_y,Hyper\_IC\_t,1,10000,'with IC','g')

HyperAUC\_UNB\_IC=rocplot1(Hyper\_UNB\_IC\_y,Hyper\_UNB\_IC\_t,1,10000,'with IC UNB ','k')

Hyper\_UNB\_with\_IC\_y = tot\_y\_unbalanced{var}';

Hyper\_UNB\_with\_IC\_t = tot\_t\_unbalanced{var}'-1;

Hyper\_with\_IC\_y = tot\_y{var};

Hyper\_with\_IC\_t = tot\_t{var}'-1;

Hyper\_UNB\_ICall\_y = tot\_y\_unbalanced{var}';

Hyper\_UNB\_ICall\_t= tot\_t\_unbalanced{var}'-1;

Hyper\_ICall\_y= tot\_y{var};

Hyper\_ICall\_t = tot\_t{var}'-1;

HyperAUC \_ICall=rocplot1(Hyper\_ICall\_y,Hyper\_ICall\_t,1,10000,'with IC','g')

HyperAUC\_UNB\_IC=rocplot1(Hyper\_UNB\_IC\_y,Hyper\_UNB\_IC\_t,1,10000,'with IC UNB ','k')

>> figure;hold on;HyperAUC\_UNB\_k2=rocplot1(Hyper\_UNB\_k2\_y,Hyper\_UNB\_k2\_t,1,10000,'with K2 UNB ','k');hold on;HyperAUC\_without\_Latent=rocplot1(Hyper\_without\_Latent\_y',Hyper\_without\_Latent\_t',1,10000,'with','r');hold on;HyperAUC\_k2=rocplot1(Hyper\_k2\_y,Hyper\_k2\_t,1,10000,'with K2','c');hold on;HyperAUC\_with\_IC =rocplot1(Hyper\_with\_IC\_y, Hyper\_with\_IC\_t',1,10000,'with IC','b');

>>

>> plotconfusion(Hyper\_UNB\_k2\_t,Hyper\_UNB\_k2\_y,'with K2 UNB',Hyper\_without\_Latent\_t,Hyper\_without\_Latent\_y','without latent',Hyper\_k2\_t,Hyper\_k2\_y','with K2',Hyper\_with\_IC\_t,Hyper\_with\_IC\_y','with IC')

var = 2;

Retino\_UNB\_with\_IC\_y = tot\_y\_unbalanced{var}';

Retino\_UNB\_with\_IC\_t = tot\_t\_unbalanced{var}'-1;

Retino\_with\_IC\_y = tot\_y{var};

Retino\_with\_IC\_t = tot\_t{var}'-1;

AUC\_with\_IC =rocplot1(Retino\_with\_IC\_y',Retino\_with\_IC\_t',1,10000,'with IC','b');

Retino\_UNB\_with\_IC\_y\_ICall = tot\_y\_unbalanced{var}';

Retino\_UNB\_with\_IC\_t\_ICall = tot\_t\_unbalanced{var}'-1;

Retino\_with\_IC\_y\_ICall = tot\_y{var};

Retino\_with\_IC\_t\_ICall = tot\_t{var}'-1;

RetinoAUC\_with\_ICall=rocplot1(Retino\_with\_IC\_y\_ICall',Retino\_with\_IC\_t\_ICall',1,10000,'with','c')

Retino\_UNB\_with\_IC\_y\_inter= tot\_y\_unbalanced{var}';

Retino\_UNB\_with\_IC\_t\_inter = tot\_t\_unbalanced{var}'-1;

Retino\_with\_IC\_y\_inter= tot\_y{var};

Retino\_with\_IC\_t\_inter = tot\_t{var}'-1;

RetinoAUC\_with\_inter=rocplot1(Retino\_with\_IC\_y\_inter',Retino\_with\_IC\_t\_inter',1,10000,'with','c')

Retino\_UNB\_with\_K2\_y = tot\_y\_unbalanced{var}';

Retino\_UNB\_with\_K2\_t = tot\_t\_unbalanced{var}'-1;

Retino\_with\_K2\_y = tot\_y{var};

Retino\_with\_K2\_t = tot\_t{var}'-1;

RetinoAUC\_UNB\_with\_K2=rocplot1(Retino\_UNB\_with\_K2\_y, Retino\_UNB\_with\_K2\_t',1,10000,'with K2','k')

RetinoAUC\_with\_K2=rocplot1(Retino\_with\_K2\_y, Retino\_with\_K2\_t',1,10000,'with K2','k')

Retino\_UNB\_without\_latent\_y = tot\_y\_unbalanced{var}';

Retino\_UNB\_without\_latent\_t = tot\_t\_unbalanced{var}'-1;

Retino\_without\_latent\_y = tot\_y{var};

Retino\_without\_latent\_t = tot\_t{var}'-1;

AUC\_without\_latent=rocplot1(Retino\_without\_latent\_y',Retino\_without\_latent\_t',1,100,'without latent','y');

>> RetinoAUC\_UNB\_with\_K2=rocplot1(Retino\_UNB\_with\_K2\_y, Retino\_UNB\_with\_K2\_t',1,10000,'with K2 UNB','k');hold on;AUC\_without\_latent=rocplot1(Retino\_without\_latent\_y',Retino\_without\_latent\_t',1,10000,'without latent','r');hold on;RetinoAUC\_with\_K2=rocplot1(Retino\_with\_K2\_y, Retino\_with\_K2\_t',1,10000,'with K2','c');hold on;AUC\_with\_IC =rocplot1(Retino\_with\_IC\_y',Retino\_with\_IC\_t',1,10000,'with IC','b');

>> plotconfusion(Retino\_UNB\_with\_K2\_t,Retino\_UNB\_with\_K2\_y,'with K2 UNB',Retino\_without\_latent\_t,Retino\_without\_latent\_y','without latent',Retino\_with\_K2\_t,Retino\_with\_K2\_y','with K2',Retino\_with\_IC\_t,Retino\_with\_IC\_y','with IC')

Var = 5

Liver\_UNB\_with\_IC\_y\_ICall = tot\_y\_unbalanced{var}';

Liver\_UNB\_with\_IC\_t\_ICall = tot\_t\_unbalanced{var}'-1;

Liver\_with\_IC\_y\_ICall = tot\_y{var};

Liver\_with\_IC\_t\_ICall = tot\_t{var}'--1;

LiverAUC\_with\_ICall=rocplot1(Liver\_with\_IC\_y\_ICall',Liver\_with\_IC\_t\_ICall',1,10000,'with','g')

Liver\_UNB\_with\_IC\_y = tot\_y\_unbalanced{var}';

Liver\_UNB\_with\_IC\_t = tot\_t\_unbalanced{var}'-1;

Liver\_with\_IC\_y = tot\_y{var};

Liver\_with\_IC\_t = tot\_t{var}'-1;

LiverAUC\_with\_IC =rocplot1(Liver\_with\_IC\_y,Liver\_with\_IC\_t',1,10000,'with IC','b')

Liver\_UNB\_with\_K2\_y = tot\_y\_unbalanced{var}';

Liver\_UNB\_with\_K2\_t = tot\_t\_unbalanced{var}'-1;

Liver\_with\_K2\_y = tot\_y{var};

Liver\_with\_K2\_t = tot\_t{var}'-1;

LiverAUC\_with\_K2=rocplot1(Liver\_with\_K2\_y,Liver\_with\_K2\_t',1,10000,'with K2','m')

LiverAUC\_with\_UNB\_K2=rocplot1(Liver\_with\_UNB\_K2\_y,Liver\_with\_UNB\_K2\_t',1,10000,'with K2 UNB','k')

Liver\_UNB\_without\_latent\_y = tot\_y\_unbalanced{var}';

Liver\_UNB\_without\_latent\_t = tot\_t\_unbalanced{var}'-1;

Liver\_without\_latent\_y = tot\_y{var};

Liver\_without\_latent\_t = tot\_t{var}'-1;

LiverAUC\_without\_latent=rocplot1(Liver\_without\_latent\_y', Liver\_without\_latent\_t',1,100,'without latent','r');

>> figure;hold on;

>> LiverAUC\_with\_ICall=rocplot1(Liver\_with\_IC\_y\_ICall',Liver\_with\_IC\_t\_ICall',1,10000,'with','g')

LiverAUC\_with\_ICall =

0.9012

>> hold on

>> LiverAUC\_with\_IC=rocplot1(Liver\_with\_IC\_y',Liver\_with\_IC\_t',1,10000,'with','b')

>> figure;hold on;LiverAUC\_with\_K2=rocplot1(Liver\_with\_K2\_y,Liver\_with\_K2\_t',1,10000,'with K2','c');hold on;LiverAUC\_UNB\_with\_K2=rocplot1(Liver\_UNB\_with\_K2\_y,Liver\_UNB\_with\_K2\_t',1,10000,'with K2 UNB','k');hold on;LiverAUC\_without\_latent=rocplot1(Liver\_without\_latent\_y', Liver\_without\_latent\_t',1,100,'without latent','r');hold on;LiverAUC\_with\_IC =rocplot1(Liver\_with\_IC\_y,Liver\_with\_IC\_t',1,10000,'with IC','b');

>> plotconfusion(Liver\_UNB\_with\_K2\_t,Liver\_UNB\_with\_K2\_y,'with K2 UNB',Liver\_without\_latent\_t,Liver\_without\_latent\_y','without latent',Liver\_with\_K2\_t,Liver\_with\_K2\_y','with K2',Liver\_with\_IC\_t,Liver\_with\_IC\_y','with IC')

Blue: With IC\*

Red: Without Latent

Cyan: With K2

Black: Unbalanced

ROC curves in blue, red, Cyan, Black shows ROC With IC\*, Without Latent, With K2 and Unbalanced

AUC\_with\_IC\_alpah1=rocplot1(Retino\_with\_IC\_y\_alpah1',Retino\_with\_IC\_t\_alpah1',1,100,'with','b')

load('D:\Leila\bnt\BNT\LatentDBN\_27\_6\_17\matlab17\_6\_17.mat')

Retino\_UNB\_without\_IC\_y = tot\_y\_unbalanced{var}';

Retino\_UNB\_without\_IC\_t = tot\_t\_unbalanced{var}'-1;

Retino\_without\_IC\_y = tot\_y{var};

Retino\_without\_IC\_t = tot\_t{var}'-1;

figure;

hold on

AUC\_with\_IC\_alpah1=rocplot1(Retino\_with\_IC\_y\_alpah1',Retino\_with\_IC\_t\_alpah1',1,100,'with','b');

hold on

AUC\_without\_IC=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r');

figure;

hold on

AUC\_with\_IC\_alpah1=rocplot1(Retino\_with\_IC\_y\_alpah1',Retino\_with\_IC\_t\_alpah1',1,100,'with','b');

hold on

AUC\_without\_IC=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r');

var = 6;

Hyper\_UNB\_with\_IC\_y\_alpah1 = tot\_y\_unbalanced{var}';

Hyper\_UNB\_with\_IC\_t\_alpah1 = tot\_t\_unbalanced{var}'-1;

Hyper\_with\_IC\_y\_alpah1 = tot\_y{var};

Hyper\_with\_IC\_t\_alpah1 = tot\_t{var}'-1;

HyperAUC\_with\_IC\_alpah1=rocplot1(Hyper\_with\_IC\_y\_alpah1',Hyper\_with\_IC\_t\_alpah1',1,10000,'with','b')

var = 6;

Hyper\_UNB\_with\_IC\_y\_ICall = tot\_y\_unbalanced{var}';

Hyper\_UNB\_with\_IC\_t\_ICall = tot\_t\_unbalanced{var}'-1;

Hyper\_with\_IC\_y\_ICall = tot\_y{var};

Hyper\_with\_IC\_t\_ICall = tot\_t{var}'-1;

HyperAUC\_with\_ICall=rocplot1(Hyper\_with\_IC\_y\_ ICall ',Hyper\_with\_IC\_t\_ ICall ',1,10000,'with','g')

>> Liver\_UNB\_without\_Latent\_y = tot\_y\_unbalanced{var}';

>> Liver\_UNB\_without\_Latent\_t = tot\_t\_unbalanced{var}'-1;

>> Liver\_without\_Latent\_y = tot\_y{var};

>> Liver\_without\_Latent\_t = tot\_t{var}'-1;

>> LiverAUC\_without\_Latent=rocplot1(Liver\_without\_Latent\_y',Liver\_without\_Latent\_t',1,10000,'with','y')

Hyper\_UNB\_without\_y\_alpah1 = tot\_y\_unbalanced{var}';

Hyper\_UNB\_without\_t\_alpah1 = tot\_t\_unbalanced{var}'-1;

Hyper\_without\_y\_alpah1 = tot\_y{var};

Hyper\_without\_t\_alpah1 = tot\_t{var}'-1;

HyperAUC\_without\_alpah1=rocplot1(Hyper\_without\_y\_alpah1',Hyper\_without\_t\_alpah1',1,10000,'with','r');

figure;

hold on

HyperAUC\_with\_IC\_alpah1=rocplot1(Hyper\_with\_IC\_y\_alpah1',Hyper\_with\_IC\_t\_alpah1',1,10000,'with','b')

hold on

HyperAUC\_with\_IC\_pointingJust12and6\_7\_7\_17=rocplot1(Hyper\_with\_IC\_y\_pointingJust12and6\_7\_7\_17',Hyper\_with\_IC\_t\_pointingJust12and6\_7\_7\_17',1,10000,'with','g')

hold on;HyperAUC\_without\_IC=rocplot1(Hyper\_without\_IC\_y', Hyper\_without\_IC\_t',1,10000,'without','r');hold off

figure;

hold on

HyperAUC\_with\_IC\_alpah1=rocplot1(Hyper\_with\_IC\_y\_alpah1',Hyper\_with\_IC\_t\_alpah1',1,10000,'with','b')

hold on

HyperAUC\_with\_IC\_pointingJust12and6\_7\_7\_17=rocplot1(Hyper\_with\_IC\_y\_pointingJust12and6\_7\_7\_17',Hyper\_with\_IC\_t\_ pointingJust12and6\_7\_7\_17',1,10000,'with','b')

hold on

HyperAUC\_with\_IC\_pointing\_6\_12\_inter=rocplot1(Hyper\_with\_IC\_y\_pointing\_6\_12\_inter',Hyper\_with\_IC\_t\_pointing\_6\_12\_inter',1,10000,'with','b')

hold on

HyperAUC\_without\_IC=rocplot1(Hyper\_without\_IC\_y', Hyper\_without\_IC\_t',1,10000,'without','r')

load('D:\Leila\bnt\BNT\LatentDBN\_27\_6\_17\matlab17\_6\_17.mat')

Liver\_UNB\_without\_IC\_y = tot\_y\_unbalanced{var}';

Liver\_UNB\_without\_IC\_t = tot\_t\_unbalanced{var}'-1;

Liver\_without\_IC\_y = tot\_y{var};

Liver\_without\_IC\_t = tot\_t{var}'-1;

LiverAUC\_without\_IC=rocplot1(Liver\_without\_IC\_y',Liver\_without\_IC\_t',1,10000,'without','r')

figure;

hold on

LiverAUC\_with\_IC\_alpah1=rocplot1(Liver\_with\_IC\_y\_alpah1',Liver\_with\_IC\_t\_alpah1',1,10000,'with','b')

hold on

LiverAUC\_without\_IC=rocplot1(Liver\_without\_IC\_y',Liver\_without\_IC\_t',1,10000,'without','r')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y,'without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y,'UNB without IC\*-LS Liver',Liver\_with\_IC\_t\_alpah1, Liver\_with\_IC\_y\_alpah1,'with IC\*-LS Liver',Liver\_UNB\_with\_IC\_t\_alpah1,Liver\_UNB\_with\_IC\_y\_alpah1,'UNB with IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y,'without IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t', Liver\_without\_IC\_y','without IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t', Liver\_without\_IC\_y,'without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t',Liver\_UNB\_without\_IC\_y','UNB without IC\*-LS Liver',Liver\_with\_IC\_t\_alpah1', Liver\_with\_IC\_y\_alpah1','with IC\*-LS Liver',Liver\_UNB\_with\_IC\_t\_alpah1',Liver\_UNB\_with\_IC\_y\_alpah1','UNB with IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y','without IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y,'without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y','UNB without IC\*-LS Liver',Liver\_with\_IC\_t\_alpah1, Liver\_with\_IC\_y\_alpah1','with IC\*-LS Liver',Liver\_UNB\_with\_IC\_t\_alpah1,Liver\_UNB\_with\_IC\_y\_alpah1','UNB with IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y','without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y','UNB without IC\*-LS Liver',Liver\_with\_IC\_t\_alpah1, Liver\_with\_IC\_y\_alpah1','with IC\*-LS Liver',Liver\_UNB\_with\_IC\_t\_alpah1,Liver\_UNB\_with\_IC\_y\_alpah1','UNB with IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y,'without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y','UNB without IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y,'without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y,'UNB without IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y,'without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t',Liver\_UNB\_without\_IC\_y','UNB without IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y','without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y','UNB without IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y','without IC\*-LS Liver')

plotconfusion(Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y','UNB without IC\*-LS Liver')

Liver\_without\_IC\_t

Liver\_UNB\_without\_IC\_t

plotconfusion(Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y','UNB without IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y','without IC\*-LS Liver')

Liver\_UNB\_without\_IC\_t

Liver\_UNB\_without\_IC\_y'

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y','without IC\*-LS Liver')

plotconfusion(Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y','UNB without IC\*-LS Liver')

plotconfusion(Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y,'UNB without IC\*-LS Liver')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y','without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y,'UNB without IC\*-LS Liver',Liver\_with\_IC\_t\_alpah1, Liver\_with\_IC\_y\_alpah1','with IC\*-LS Liver',Liver\_UNB\_with\_IC\_t\_alpah1,Liver\_UNB\_with\_IC\_y\_alpah1,'UNB with IC\*-LS Liver')

load('D:\Leila\bnt\BNT\LatentDBN\_27\_6\_17\Retino\_IC\_LS\_27\_6\_17.mat')

figure;

hold on

[AUC\_UNB\_without\_IC AUH]=rocplot1(Retino\_UNB\_without\_IC\_y',Retino\_UNB\_without\_IC\_t',1,100,'without','r');hold on

[AUC\_UNB\_with\_IC AUH]=rocplot1(Retino\_UNB\_with\_IC\_y',Retino\_UNB\_with\_IC\_t',1,100,'with','b')

figure;

hold on

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r');hold on

[AUC\_with\_IC AUH]=rocplot1(Retino\_with\_IC\_y',Retino\_with\_IC\_t',1,100,'with','b')

figure;

hold on

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r')hold on

[AUC\_with\_IC AUH]=rocplot1(Retino\_with\_IC\_y',Retino\_with\_IC\_t',1,100,'with','b')

hold on

[AUC\_with\_IC AUH]=rocplot1(Retino\_with\_IC\_y',Retino\_with\_IC\_t',1,100,'with','b')

figure;

hold on

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r')hold on

[AUC\_with\_IC AUH]=rocplot1(Retino\_with\_IC\_y',Retino\_with\_IC\_t',1,100,'with','b')

figure;

hold on

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r')

hold on

[AUC\_with\_IC AUH]=rocplot1(Retino\_with\_IC\_y',Retino\_with\_IC\_t',1,100,'with','b')

[AUC\_with\_IC\_alpha1 AUH]=rocplot1(Retino\_with\_IC\_y\_alpah1',Retino\_with\_IC\_t\_alpah1',1,100,'with','b')

figure;

hold on

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r')

hold on

[AUC\_with\_IC\_alpha1 AUH]=rocplot1(Retino\_with\_IC\_y\_alpah1',Retino\_with\_IC\_t\_alpah1',1,100,'with','b')

figure;

hold on

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r')

hold on

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r')

figure;

hold on

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r')

hold on

[AUC\_with\_IC\_alpha1 AUH]=rocplot1(Retino\_with\_IC\_y\_alpah1',Retino\_with\_IC\_t\_alpah1',1,100,'with','b')

%-- 28/06/2017 10:39 --%

figure;

hold on

[AUC\_with\_IC\_alpha1 AUH]=rocplot1(Retino\_with\_IC\_y\_alpah1',Retino\_with\_IC\_t\_alpah1',1,100,'with','b')

load('D:\Leila\bnt\BNT\LatentDBN\_27\_6\_17\Retino\_IC\_LS\_27\_6\_17.mat')

figure;

hold on

[AUC\_with\_IC\_alpha1 AUH]=rocplot1(Retino\_with\_IC\_y\_alpah1',Retino\_with\_IC\_t\_alpah1',1,100,'with','b')

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r')

plotconfusion(Liver\_without\_IC\_t, Liver\_without\_IC\_y','without IC\*-LS Liver',Liver\_UNB\_without\_IC\_t,Liver\_UNB\_without\_IC\_y,'UNB without IC\*-LS Liver',Liver\_with\_IC\_t\_alpah1, Liver\_with\_IC\_y\_alpah1','with IC\*-LS Liver',Liver\_UNB\_with\_IC\_t\_alpah1,Liver\_UNB\_with\_IC\_y\_alpah1,'UNB with IC\*-LS Liver')

plotconfusion(Retino\_without\_IC\_t, Retino\_without\_IC\_y','without IC\*-LS Retinopathy',Retino\_UNB\_without\_IC\_t,Retino\_UNB\_without\_IC\_y,'UNB without IC\*-LS Retinopathy',Retino\_with\_IC\_t\_alpah1, Retino\_with\_IC\_y\_alpah1','with IC\*-LS Retinopathy',Retino\_UNB\_with\_IC\_t\_alpah1,Retino\_UNB\_with\_IC\_y\_alpah1,'UNB with IC\*-LS Retinopathy')

figure;

hold on

[AUC\_with\_IC\_alpha1 AUH]=rocplot1(Retino\_with\_IC\_y\_alpah1',Retino\_with\_IC\_t\_alpah1',1,100,'with','b')

hold on

[AUC\_without\_IC AUH]=rocplot1(Retino\_without\_IC\_y',Retino\_without\_IC\_t',1,100,'without','r')

**Excel patient hidden test data**

p81=cell2mat(testcell{81})'-1

p37=cell2mat(testcell{37})'-1;

p54=cell2mat(testcell{54})'-1;

p71=cell2mat(testcell{71})'-1;

p151=cell2mat(testcell{151})'-1;

p155=cell2mat(testcell{155})'-1;

p62=cell2mat(testcell{62})'-1

p73=cell2mat(testcell{73})'-1

p711=cell2mat(testcell{71})'-1

p132=cell2mat(testcell{132})'-1

p151=cell2mat(testcell{151})'-1

p68=cell2mat(testcell{68})'-1

p21=cell2mat(testcell{21})'-1

p11=cell2mat(testcell{11})'-1

p8=cell2mat(testcell{8})'-1

outpred\_liver=outpred3{5}

H\_54\_liver=outpred\_liver{54}(:,1)

H\_37\_liver=outpred\_liver{37}(:,1)

H\_71\_liver=outpred\_liver{71}(:,1)

H\_151\_liver=outpred\_liver{151}(:,1)

H\_155\_liver=outpred\_liver{155}(:,1)

H\_152\_liver=outpred\_liver{152}(:,1)

H\_8\_liver=outpred\_liver{8}(:,1)

H\_11\_liver=outpred\_liver{11}(:,1)

H\_21\_liver=outpred\_liver{21}(:,1)

H\_68\_liver=outpred\_liver{68}(:,1)

H\_62\_liver=outpred\_liver{62}(:,1)

H\_73\_liver=outpred\_liver{73}(:,1)

H\_81\_liver=outpred\_liver{81}(:,1)

H\_71\_liver=outpred\_liver{71}(:,1)

H\_132\_liver=outpred\_liver{132}(:,1)

outpred\_liver=outpred3{5}

outpred\_retino=outpred3{2}

outpred\_neuro=outpred3{3}

outpred\_nepro=outpred3{4}

outpred\_hyper=outpred3{6}

H\_p81\_retino=outpred\_retino{81}(:,1)

H\_54\_retino=outpred\_retino{54}(:,1)

H\_37\_retino=outpred\_retino{37}(:,1)

H\_71\_retino=outpred\_retino{71}(:,1)

H\_151\_retino=outpred\_retino{151}(:,1)

H\_155\_retino=outpred\_retino{155}(:,1)

H\_152\_retino=outpred\_retino{152}(:,1)

H\_8\_retino =outpred\_retino {8}(:,1)

H\_11\_retino =outpred\_retino {11}(:,1)

H\_21\_retino =outpred\_retino {21}(:,1)

H\_68\_retino =outpred\_retino {68}(:,1)

H\_62\_retino =outpred\_retino {62}(:,1)

H\_73\_retino =outpred\_retino {73}(:,1)

H\_81\_retino =outpred\_retino {81}(:,1)

H\_71\_retino =outpred\_retino {71}(:,1)

H\_132\_retino =outpred\_retino {132}(:,1)

outpred\_retino\_ic =outpred3{2};

H\_54\_outpred\_retino\_ic =outpred\_retino\_ic{54}(:,1)

H\_37\_outpred\_retino\_ic=outpred\_retino\_ic{37}(:,1)

H\_71\_outpred\_retino\_ic=outpred\_retino\_ic{71}(:,1)

H\_151\_outpred\_retino\_ic=outpred\_retino\_ic{151}(:,1)

H\_155\_outpred\_retino\_ic=outpred\_retino\_ic{155}(:,1)

H\_152\_outpred\_retino\_ic=outpred\_retino\_ic {152}(:,1)

H\_81\_outpred\_retino\_ic=outpred\_retino\_ic {81}(:,1)

H\_8\_retino\_ic =outpred\_retino\_ic {8}(:,1)

H\_11\_retino\_ic =outpred\_retino\_ic {11}(:,1)

H\_21\_retino\_ic =outpred\_retino\_ic {21}(:,1)

H\_68\_retino\_ic =outpred\_retino\_ic {68}(:,1)

H\_62\_retino\_ic =outpred\_retino\_ic {62}(:,1)

H\_73\_retino\_ic =outpred\_retino\_ic {73}(:,1)

H\_81\_retino\_ic =outpred\_retino\_ic {81}(:,1)

H\_71\_retino\_ic =outpred\_retino\_ic {71}(:,1)

H\_132\_retino\_ic =outpred\_retino\_ic {132}(:,1)

H\_p81\_neuro=outpred\_neuro{81}(:,1)

H\_54\_neuro=outpred\_neuro{54}(:,1)

H\_37\_neuro=outpred\_neuro{37}(:,1)

H\_71\_neuro=outpred\_neuro{71}(:,1)

H\_151\_neuro=outpred\_neuro{151}(:,1)

H\_155\_neuro=outpred\_neuro{155}(:,1)

H\_152\_neuro=outpred\_neuro{152}(:,1)

H\_p81\_nepro=outpred\_nepro{81}(:,1)

H\_54\_nepro=outpred\_nepro{54}(:,1)

H\_37\_nepro=outpred\_nepro{37}(:,1)

H\_71\_nepro=outpred\_nepro{71}(:,1)

H\_151\_nepro=outpred\_nepro{151}(:,1)

H\_155\_nepro=outpred\_nepro{155}(:,1)

H\_152\_nepro=outpred\_nepro{152}(:,1)

H\_p81\_hyper=outpred\_hyper{81}(:,1)

H\_54\_hyper=outpred\_hyper{54}(:,1)

H\_37\_hyper=outpred\_hyper{37}(:,1)

H\_71\_hyper=outpred\_hyper{71}(:,1)

H\_151\_hyper=outpred\_hyper{151}(:,1)

H\_155\_hyper=outpred\_hyper{155}(:,1)

H\_152\_hyper=outpred\_hyper{152}(:,1)

H\_8\_hyper =outpred\_hyper {8}(:,1)

H\_11\_hyper =outpred\_hyper {11}(:,1)

H\_21\_hyper =outpred\_hyper {21}(:,1)

H\_68\_hyper =outpred\_hyper {68}(:,1)

H\_62\_hyper =outpred\_hyper {62}(:,1)

H\_73\_hyper =outpred\_hyper {73}(:,1)

H\_81\_hyper =outpred\_hyper {81}(:,1)

H\_71\_hyper =outpred\_hyper {71}(:,1)

H\_132\_hyper =outpred\_hyper {132}(:,1)

**% probability of comorbidities**

PROB\_54\_outpred\_retino\_ic =outpred\_retino\_ic{54}(:,3)

PROB\_37\_outpred\_retino\_ic=outpred\_retino\_ic{37}(:,3)

PROB\_71\_outpred\_retino\_ic=outpred\_retino\_ic{71}(:,3)

PROB\_151\_outpred\_retino\_ic=outpred\_retino\_ic{151}(:,3)

PROB\_155\_outpred\_retino\_ic=outpred\_retino\_ic{155}(:,3)

PROB\_152\_outpred\_retino\_ic=outpred\_retino\_ic {152}(:,3)

PROB\_81\_outpred\_retino\_ic=outpred\_retino\_ic {81}(:,3)

PROB\_8\_retino\_ic =outpred\_retino\_ic {8}(:,3)

PROB\_11\_retino\_ic =outpred\_retino\_ic {11}(:,3)

PROB\_21\_retino\_ic =outpred\_retino\_ic {21}(:,3)

PROB\_68\_retino\_ic =outpred\_retino\_ic {68}(:,3)

PROB\_62\_retino\_ic =outpred\_retino\_ic {62}(:,3)

PROB\_73\_retino\_ic =outpred\_retino\_ic {73}(:,3)

PROB\_81\_retino\_ic =outpred\_retino\_ic {81}(:,3)

PROB\_71\_retino\_ic =outpred\_retino\_ic {71}(:,3)

PROB\_132\_retino\_ic =outpred\_retino\_ic {132}(:,3)

H\_p81\_neuro=outpred\_neuro{81}(:,1)

H\_54\_neuro=outpred\_neuro{54}(:,1)

H\_37\_neuro=outpred\_neuro{37}(:,1)

H\_71\_neuro=outpred\_neuro{71}(:,1)

H\_151\_neuro=outpred\_neuro{151}(:,1)

H\_155\_neuro=outpred\_neuro{155}(:,1)

H\_152\_neuro=outpred\_neuro{152}(:,1)

H\_p81\_nepro=outpred\_nepro{81}(:,1)

H\_54\_nepro=outpred\_nepro{54}(:,1)

H\_37\_nepro=outpred\_nepro{37}(:,1)

H\_71\_nepro=outpred\_nepro{71}(:,1)

H\_151\_nepro=outpred\_nepro{151}(:,1)

H\_155\_nepro=outpred\_nepro{155}(:,1)

H\_152\_nepro=outpred\_nepro{152}(:,1)

H\_p81\_hyper=outpred\_hyper{81}(:,1)

H\_54\_hyper=outpred\_hyper{54}(:,1)

H\_37\_hyper=outpred\_hyper{37}(:,1)

H\_71\_hyper=outpred\_hyper{71}(:,1)

H\_151\_hyper=outpred\_hyper{151}(:,1)

H\_155\_hyper=outpred\_hyper{155}(:,1)

H\_152\_hyper=outpred\_hyper{152}(:,1)

H\_8\_hyper =outpred\_hyper {8}(:,1)

H\_11\_hyper =outpred\_hyper {11}(:,1)

H\_21\_hyper =outpred\_hyper {21}(:,1)

H\_68\_hyper =outpred\_hyper {68}(:,1)

H\_62\_hyper =outpred\_hyper {62}(:,1)

H\_73\_hyper =outpred\_hyper {73}(:,1)

H\_81\_hyper =outpred\_hyper {81}(:,1)

H\_71\_hyper =outpred\_hyper {71}(:,1)

H\_132\_hyper =outpred\_hyper {132}(:,1)

PROB\_54\_outpred\_hyper\_ic =outpred\_hyper\_ic{54}(:,7)

PROB\_37\_outpred\_hyper\_ic=outpred\_hyper\_ic{37}(:,7)

PROB\_71\_outpred\_hyper\_ic=outpred\_hyper\_ic{71}(:,7)

PROB\_151\_outpred\_hyper\_ic=outpred\_hyper\_ic{151}(:,7)

PROB\_155\_outpred\_hyper\_ic=outpred\_hyper\_ic{155}(:,7)

PROB\_152\_outpred\_hyper\_ic=outpred\_hyper\_ic {152}(:,7)

PROB\_81\_outpred\_hyper\_ic=outpred\_hyper\_ic {81}(:,7)

PROB\_8\_hyper\_ic =outpred\_hyper\_ic {8}(:,7)

PROB\_11\_hyper\_ic =outpred\_hyper\_ic {11}(:,7)

PROB\_21\_hyper\_ic =outpred\_hyper\_ic {21}(:,7)

PROB\_68\_hyper\_ic =outpred\_hyper\_ic {68}(:,7)

PROB\_62\_hyper\_ic =outpred\_hyper\_ic {62}(:,7)

PROB\_73\_hyper\_ic =outpred\_hyper\_ic {73}(:,7)

PROB\_81\_hyper\_ic =outpred\_hyper\_ic {81}(:,7)

PROB\_71\_hyper\_ic =outpred\_hyper\_ic {71}(:,7)

PROB\_132\_hyper\_ic =outpred\_hyper\_ic {132}(:,7)

load('D:\Leila\bnt\BNT\LatentDBN\_27\_6\_17\Liver\_IC\_LS\_28\_6\_17.mat')

outpred\_liver\_ic =outpred3{5};

H\_54\_outpred\_liver\_ic =outpred\_liver\_ic{54}(:,1)

H\_37\_outpred\_liver\_ic=outpred\_liver\_ic{37}(:,1)

H\_71\_outpred\_liver\_ic=outpred\_liver\_ic{71}(:,1)

H\_151\_outpred\_liver\_ic=outpred\_liver\_ic{151}(:,1)

H\_155\_outpred\_liver\_ic=outpred\_liver\_ic{155}(:,1)

H\_152\_outpred\_liver\_ic=outpred\_liver\_ic {152}(:,1)

H\_81\_outpred\_liver\_ic=outpred\_liver\_ic {81}(:,1)

H\_8\_liver\_ic =outpred\_liver\_ic {8}(:,1)

H\_11\_liver\_ic =outpred\_liver\_ic {11}(:,1)

H\_21\_liver\_ic =outpred\_liver\_ic {21}(:,1)

H\_68\_liver\_ic =outpred\_liver\_ic {68}(:,1)

H\_62\_liver\_ic =outpred\_liver\_ic {62}(:,1)

H\_73\_liver\_ic =outpred\_liver\_ic {73}(:,1)

H\_81\_liver\_ic =outpred\_liver\_ic {81}(:,1)

H\_71\_liver\_ic =outpred\_liver\_ic {71}(:,1)

H\_132\_liver\_ic =outpred\_liver\_ic {132}(:,1)

PROB\_54\_outpred\_liver\_ic =outpred\_liver\_ic{54}(:,6)

PROB\_37\_outpred\_liver\_ic=outpred\_liver\_ic{37}(:,6)

PROB\_71\_outpred\_liver\_ic=outpred\_liver\_ic{71}(:,6)

PROB\_151\_outpred\_liver\_ic=outpred\_liver\_ic{151}(:,6)

PROB\_155\_outpred\_liver\_ic=outpred\_liver\_ic{155}(:,6)

PROB\_152\_outpred\_liver\_ic=outpred\_liver\_ic {152}(:,6)

PROB\_81\_outpred\_liver\_ic=outpred\_liver\_ic {81}(:,6)

PROB\_8\_liver\_ic =outpred\_liver\_ic {8}(:,6)

PROB\_11\_liver\_ic =outpred\_liver\_ic {11}(:,6)

PROB\_21\_liver\_ic =outpred\_liver\_ic {21}(:,6)

PROB\_68\_liver\_ic =outpred\_liver\_ic {68}(:,6)

PROB\_62\_liver\_ic =outpred\_liver\_ic {62}(:,6)

PROB\_73\_liver\_ic =outpred\_liver\_ic {73}(:,6)

PROB\_81\_liver\_ic =outpred\_liver\_ic {81}(:,6)

PROB\_71\_liver\_ic =outpred\_liver\_ic {71}(:,6)

PROB\_132\_liver\_ic =outpred\_liver\_ic {132}(:,6)

outpred\_hyper\_ic =outpred3{6};

H\_54\_outpred\_hyper\_ic =outpred\_hyper\_ic{54}(:,1)

H\_37\_outpred\_hyper\_ic=outpred\_hyper\_ic{37}(:,1)

H\_71\_outpred\_hyper\_ic=outpred\_hyper\_ic{71}(:,1)

H\_151\_outpred\_hyper\_ic=outpred\_hyper\_ic{151}(:,1)

H\_155\_outpred\_hyper\_ic=outpred\_hyper\_ic{155}(:,1)

H\_152\_outpred\_hyper\_ic=outpred\_hyper\_ic {152}(:,1)

H\_81\_outpred\_hyper\_ic=outpred\_hyper\_ic {81}(:,1)

H\_8\_hyper\_ic =outpred\_hyper\_ic {8}(:,1)

H\_11\_hyper\_ic =outpred\_hyper\_ic {11}(:,1)

H\_21\_hyper\_ic =outpred\_hyper\_ic {21}(:,1)

H\_68\_hyper\_ic =outpred\_hyper\_ic {68}(:,1)

H\_62\_hyper\_ic =outpred\_hyper\_ic {62}(:,1)

H\_73\_hyper\_ic =outpred\_hyper\_ic {73}(:,1)

H\_81\_hyper\_ic =outpred\_hyper\_ic {81}(:,1)

H\_71\_hyper\_ic =outpred\_hyper\_ic {71}(:,1)

H\_132\_hyper\_ic =outpred\_hyper\_ic {132}(:,1)

load('D:\Leila\bnt\BNT\LatentDBN\_27\_6\_17\Liver\_IC\_LS\_28\_6\_17.mat')

patlen = 182;

hba1c = [];

for i = 1:patlen

temp31=cell2mat(testcell{i}(1,:));

temp31=temp31(2:length(temp31))'-1;

hba1c = [hba1c;temp31];

end

BMI = [];for i = 1:patlen

temp31=cell2mat(testcell{i}(7,:));

temp31=temp31(2:length(temp31))'-1;

BMI= [BMI;temp31];

end

CREATININE = [];for i = 1:patlen

temp31=cell2mat(testcell{i}(8,:));

temp31=temp31(2:length(temp31))'-1;

CREATININE= [CREATININE;temp31];

end

HDL = [];for i = 1:patlen

temp31=cell2mat(testcell{i}(10,:));

temp31=temp31(2:length(temp31))'-1;

HDL= [HDL;temp31];

end

DBP = [];for i = 1:patlen

temp31=cell2mat(testcell{i}(11,:));

temp31=temp31(2:length(temp31))'-1;

DBP= [DBP;temp31];

end

CHOLESTROL = [];for i = 1:patlen

temp31=cell2mat(testcell{i}(9,:));

temp31=temp31(2:length(temp31))'-1;

CHOLESTROL= [CHOLESTROL;temp31];

end

SBP = [];for i = 1:patlen

temp31=cell2mat(testcell{i}(12,:));

temp31=temp31(2:length(temp31))'-1;

SBP= [SBP;temp31];

end

SMK = [];for i = 1:patlen

temp31=cell2mat(testcell{i}(13,:));

temp31=temp31(2:length(temp31))'-1;

SMK= [SMK;temp31];

End