# Supplementary Material

Training error curve Matlab code:

clc;clear all;close all

rng(0)

xlsfile='8.xlsx';

[data1,~]=xlsread(xlsfile,1,'d4:e33');

P\_train=data1((1:25),1)';

P\_test=data1((26:30),1)';

T\_train=data1((1:25),2)';

T\_test=data1((26:30),2)';

[p\_train,ps\_input]=mapminmax(P\_train,0,1);

p\_test=mapminmax('apply',P\_test,ps\_input);

[t\_train,ps\_output]=mapminmax(T\_train,0,1);

i=1;

% for rbf\_spread=0.1:0.1:1

% net=newrb(p\_train,t\_train,0.04,rbf\_spread);

% net=newrbe(p\_train,t\_train,rbf\_spread);

% t\_sim1=sim(net,p\_test);

% T\_sim1=mapminmax('reverse',t\_sim1,ps\_output);

% error2(i,:)=(T\_sim1-T\_test);

% R=corrcoef(T\_sim1,T\_test);

% corr(i)=R(2)\*R(2)

% i=(i+1);

% end

net=newrb(p\_train,t\_train,0.04,0.2);

% net=newrbe(p\_train,t\_train,rbf\_spread);

t\_sim1=sim(net,p\_test);

T\_sim1=mapminmax('reverse',t\_sim1,ps\_output);

R=corrcoef(T\_sim1,T\_test);

corr=R(2)\*R(2)

newrb radial basis function matlab code:

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T\_train=data1((1:25),2)';

T\_test=data1((26:30),2)';

[p\_train,ps\_input]=mapminmax(P\_train,0,1);

p\_test=mapminmax('apply',P\_test,ps\_input);

[t\_train,ps\_output]=mapminmax(T\_train,0,1);

i=1;

for rbf\_spread=0.1:0.1:1

 net=newrb(p\_train,t\_train,0.04,rbf\_spread);

 t\_sim1=sim(net,p\_test);

 T\_sim1=mapminmax('reverse',t\_sim1,ps\_output);

 error2(i,:)=(T\_sim1-T\_test);

 R=corrcoef(T\_sim1,T\_test);

 corr(i)=R(2)\*R(2)

 i=(i+1);

end

figure(1)

plot(0.1:0.1:1,corr,'r-o')

xlabel('Spread')

ylabel('R2')

ylim([0,1])

newrbe radial basis function matlab code:

clc;clear all;close all

rng(0)

xlsfile='8.xlsx';

[data1,~]=xlsread(xlsfile,1,'d4:e33');

P\_train=data1((1:25),1)';

P\_test=data1((26:30),1)';

T\_train=data1((1:25),2)';

T\_test=data1((26:30),2)';

[p\_train,ps\_input]=mapminmax(P\_train,0,1);

p\_test=mapminmax('apply',P\_test,ps\_input);

[t\_train,ps\_output]=mapminmax(T\_train,0,1);

i=1;

for rbf\_spread=0.1:0.1:1

% net=newrb(p\_train,t\_train,0.04,rbf\_spread);

 net=newrbe(p\_train,t\_train,rbf\_spread);

 t\_sim1=sim(net,p\_test);

 T\_sim1=mapminmax('reverse',t\_sim1,ps\_output);

 error2(i,:)=(T\_sim1-T\_test);

 R=corrcoef(T\_sim1,T\_test);

 corr(i)=R(2)\*R(2)

 i=(i+1);

end

figure(1)

plot(0.1:0.1:1,corr,'r-o')

xlabel('Spread')

ylabel('R2')

ylim([0,1])

[a,xiaobiao]=max(corr);

figure(2)

plot(1:5,error2(xiaobiao,:),'b-o')

xlabel('item')

ylabel('value')

ylim([0,0.01])