Matlab code for RE and CE calculation

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% The leave-one-out method for verification of reconstructed models.
function [R,Rsquare,P,RE,CE,MSE,RMSE,z,l,t]=loocv(data)
x=data(:,1);
y=data(:,2);
% z+/l- for sign test
n=length(y);
for i=1:n
dotbeta=[1:i-1 i+1:n];
for j=1:n-1
x1(j,i)=x(dotbeta(j));
y1(j,i)=y(dotbeta(j));
end
end
for i=1:n
[B]=regress(y1(:,i),[ones(size(x1,1),1) x1(:,i)],0.01);
B=B';
for j=1:2
b1(i,j)=B(:,j);
end
end
beta=b1(:,1);
beta1=b1(:,2);
for i=1:n
y2(i)=beta(i)+beta1(i)*x(i);
end
Y2=y2';
sum=0;
sum1=0;
sum2=0;
sum3=0;
for i=1:n
sum=sum+(y(i)-y2(i))*(y(i)-y2(i)); % Sum of squares of errors,validation (SSE)
sum1=sum1+y(i)*y(i);
sum2=sum2+(y(i)-mean(y))*(y(i)-mean(y));
sum3=sum3+(y(i)-mean(Y2))*(y(i)-mean(Y2));
end
%RE=1-(sum/sum1);% Defined by Wu Xiangding (not use)
RE=1-(sum/sum2); % Defined by Lorenz,1956
CE=1-(sum/sum3); % CE Defined by Briffa.
MSE=sum/n; % Mean squared erro of validation
RMSE=sqrt(sum/n); % Root mean squared error of validation
[R,P]=corrcoef(y2,y);
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Z=R(:,2);
Rsquare=Z(1)*Z(1);
AdjRsquare=1-(1-Rsquare)*(n-1)/(n-1-1)
for i=1:n
ym(i)=y(i)-mean(y);
y2m(i)=y2(i)-mean(y2);
pyy2(i)=ym(i)*y2m(i);
end
z=0;
l=0;
for i=1:n
if pyy2(i)>0
z=z+1;
yy1(z)=pyy2(i);
else
l=l+1;
zz1(l)=abs(pyy2(i));
end
end
s1=0;
for i=1:z
s1=s1+(yy1(i)-mean(yy1))*(yy1(i)-mean(yy1));
end
s1=s1/(z-1);
s2=0;
for i=1:l
s2=s2+(zz1(i)-mean(zz1))*(zz1(i)-mean(zz1));
end
s2=s2/(l-1);
t=(mean(yy1)-abs(mean(zz1)))/sqrt(s1/z+s2/l);
% PRESS=SSE; Predicted residual sum of squares
```