```
clc; clear all; close all;
filename='windedata.xlsx';
wine = xlsread(filename, 'White Wine');      % reads the White wine data from excel
   p=3430;q=4898;                            % number of experimental samples and total sample
s
   xbar=mean(wine);                          % mean of columns of experimental samples
   sigma=std(wine);                          % standard deviation of columns of experimental s
amples
   [m,n]=size(wine);                         % get size of  experimental samples

   NormA=wine-(ones(m,1)*xbar);              % mean shift
   NormA=NormA./(ones(m,1)*sigma);           % scale by standard deviation

   X=NormA(1:p,[1:n-1]);                     % extract input experimental data
   Y=NormA(1:p,n);                           % extract output experimental data

   alpha_O=inv(X.'*X)*X.'*Y   ;              % OLS slope estimate
   beta=mean(Y)-alpha_O.'*mean(X).';         % OLS constant estimate
   Y1=NormA(p+1:q,n);                        % actual values of test samples
   Y_O=NormA(p+1:q,[1:n-1])*alpha_O;         % OLS model prediction for test samples
   RMSD_O =sqrt((Y1-Y_O).'*(Y1-Y_O)/(q-p-1));   % root mean square deviation of OLS

    Z=[X Y];
   S=Z.'*Z;                                  % Covariance matrix
   [V,D]=eig(S);                             % V - eigen vector matrix, D- eigen values
   alpha_T=-V(:,1)/V(n,1)  ;                 % TLS estimates
   alpha_T(n)=[];                            % Remove the output vector
   Y_T=NormA(p+1:q,1:n-1)*alpha_T;              % TLS model prediction for test samples
   RMSD_T =sqrt((Y1-Y_T).'*(Y1-Y_T)/(q-p-1));   % root mean square deviation of TLS

fprintf('\n\n-----------------------------------------------------------\n')
fprintf('\n Root mean square deviation for OLS of White wine test samples \n')
fprintf(' RMSD = %s\n', RMSD_O)
fprintf('\n Root mean square deviation for TLS of White wine test samples \n')
fprintf(' RMSD = %s\n', RMSD_T)
fprintf('\n-----------------------------------------------------------\n')
```

```
-----------------------------------------------------------

 Root mean square deviation for OLS of White wine test samples
 RMSD = 8.007897e-01

 Root mean square deviation for TLS of White wine test samples
 RMSD = 6.379697e+00

-----------------------------------------------------------
```

Published with MATLAB® R2016a