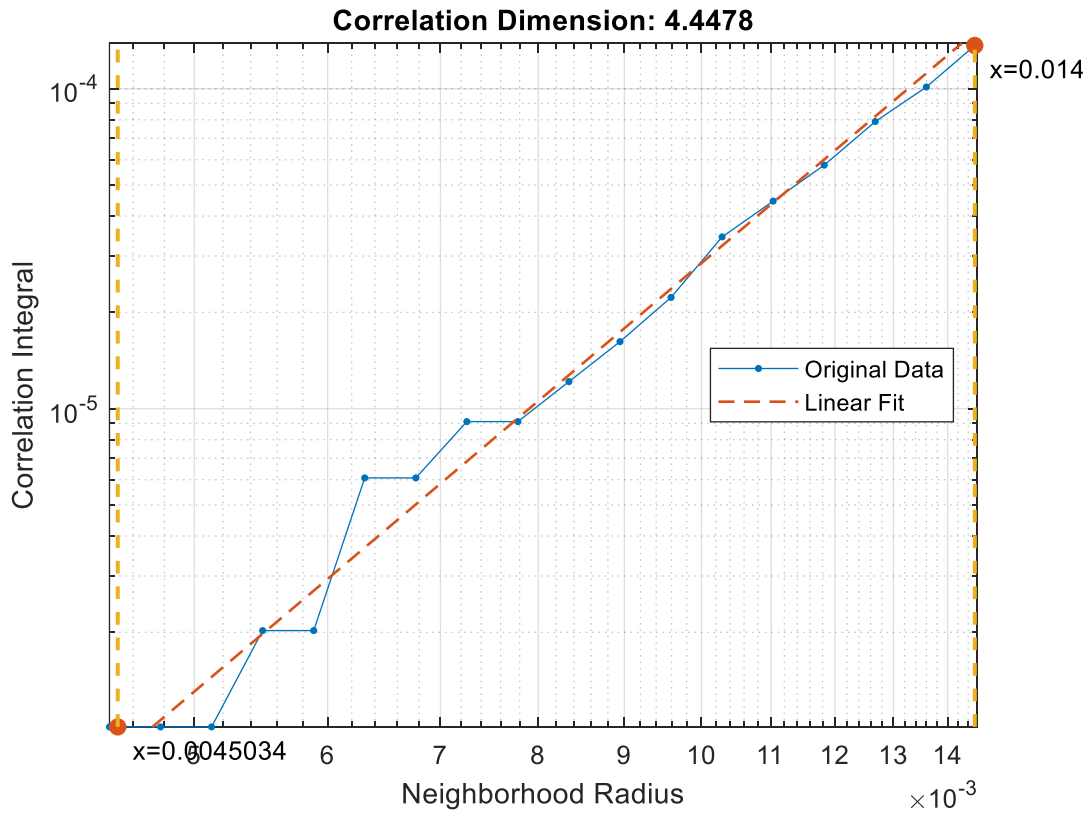
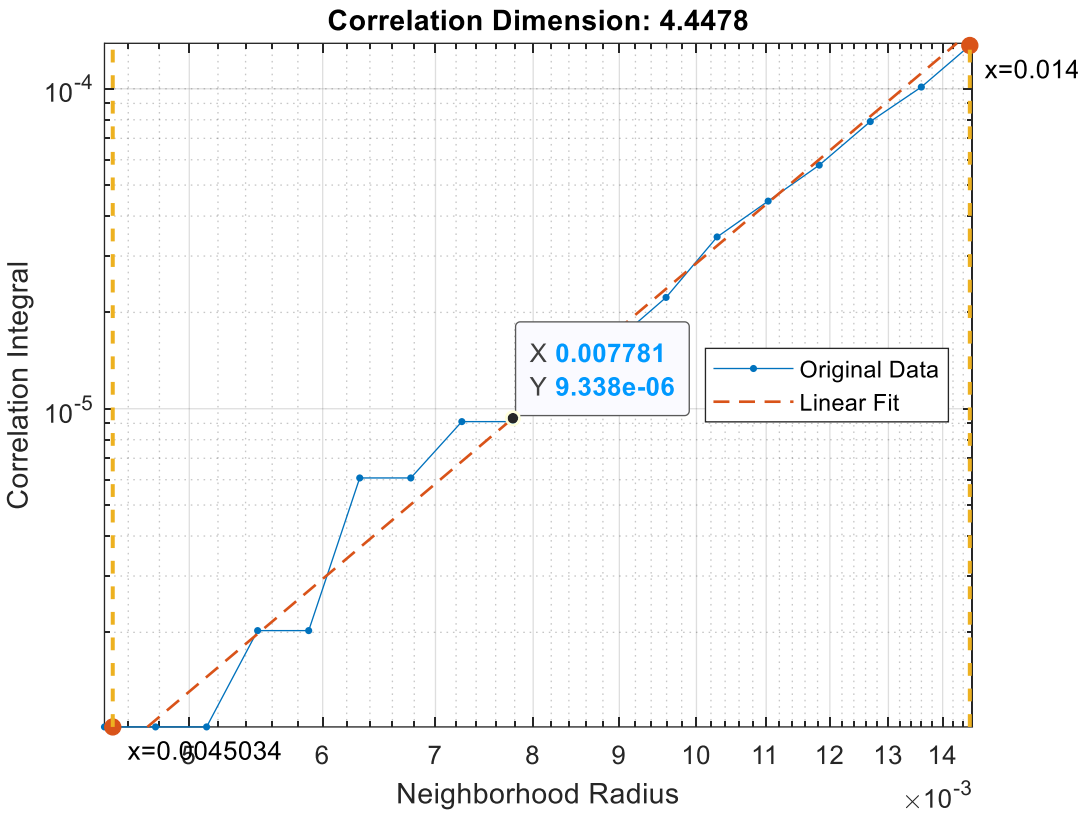
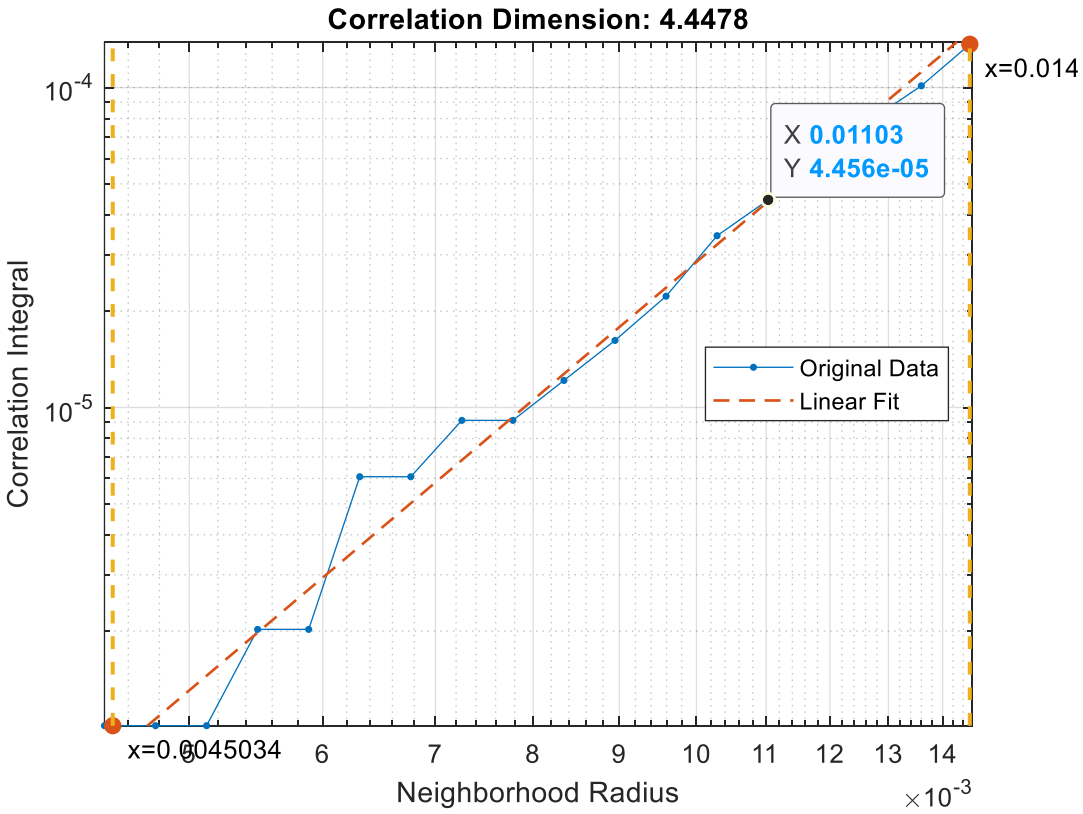
Same codes are applied on Faulty bearing.

```
[n,p]=size(Healthy);
t=1:n;
mean(Healthy); %ortalama
median(Healthy); % medyan
std(Healthy); % standart sapma
zscore(Healthy);%standardization/normalization
histogram(Healthy);
window=20; %nokta_sayısı Moving Average Filter
meanHealthy=movmean(Healthy,window);
plot(t,Healthy,t,meanHealthy);
periodogram(Healthy);
autocorr(Healthy);
spectrogram(Healthy);
%Differencing_First
Y= diff(Healthy)
[k,h]=size(Y);
s=1:k;
plot(s,Y)
W=diff(Y) %Dif_second
[e,r]=size(W);
v=1:e;
plot(v,W)
G=diff(W) %Dif_Third
[d,f]=size(G);
q=1:d;
plot(q,G)
%AMI_First minimum
Y=log(1-(autocorr(Healthy,150).^2));
A=Y*(-1/2);
[m,k]=size(A);
```

```
s=1:m;
TF = islocalmin(A);
plot(s,A,s(TF),A(TF),'r*')
xdata=Healthy_2(:,1);
[~,eLag,eDim] = phaseSpaceReconstruction(xdata)
phaseSpaceReconstruction(xdata,eLag,eDim);
dim=4;
lag=4;
Np=100;
correlationDimension(xdata,lag,dim,'NumPoints',Np)
MinR=0.007781;
MaxR=0.01103;
corDim = correlationDimension(xdata,[],dim,'MinRadius',MinR,'MaxRadius',MaxR,'NumPoints',Np)
```




Correlation Dimension: 4.4478
Correlation Integral
Neighborhood Radius
X 0.007781
Y 9.338e-06
Original Data
Linear Fit
x=0.014
x=0.0045034
$10^{-4}$
$10^{-5}$
$\times 10^{-3}$


Correlation Dimension: 4.4478
Correlation Integral
Neighborhood Radius
X 0.01103
Y 4.456e-05
Original Data
Linear Fit
x=0.014
x=0.0045034
$10^{-4}$
$10^{-5}$
$\times 10^{-3}$

>> MinR=0.007781;

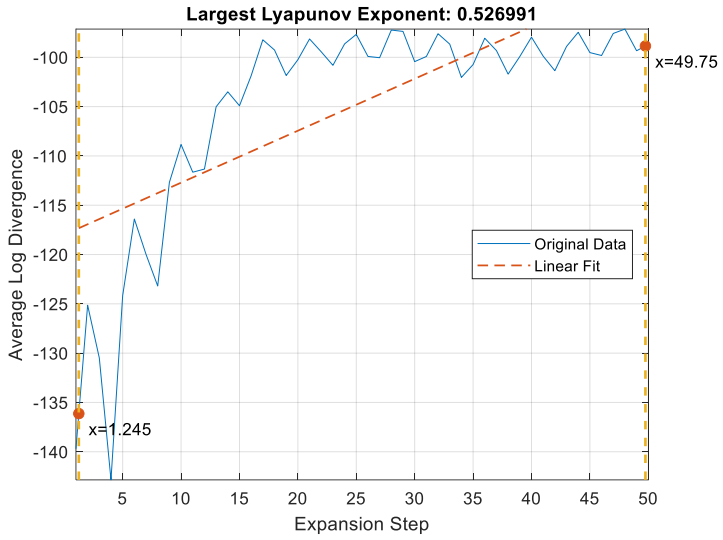
MaxR=0.01103;

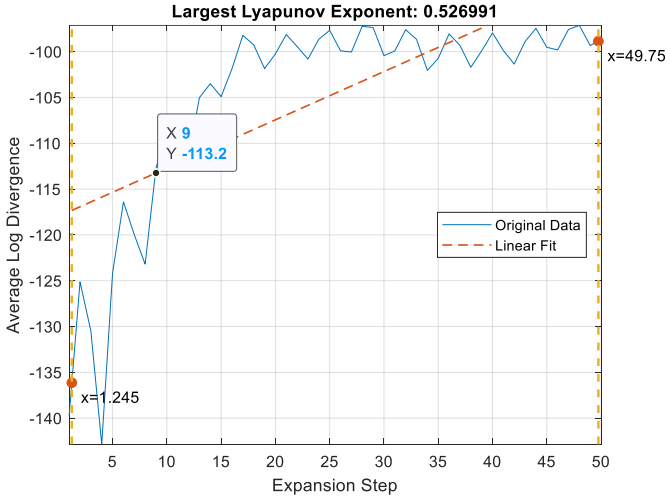
corDim = 3.8076

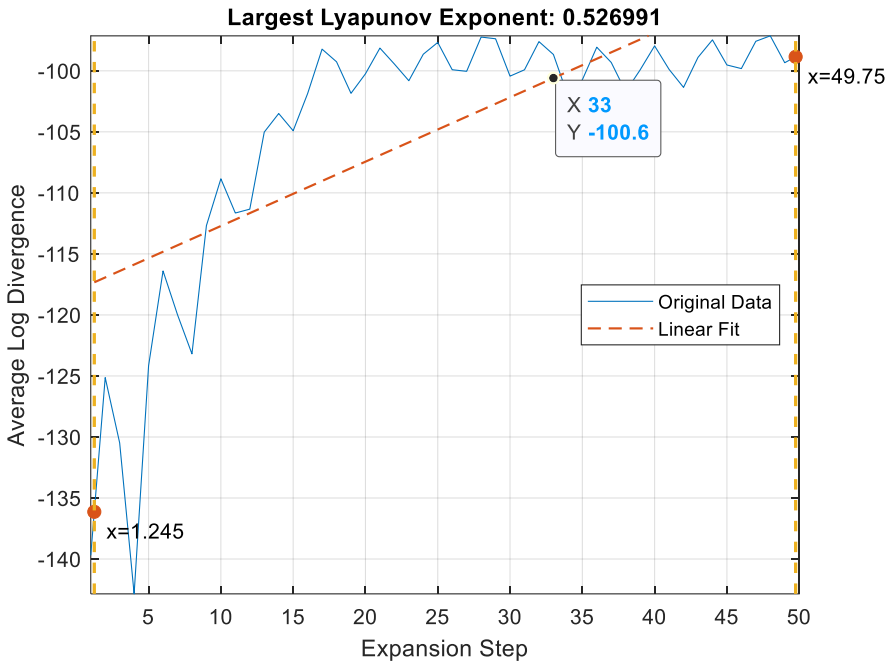
fs=48;

eRange=50;

lyapunovExponent(xdata,fs,lag,dim,'ExpansionRange',eRange)






```
>> Kmin=9;

>> Kmax=33;

>> lyapExp = lyapunovExponent(xdata,fs,lag,dim,'ExpansionRange',[Kmin Kmax])

lyapExp = 0.5207

approxEnt = approximateEntropy(xdata,eLag,eDim)

approxEnt =  0.2070
```