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17/ENG01/021

CHEMICAL ENGINEERING

ENG382 ASSIGNMENT 5

commandwindow

clearvars

clc

close all

format short g

syms t Kp Td Tp x

%Linearized

v= Kp\*(1-exp(-((t-Td)/Tp)));

favour=xlsread('1587203818odevbesdata','data1');

t1=favour(:,1);

v=favour(:,2);

V =round(favour(900,2),1);

t0=ones(length(v),1);

t=[t0 t1];

[mcoeff, mcoeffint, mrseid, mresidint, manova]=regress(v,t1);

mcoeff

manova

Kp=V

Td=-mcoeff(1)

Tp=mcoeff

figure(1)

plot(t1,v)

hold on

plot(t1,V)

grid on

grid minor

xlabel('Time(min)')

ylabel('Volume(m^3)')

legend('Experimental','Linearized')

%non-linear

fun=[0.1,0.1,0.1,0.1];

hope=@(v,t) fun(1)\*(1-exp(-((fun(2)-fun(3))/fun\*4)));

favour = nlinfit(t1,v, fun, hope);

figure(2)

plot(t1,v)

hold on

plot(t1,favour)

grid on

grid minor

xlabel('Time(min)')

ylabel('Volume(m^3)')

legend('Experimental','Nonlinear')

%comparing

figure(3)

plot(t1,v)

hold on

plot(t1,v)

hold on

plot(t1,favour)

grid minor

grid on

xlabel('Time(min)')

ylabel('Volume(m^3)')

legend('Experimental','Linearlized','Nonlinear')

%SAE

[v,t1]=simplefit\_data1;

net=fitnet('10.train');

net.performFcn= 'sae';

net= train(net,x,t)

y=net(x)

e=t1-y

perf= sae(net,t,y)

%MAE

y=net(v)

e=t-y

perf= mae(e)

%SSE

[v,t1]=simplefit\_data1;

net= fitnet(10);

net.performFcn= 'sse';

net= train(net,x,t)

y=net(x)

e=t1-y

perf= sse(net,t,y)

