

```

%%
clear;clc;clf;
load dataLouisSp.mat
apple = dataLouis;
Fc=10e3;
x=1/(2*pi*Fc)
a=-(apple(1,1)-apple(2,1))/x;
xfilt = filter(a, [1 a-1], (apple(:,2)));
xfilt = filter(a, [1 a-1], xfilt);
    %hold on
    %plot(apple(:,1),apple(:,2));
    %plot(apple(:,1),xfilt,'r')

timeLoc=1;
index=1;
y=xfilt;
totalPoints=500;
distance=16;
for i=1:totalPoints
    [aa(index),in] = max(y(timeLoc:timeLoc+distance));
    maxIndex(index)=in+timeLoc;
    timeLoc=maxIndex(index)+distance/2;
    index=index+1;
end
figure(1)
hold on
plot(maxIndex,aa,'ro')
plot(y)

maxTimes=apple(maxIndex,1);

for i=1:totalPoints-1
    a(i)=maxTimes(i+1)-maxTimes(i);
end
figure(2)
bar(a)

bits=a<7e-5;
figure(3)
bar(maxTimes(1:end-1),bits)

```