

bent_ten

```
% Question-2 Lab-6
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% Date: February 23, 2021
%
% Ten bent coins, Unknown Biases, Equally likely to get selected for tossing
% Given T observation sequences
% Parameter learning using Expectation maximization
%
% Reference: What is expectation maximization algorithm?
% Chuong B Do and Serafim Batzoglou, Nature Biotechnology,
% Vol 26, Num 8, Aug 2008
clc;
clear all;
close all;
y=csvread("2020_ten_bent_coins.csv");
# initial theta
theta=rand(1,10);
h = sum(y,2); t = 100-h;
th(1,:) = theta;
for n=2:500
    LH=zeros(size(h));
    for k=1:10
        lh(:,k) = (th(n-1,k).^h).*((1-th(n-1,k)).^t);
        LH=LH+lh(:,k);
    end
    for k=1:10
        th(n,k)=sum(h.*lh(:,k)./LH)/sum((h+t).*lh(:,k)./LH);
    end
end
disp("Initial Theta");
disp(theta);
disp("New Theta");
final=th(500,:);
disp(final);
```

```
Initial Theta
    0.5226    0.5911    0.1414    0.6579    0.7088    0.4528    0.9770    0.4377    0.7161    0.6568
New Theta
final =
```

Columns 1 through 8:

```
    0.287560    0.391205    0.010000    0.569791    0.688256    0.176789    0.897061    0.092424
```

Columns 9 and 10:

```
    0.784089    0.477410
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