Contents


```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR
```

Assignment Information Assignment: Ma3_Task5 Author: Team4 Team ID: 01 Contributor: Jackson Bitterolf: jbittero Ayush Viswanathan: viswan11 Nolan Hays: haysn Roshan Sundar: rmsundar My contributor(s) helped me: [ ] understand the assignment expectations without telling me how they will approach it. [ ] understand different ways to think about a solution without helping me plan my solution. [ ] think through the meaning of a specific error or bug present in my code without looking at my code.

```
%did you complete the assignment information? delete this line if yes
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INITIALIZATION

```
clc
clear
D=csvread('Data_volume_power.csv',2,0)
c1=D(:,1);
c2=D(:,2);
c3=D(:,3);
len=length(c1)
n1=zeros(12,1)
n2=zeros(12,1)
```

```
D =

    1.5000   10.0000    5.0000
    2.0000   20.0000   16.0000
    2.8000   29.0000   29.0000
    4.0000   40.0000   39.0000
    5.5000   48.0000   50.0000
    8.0000   57.0000   63.0000
   10.0000   66.0000   72.0000
   12.0000   67.0000   76.0000
   16.0000   80.0000   86.0000
   22.0000   86.0000   98.0000
   32.0000  103.0000  110.0000
   48.0000  109.0000  122.0000


len =
```

```
    12
```

```
n1 =

     0
     0
     0
     0
     0
     0
     0
     0
     0
     0
     0
     0
```

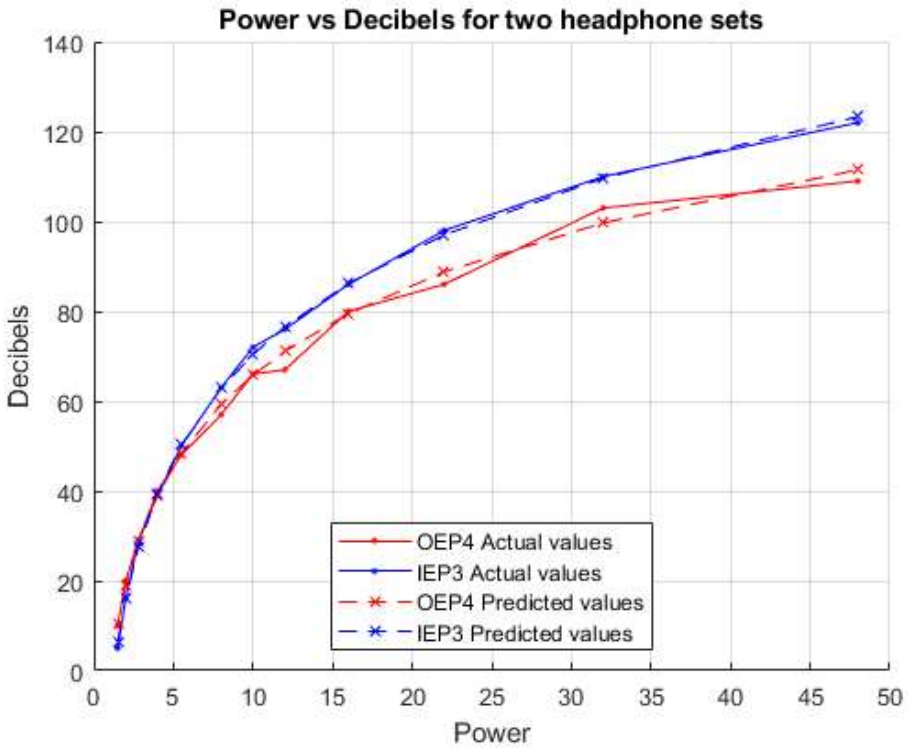
```
n2 =

     0
     0
     0
     0
     0
     0
     0
     0
     0
     0
     0
     0
```

CALCULATIONS

```
for x= 1:1:len
    p=c1(x,1);
    o4=67.1*log10(p)-1.3;
    n1(x,1)=o4;
    i3=77.7*log10(p)-7.3;
    n2(x,1)=i3;
end
```

FORMATTED TEXT & FIGURE DISPLAYS

```
hold on
grid on
title('Power vs Decibels for two headphone sets')
xlabel('Power')
ylabel('Decibels')
plot(c1,c2,'r.-')
plot(c1,c3,'b.-')
plot(c1,n1,'rx--')
plot(c1,n2,'bx--')
legend({'OEP4 Actual values','IEP3 Actual values','OEP4 Predicted values','IEP3 Predicted values'},'Location','south')
hold off
```



Analysis

```
%Q1: IEP3 fits its data better than OEP4.

%Q2: Based on the points from the models, the IEP3 headphones are more
%sensitive.

%Q3: At 60dB the IEP3 headphones require less power therefore they will
%have a longer battery life. At 30dB, both sets of headphones require a
%almost the same amount of power, and the difference cannot be determined
%from the graph.
```

ACADEMIC INTEGRITY STATEMENT

I have not used source code obtained from any other unauthorized source, either modified or unmodified. Neither have I provided access to my code to another. The project I am submitting is my own original work.

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