```matlab
%Senior Design ECE457 Project Group 9
%Fall 2019


%Global Variables
n = 2; %Number of data files
filenamelist = {'Book1.xlsx';'Book2.xlsx'}
filearray = string(filenamelist);
%c=1;
sz = 36; %Size of scatterplot points
x = [20:0.1:130]; %Setting x axis for 'normpdf' plot
DataMat = zeros(30,4); %Predefine Data Matrix

%Function
for c = 1:n
        SoundData = filearray(c,1); %Read excel file in folder



        DataMat(:,1,c) = xlsread(filearray(c,1), 'A2:A31'); %Ambient
 1st col
        DataMat(:,2,c) = xlsread(filearray(c,1), 'B2:B31'); %Quiet is
 2nd col
        DataMat(:,3,c) = xlsread(filearray(c,1), 'C2:C31'); %Medium is
 3rd col
        DataMat(:,4,c) = xlsread(filearray(c,1), 'D2:D31'); %Loud is
 4th col
        [k,DataLoc] = xlsread(filearray(c,1), 'E1:E1');


        AveAmb = mean(DataMat(:,1,c)); %Calculate Averages
        AveQui = mean(DataMat(:,2,c));
        AveMed = mean(DataMat(:,3,c));
        AveLou = mean(DataMat(:,4,c));
        StdAmb = std(DataMat(:,1,c));
        StdQui = std(DataMat(:,2,c)); %Calculate Standard Deviations
        StdMed = std(DataMat(:,3,c));
        StdLou = std(DataMat(:,4,c));
        Labels = {'Ambient';'Quiet';'Medium';'Loud'};
        Averages = {AveAmb; AveQui; AveMed; AveLou};
        Stdevs = {StdAmb; StdQui; StdMed; StdLou};

        GauAmb = normpdf(x,AveAmb,StdAmb);
        GauQui = normpdf(x,AveQui,StdQui);
        GauMed = normpdf(x,AveMed,StdMed);
        GauLou = normpdf(x,AveLou,StdLou);

        %%%%%%%%%%%%%%%PLOTTING%%%%%%%%%%%%%%%%%
        DataLoc %Print Data Location to command window
        T = table(Labels, Averages, Stdevs) %Print Data Table to
 Command Window
```

```matlab
        figure(c), subplot(2,1,1)
        hold on
        scatter(1:30, DataMat(:,1,c), sz, 'r') %Ambient
        scatter(1:30, DataMat(:,2,c), sz, 'g') %Quiet
        scatter(1:30, DataMat(:,3,c), sz, 'b') %Medium
        scatter(1:30, DataMat(:,4,c), sz, 'k') %Loud
        ylim([30 130])
        title(DataLoc)
        xlabel('Trials')
        ylabel('Volume Level in dB')
 legend({'Ambient','Quiet','Medium','Loud'},'Location','northwest','NumColumns',4)
        hold off

        subplot(2,1,2)
        hold on
        plot(x,GauAmb, 'r')
        plot(x,GauQui, 'g')
        plot(x,GauMed, 'b')
        plot(x,GauLou, 'k')
        ylabel('Probability')
        xlabel('Volume Level in dB')

 legend({'Ambient','Quiet','Medium','Loud'},'Location','northwest','NumColumns',4)
        title(DataLoc)
        ylim([-0.02 1.4])
        hold off

end

DataMat %Print Data Matrix to command window


filenamelist =

  2×1 cell array

    {'Book1.xlsx'}
    {'Book2.xlsx'}


DataLoc =

  1×1 cell array

    {'Senior Design Room'}


T =

  4×3 table

     Labels       Averages       Stdevs
    _____      _____      _____
```

```
      'Ambient'    [49.2533]    [0.3471]
      'Quiet'      [53.1833]    [2.2130]
      'Medium'     [60.7967]    [4.0985]
      'Loud'       [75.7600]    [8.7974]


DataLoc =

  1×1 cell array

    {'SENG Near On the Go with TV on'}


T =

  4×3 table

    Labels        Averages        Stdevs
   _____    _____      _____

    'Ambient'    [61.0933]      [3.0953]
    'Quiet'      [67.8867]      [3.3464]
    'Medium'     [74.6833]      [4.6382]
    'Loud'       [81.0633]      [4.4252]


DataMat(:,:,1) =

    49.6000    57.7000    61.4000    71.2000
    49.1000    54.6000    57.3000    58.5000
    49.9000    52.6000    60.1000    92.5000
    49.6000    54.1000    52.5000    75.2000
    49.1000    52.6000    55.6000    70.5000
    49.0000    57.7000    56.3000    60.6000
    49.4000    52.6000    61.3000    68.3000
    49.9000    54.6000    55.6000    71.6000
    48.9000    55.6000    56.5000    66.7000
    49.6000    50.3000    61.3000    64.5000
    49.0000    55.6000    55.6000    77.4000
    49.0000    50.3000    65.0000    77.9000
    49.2000    55.6000    59.7000    82.5000
    49.6000    53.2000    63.8000    80.5000
    49.3000    50.9000    59.3000    68.5000
    50.3000    51.5000    62.5000    82.3000
    49.1000    52.2000    65.1000    71.7000
    49.0000    50.3000    60.2000    69.0000
    49.1000    52.0000    53.9000    74.6000
    49.0000    51.5000    64.4000    84.2000
    49.1000    57.2000    67.4000    83.8000
    49.0000    55.6000    66.1000    83.7000
    48.9000    53.7000    63.7000    69.3000
    49.2000    50.3000    65.6000    82.0000
    49.0000    53.2000    57.8000    91.2000
```
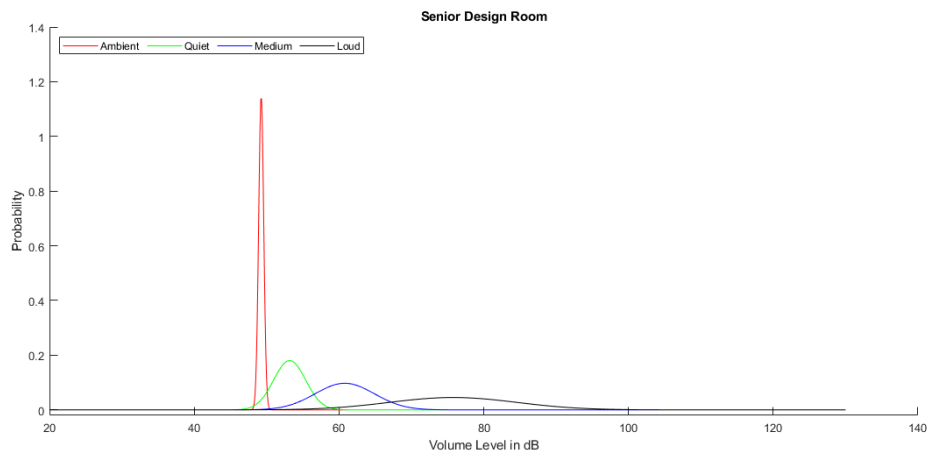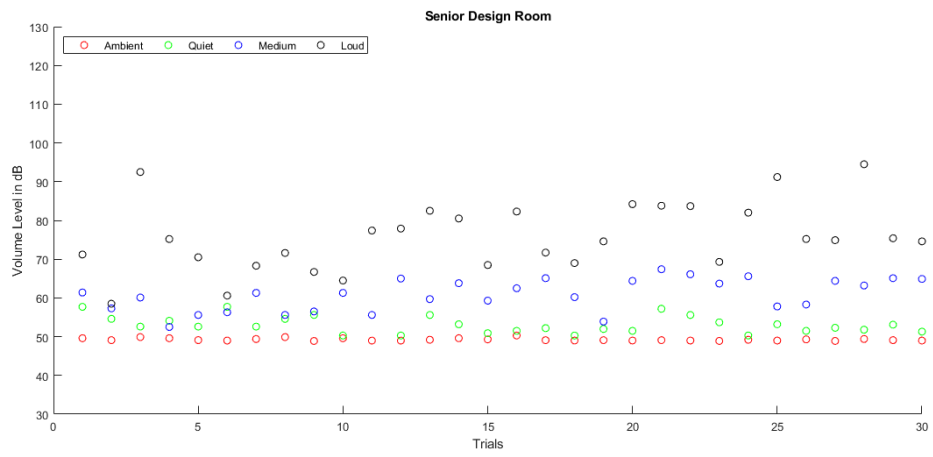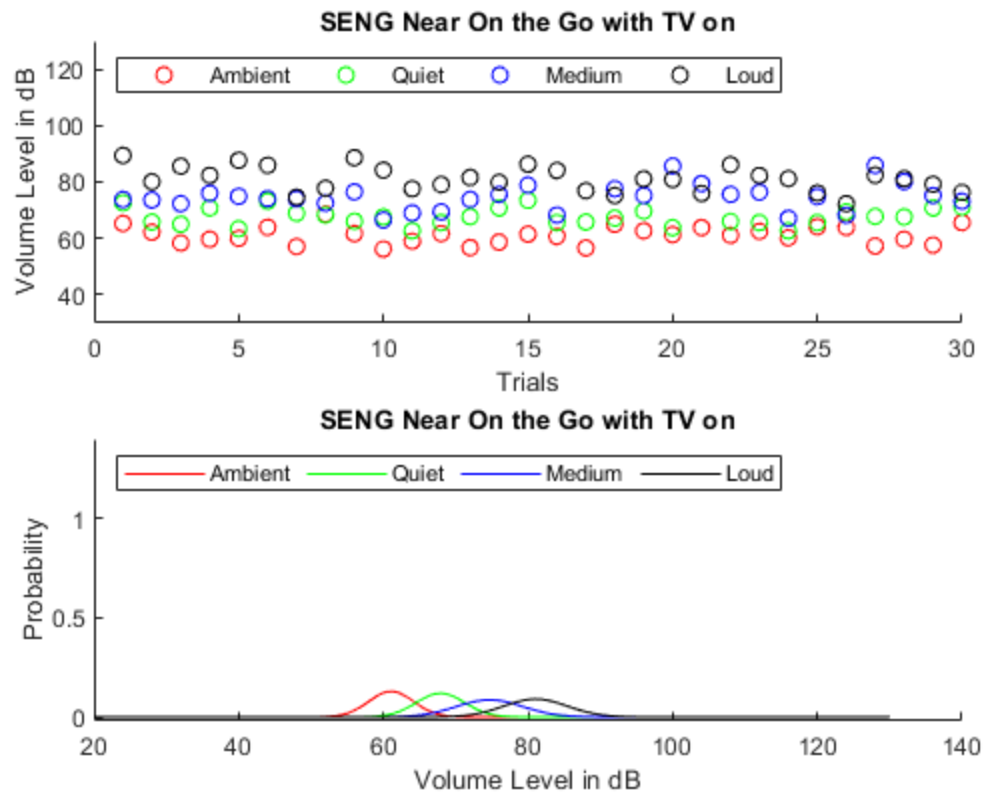
```
    49.3000    51.5000    58.3000    75.2000
    48.9000    52.3000    64.4000    74.9000
    49.4000    51.8000    63.2000    94.5000
    49.1000    53.1000    65.1000    75.4000
    49.0000    51.3000    64.9000    74.6000


DataMat(:,:,2) =

    65.3000    72.6000    73.8000    89.4000
    62.2000    65.8000    73.6000    80.1000
    58.4000    65.0000    72.3000    85.6000
    59.7000    70.8000    76.0000    82.3000
    60.0000    63.4000    74.9000    87.7000
    63.9000    73.2000    74.1000    85.9000
    57.1000    68.9000    74.0000    74.6000
    68.6000    68.3000    72.5000    77.8000
    61.7000    66.1000    76.5000    88.6000
    56.2000    67.6000    66.5000    84.2000
    59.0000    62.7000    69.0000    77.6000
    61.7000    65.6000    69.4000    79.1000
    56.7000    67.7000    73.8000    81.6000
    58.7000    70.8000    75.6000    79.9000
    61.5000    73.5000    78.9000    86.3000
    60.7000    65.6000    68.3000    84.1000
    56.6000    65.8000    76.9000    76.9000
    65.0000    67.2000    77.6000    75.2000
    62.7000    69.7000    75.2000    81.1000
    61.3000    63.8000    85.7000    80.9000
    63.8000    75.9000    79.4000    75.9000
    61.1000    66.0000    75.6000    86.1000
    62.5000    65.6000    76.4000    82.3000
    60.2000    62.7000    67.1000    81.2000
    64.1000    65.6000    74.8000    76.1000
    63.9000    69.4000    68.2000    72.3000
    57.3000    67.8000    85.9000    82.4000
    59.7000    67.6000    80.1000    81.2000
    57.6000    70.8000    75.2000    79.2000
    65.6000    71.1000    73.2000    76.3000
```

Senior Design Room

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