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% Modified by Jacob Niphanprasart

%% Create serial object for Arduino
s=serial('COM7','BaudRate',115200); % change the COM Port number as needed

%% Connect the serial port to Arduino
s.InputBufferSize = 1; % read only one byte every time
try
    fopen(s);
catch err
    fclose(instrfind);
    error('Make sure you select the correct COM Port where the Arduino is connected.');
```

end

```
%% Read the data from Arduino
Tmax = 10; % Total time for data collection (s)
i = 0;
data = 0;
t = 0;
tic % Start timer
while toc <= Tmax
    %% Read buffer data
    i = i + 1;
    data(i) = fscanf(s);
end

Fs = 1000;           % Sampling frequency
T = 1/Fs;            % Sampling period
L = size(data,2);    % Length of signal
t = (0:L-1)*T;       % Time vector

Y = fft(data);       % Take the FFT of the data array

P2 = abs(Y/L);       % Take the absolute value of the fft'd array over the length
P1 = P2(1:L/2+1);
P1(2:end-1) = 2*P1(2:end-1);

f = Fs*(0:(L/2))/L;
plot(f,P1)
title('Fast Fourier Transform for Microphone over 10 Seconds')
xlabel('f (Hz)')
ylabel('Relative Volume')

fclose(s);
```