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%% pressureSensor function records and plots voltage data from Arduino

function [data] = pulseSensor(a,sampleTime,thresh,livePlot,pauseTime)
    % INPUTS:
    % a: ardruino
    % sampleTime: time (seconds) to run function
    % thresh: voltage (volts) threshold to change LED
    % livePlot: true/false to plot voltage in real-time
    % pausetime: time (seconds) to pause between each iteration

    % OUTPUT:
    % data: table with time (seconds), voltage (volts), and pressed (0/1)

    i = 1;
    tic
    timeVec = [];
    voltageVec = [];
    pressedVec = [];

    if livePlot
        h = animatedline;
        time = 0;
        window = 5;
        axis([time-window,time+window,0,5])
        xlabel('Elapsed Time (seconds)')
        ylabel('Voltage (V)')
    end

    disp("Recording data...")

    while toc < sampleTime
      voltage = readVoltage(a, 'A0');
      time = toc;
      %writePWMVoltage(a, 'D3', 5-voltage);

      % turn LED on if voltage is below threshold
      if voltage <= thresh
          writeDigitalPin(a, 'D3', 1)
          pressed = true;
      else
          writeDigitalPin(a, 'D3', 0)
          pressed = false;
      end
```

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    % save time, voltage, and pressed values
    timeVec(i) = time;
    voltageVec(i) = voltage;
    pressedVec(i) = pressed;

    if livePlot
        addpoints(h,time,voltage);
        drawnow
        axis([time-window,time+window,0,5])
    end

    pause(pauseTime)

    i = i + 1;
  end
  disp('Data recording stopped')
  writeDigitalPin(a, 'D3', 0) % turn LED off
  data = table(timeVec',voltageVec',pressedVec','VariableNames',{'time','voltage','pressed'});
end
```