Overview

The task for this homework is to create a short academic lab report that presents the data of the moving blade you acquired in lab 1, task 4. You will first need to find the best way to organize and plot the data and present it in an understandable way, adhering to the formatting guidelines (see "***Report Formatting Guidelines***" in moodle and recall the **second part of Lecture 1**).

Imagine that you are writing this report to a coursemate who tries to repeat the measurement you did. From this perspective, it would really help if the report is given at a sufficient level of detail i.e. describes the measurement process, explains well which wire was connected where, as well as lists the names and characteristics for all the used equipment. Try to include all additional information that would be necessary for another person to acquire an identical result (e.g. the lighting conditions), but avoid excessive complexity (e.g., probably barometric reading had a negligible effect).

Requirements for the report of the Homework 1:

- Introduction to the problem that was investigated.
- At least one graphical item (schematics, picture, etc.) that describes the experiment set-up (the instruments and their connections). Please annotate the graphical item clearly.
- At least one graph (with at least three data points) that describes the blade movement. Please annotate the graph(s) clearly. Important characteristics of the blade movement should be unambiguously presented. The choice of parameters is yours, as long as the movement of the blade is described.
- The report has to demonstrate your understanding by the following key points:
    - Please give your considerations on choosing the sampling interval for the 60-second measurement
    - Please explain, why the measurements with the lowest sampling periods took far more than the expected 10 seconds. Also, please find the highest sampling rate for the instrument used.
    - Please estimate the minimum sampling rate required for the problem investigated
- Extra credits (2p):
    - What is the bit depth of the DAQ device you used? Considering the selected measurement range, what is the smallest voltage difference that can be detected? Give an estimate for the minimum bit depth required to carry the information in the problem investigated.
    - Suggest alternatives/optimizations to the given particular measurement, keeping the same DAQ device

Uploading the homework

Ensure the following files will be included with the submission:

- **FirstName_LastName_HW1_report.pdf**: The report in a **pdf** format
- **FirstName_LastName_HW1_extra.zip**: A compressed **ZIP**-file containing:
    - the original measurement data (.txt, .csv, ...) that was used in your report;
    - any VI-s or other source code that was created to acquire or process the data.