Teaching materials
Deliverable 1. Platform identification

MISCE project

Mechatronics for Improving and Standardizing Competences in Engineering

Competence: Control Engineering

Workgroup: Universidad de Castilla-La Mancha
Universitat Politècnica de València

This document corresponds to the first deliverable for the competence ‘Control Engineering’ using the ‘DC-motor control platform’

Version: 1.0

Date: October 5th, 2023

Visit https://misceproject.eu/ for more information.

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1 Dynamics response

In the range [-12 V, 12 V], please select 4 input tension values and represent the dynamics response and the dynamics parameters of that response in terms of angular velocity.

Input voltage value:	Input voltage value:
Input voltage value:	Input voltage value:

Figure 1. Dynamic responses of the system.

Have you filtered the velocity of the output shaft?

☐ Yes

☐ No

In affirmative case, which is the equation of the filter and its implemented code?

2 Static gain, K

Please, include the representation of the angular velocity of the output shaft (Y-axis) against input voltage value (X-axis) and mark the region of interest (dead zone, saturation, …).

Figure 2. Graphic representation of the steady state value of angular velocity (rad/s) vs. input volage (V)

Which is equation of the linear regression of this relationship?

Which is the value of the static gain of the system, K?

3 Time constant, T

Details the procedure to estimate the time constant of the system.

Include the graphical representation that you consider supporting the described procedure.

Figure 3. Graphic representation to support the identification procedure

4 Transfer function of the system

Please, write the equation of the transfer function of the system, $G(s) = \frac{\Theta(s)}{V(s)}$, angular position (rad/s) vs input voltage (V).

For two different values of input signal, please compare the experimental results with the simulated results in terms of the angular velocity.

Input voltage value:	Input voltage value:

Figure 4. Comparison results: experiments vs simulations

Include here the comments that you consider for clarifying purposes: