ELEC-C1310 Automaatio- ja systeemitekniikan laboratoriotyöt

Control of a DC motor

Assignment

Instructors:

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The workbook "**Rotary Servo Base Unit - Workbook (Student).pdf**" (1) is used for this lab. This lab will cover chapters 1-3.

Numerical values of parameters can be found in "**Rotary Servo Base Unit – User Manual.pdf**"

IMPORTANT: Solution must be submitted to Mycourses prior to the lab session. One copy is enough from each group.

Carefully read the workbook (1) and answer these following questions.

1. **Modeling:**
   - Read **section 1.1**, answer all the questions in **section 1.2** in the workbook (1)
2. **Position Control**
   - Read **section 2.1**, answer all the questions in **section 2.2**
3. **Speed Control**
   - Read **section 3.1**, answer all the questions in **section 3.2**

In-lab experiment instructions:

- In the first chapter of the lab, you will be doing experiments to determine the system's steady-state gain (K) and time constant (tau) then validate them with the values calculated from the pre-lab questions.

- The second chapter involves designing Kp, Kd gains for a PD controller in frequency domain/time domain and then validating on the DC motor.

- The last chapter consists of only designing PI gains for a speed controller, not the LEAD control design.

Should you have any problems or questions, please ask the instructor!