Lab report 4:

System identification and Interaction Control

System identification

To identify the stiction torque, the motor current was being increased in small steps until a movement is being detected (Δx > sensor noise, 0.616°). This stiction motor current was being recorded 5 times for each spinning direction of the motor and the mean stiction torque was being calculated. The damping relative to the paddle axis was calculated by using the motor characteristics from the datasheet.

**Equation:**

|  |  |
| --- | --- |
| Current start to move cw(paddle) [A] | Current start to move ccw(paddle) [A] |
| -0.021418 | 0.012862 |
| -0.025703 | 0.008577 |
| -0.025703 | 0.008577 |
| -0.021418 | 0.012862 |
| -0.021418 | 0.008577 |
| Mean: -0.023989 | **Mean: 0.010291** |

|  |  |
| --- | --- |
| Motor Stiction torque cw(paddle) [Nm] | Motor Stiction torque ccw(paddle) [Nm] |
| -0.024109 | 0.012065 |
| -0.024109 | 0.008045 |
| -0.024109 | 0.008045 |
| -0.020090 | 0.012065 |
| -0.020090 | 0.008045 |
| Mean: -0.022501 | **Mean: 0.0096531** |

**Damping:**

**Relative to the paddle axis:**